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EXPLORING THE CONNECTION BETWEEN ENTREPRENEURIAL ORIENTATION AND EXPORT PERFORMANCE: THE ROLE OF INNOVATION CAPABILITIES*

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Abstract. This study aims to analyse the relationship between entrepreneurial orientation, innovation capabilities and export performance in the context of the transport sector. In addition, it aims to analyse the mediating effect of innovation capabilities on the relationship between entrepreneurial orientation and export performance. This exploratory and transversal study takes a quantitative methodological approach based on survey data from 246 top managers of Portuguese small and medium-sized enterprises (SMEs) in the transport sector, specifically those involved in road, sea, and air freight operations. The findings confirm the existence of significant direct relationships between entrepreneurial orientation and innovation capabilities, innovation capabilities and export performance, and entrepreneurial orientation and export performance. The mediating effect of innovation capabilities on the relationship between entrepreneurial orientation and export performance was also supported. This study emphasises the vital connection between entrepreneurial orientation and innovation capabilities, confirming entrepreneurial orientation as a core strategic driver of innovation within firms. Innovation capabilities mediate the relationship between entrepreneurial orientation and export performance, indicating that strategic intent must be translated into concrete innovation competencies to achieve export success. The findings also substantiate the impact of entrepreneurial orientation on export performance, aligning with theories that link entrepreneurial strategies to international growth. The study provides practical insights for transport sector managers, highlighting the importance of cultivating innovation capabilities alongside entrepreneurial practices to improve export outcomes and sustain competitiveness in global markets. This study focuses on the transport sector, a relatively underexplored industry in the study of entrepreneurial orientation, innovation capabilities, and export performance. Additionally, it investigates and confirms the mediating effect of innovation capabilities on the relationship between entrepreneurial orientation and export performance. This research contributes to existing research, as previous studies focused primarily on direct relationships rather than exploring mediating mechanisms. By focusing on Portuguese SMEs in the transport sector, the study provides empirical evidence from a regional and sectoral perspective. This localised focus enhances understanding of how entrepreneurial orientation and innovation capabilities drive performance in a specific economic and cultural environment.

Keywords: entrepreneurial orientation; innovation capabilities; export performance; transport sector; PLS-SEM

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1. Introduction

In a world of constant change, with growing interdependence between countries, firms have a progressively greater need to constantly seek solutions for their survival and adaptation to the environment, and to respond to the incessant obstacles present, by following policies, developing and applying strategies and/or adapting the instruments used by the various players. Thus, in this context, entrepreneurship and internationalisation are the answer to the widespread increase in potential competitive threats to their survival. Entrepreneurial orientation in the international context is a research topic that has been systematically developed within international entrepreneurship studies, thereby consolidating the concepts of entrepreneurship and international business.

Some researchers have analysed the impact of entrepreneurial orientation on export performance (e.g., Miller, 1983; Monteiro et al., 2019; Hossain et al., 2022) or innovation capabilities (e.g., Aljanabi, 2017), while others have found some empirical evidence that innovation capabilities have an impact on a firm's export performance (e.g., Kolbe et al., 2021; Alegre et al., 2022; Moreira et al., 2022; Zhang & Jedin, 2022). However, the effects of entrepreneurial orientation on innovation capabilities remain a topic of study that warrants further research, reflecting a gap in the literature (Aljanabi, 2017; Alshanty & Emeagwali, 2019). Furthermore, the complexity of defining export performance is a challenge, as different perspectives from various authors (e.g., Monteiro et al., 2019; Njegic & Komnenic, 2020) contribute to a multifaceted view of this concept, encompassing a variety of measurement indicators and potentially introducing subjectivity into its assessment.

The scarce resources of SMEs can also explain situations in which a particular firm lacks sufficient means to excel in innovation (Alegre et al., 2022). Firms often lack sufficient resources to bear the high costs of internationalisation; only the most productive firms become exporters. Innovation is therefore an important factor in export performance; however, firms also increase their performance and innovation capabilities after entering foreign markets (Vieira et al., 2022). It is important to note that innovation improves export performance, both directly and indirectly, by sustaining technological innovation (Zhang & Jedin, 2022). Therefore, the main objective of this study is to understand how a higher level of entrepreneurial orientation and a higher degree of innovation capabilities influence the export performance of a Portuguese exporting firm.

Although the relationship between entrepreneurial orientation, innovation capabilities and export performance has been the subject of growing interest and research, as it is intrinsically linked to firms' ability to stand out in international markets, develop their competitiveness and drive economic growth (Ferreira et al., 2020; Monteiro et al., 2019), there is still no consensus in the literature about this relationship and there is the need to develop empirical studies about these three variables, especially in ever-changing markets, to enrich theoretical advancement in this field, because resources and competencies are interlinked and underpin entrepreneurs' ability to recognise unique business opportunities and allocate resources. Studies indicate that promoting innovation capabilities in SMEs will contribute to an increase in export performance; this implies adopting innovations in various areas, including technological, commercial and logistical processes (e.g., Perera et al., 2026; Dao et al., 2026)

Furthermore, the interconnection between these three variables represents a gap in the literature and is the main motivation for this research problem. Thus, the question under study is defined as: How do innovation capabilities influence the relationship between entrepreneurial orientation and export performance in firms? As mentioned above, the main objective is to understand this relationship, but it is also essential to define specific objectives for this study, such as:

- (1) To assess the impact of entrepreneurial orientation on increasing innovation capabilities in firms;
- (2) To analyse the importance of innovation capabilities in the development of firms' export performance;
- (3) To evaluate the contribution of entrepreneurial orientation to export performance;

(4) To understand the extent to which entrepreneurial orientation and innovation capabilities together influence export performance.

2. Theoretical background

Entrepreneurial orientation and innovation capabilities

Entrepreneurial orientation refers to the intensive search for new market opportunities and the improvement of existing areas of operation. The objectives set and the skills of the firm's top management are essential for boosting entrepreneurial orientation (Ferreira et al., 2020).

Researchers view entrepreneurial orientation as an essential organisational resource that enables firms to differentiate themselves from others. The firm possesses a rich body of knowledge from its employees, which is shared both internally and externally, thereby fostering knowledge creation. Subsequently, this knowledge is recognised as a strategic resource that is converted into innovation to exploit market opportunities. This will enable firms to understand the demands of the market in which they operate and of their customers, and thus fulfil their needs through innovation (Miller, 1983). SMEs with a high entrepreneurial orientation are more likely to be highly proactive, with a greater predisposition to seek out and capitalise on market opportunities and trends encountered, this description being linked to the ability to respond to market signals (Aljanabi, 2017; Kang & Lee, 2025).

Associated with innovation, another dimension of entrepreneurial orientation is risk-taking, given the potential for firm failure. In this way, it must be prepared to face these adversities by creating operational knowledge rooted in entrepreneurial attitudes (Aljanabi, 2017). Innovation capabilities are recognised as a firm's ability to develop new products or services, concepts and processes through its proactivity and speed in responding to the latest market trends (Alshanty & Emeagwali, 2019). It is important for a firm to continually acquire market information to outperform its competitors, build relationships with market players, and gain a competitive advantage (Alshanty & Emeagwali, 2019).

The relationship between entrepreneurial orientation and innovation capabilities refers to the link with a market-oriented culture, which plays a significant role in the success of business innovation; thus, entrepreneurial orientation is an essential resource for a firm to implement innovation, with a major influence on its ability to adapt to environmental changes (Ferreira et al., 2020). A high level of innovation capability allows entrepreneurial orientation to be linked to product innovation. Ko and Lu (2010) highlight the role of other dimensions of entrepreneurial orientation, such as risk-taking, which drives a firm's ability to produce new products and processes, since its nature allows for the allocation of the organisational resources needed to produce innovations.

The innovation dimension specifically reflects a firm's propensity to support and engage in novel ideas, experimentation, and creative processes, potentially leading to the development of new products, services, or technological solutions (Miller, 1983). This dimension is primarily attitudinal, capturing the firm's orientation or openness toward innovation, rather than its ability to execute it. It indicates how forward-looking and entrepreneurial the firm is in spirit, without necessarily reflecting the effectiveness of innovation implementation.

In contrast, innovation capabilities pertain to a firm's actual competence in developing, managing, and executing innovations. This construct emphasises the operational and process-based aspects of innovation, encompassing the organisational skills, resources, and systems required to sustain innovation in response to both internal dynamics and external market conditions. Innovation capabilities include knowledge management, R&D proficiency, a learning orientation, and the systematic integration of innovative practices into the firm's routine operations.

Although both constructs are centred on innovation, they differ in terms of conceptual focus and practical implications. Entrepreneurial orientation, through its innovation dimension, reflects an intention or disposition toward innovation, while innovation capabilities capture the firm's capacity to realise innovation in practice. Consequently, a firm may possess a strong entrepreneurial orientation yet lack the necessary capabilities to implement innovation effectively, or conversely, may have robust innovation capabilities but a limited strategic inclination toward entrepreneurial initiatives.

We therefore intend to test the following research hypothesis:

H1: Entrepreneurial orientation has a positive and significant effect on innovation capabilities.

Innovation capabilities and export performance

Export growth depends not only on the main innovation assets (R&D, manufacturing, and marketing) but also on secondary innovation assets, such as learning, organisation, resource allocation, and strategic planning, to strengthen international competitiveness. Although innovation capabilities positively impact SME performance and innovation increases the propensity to export, these factors may not be the predominant ones for success on an international scale; international experience may play a more crucial role in this context (Oura et al., 2016). The increase in exports is closely associated with the total improvement in the dimensions of innovation capabilities. Furthermore, additional innovation capabilities (learning, organisational, resource exploitation, and strategic capabilities) enable the integration of all capabilities and the achievement of sustainable international competitiveness (Sriboonlue & Sriboonlue, 2026).

Kolbe et al. (2021) mention that product innovation can increase the likelihood of starting to export and encourage non-exporting SMEs to pursue international operations. Furthermore, exporters must identify customers who are compatible with products developed with new technologies to ensure their success. Living in an increasingly global and highly competitive market, firms must have a remarkable and efficient capacity for innovation to understand and satisfy the needs of international customers through differentiated products, improving their productivity levels (Vieira et al., 2022).

Exploratory and exploitative innovation have been shown to positively impact firm performance, whereas a mixed approach has no significant effect (Popadić & Černe, 2016). Gupta et al. (2006) suggest that exploratory innovation and exploitative innovation can be mutually reinforcing and need not necessarily be contradictory. Still, they can occur in complementary fields that do not necessarily compete for the same resources. The traditional theory of the technology life cycle argues that after the exploratory innovation phase, which is characterised by generating higher potential returns through radical innovations such as new product concepts or distribution channels, the post-design phase follows. In this phase, exploratory innovations, which are characterised by incremental improvements, can yield significant performance benefits. According to Benner and Tushman (2003), it is possible to find both high and low levels of exploratory innovation in a given field, coexisting with high or low levels of exploitative innovation in a complementary field.

We therefore intend to test the following research hypothesis:

H2: Innovation capabilities have a positive and significant effect on export performance.

Entrepreneurial orientation and export performance

The literature is extensive on the role of entrepreneurial orientation in the firm's search for opportunities, as well as its multifaceted outcomes that enable superior performance (Monteiro et al., 2019). According to Miller (1983), a firm that adopts an entrepreneurial orientation invests in product and/or market innovation, takes on some risk, and takes a proactive stance towards its competitors. To some scholars (e.g., Miller, 1983), firms with an entrepreneurial orientation tend to be successful, since there is a positive relationship between entrepreneurial

orientation and business performance, and it is an indispensable condition for firms seeking to develop in increasingly demanding competitive environments.

Entrepreneurial orientation is a multidimensional concept with three key dimensions: innovativeness, risk-taking and proactivity (Miller, 1983). The most common dimensions in research are the three mentioned by Miller (1983), in which firms with a high level in these three dimensions are considered potentially entrepreneurial, with a greater likelihood of making strategic decisions to combine adequate resources, foster sustainable capabilities and perfect essential capabilities to succeed in international markets (Monteiro et al., 2019).

As part of their differentiation strategy, firms consider innovation to offer different solutions across markets. Thus, innovation is a dimension of entrepreneurial orientation and an instrument that enables the exploration of new opportunities, despite greater risk due to the possibility of not achieving the expected return on investment (Monteiro et al., 2017). SMEs with a higher level of international entrepreneurial orientation tend to perform more effectively in international markets, as they proactively adopt new technologies and take on the risks inherent in strategies focused on product adaptation to the needs of foreign customers (Hossain et al., 2022).

The literature on internationalisation points out that innovation is important for obtaining competitive advantages in global markets and that many international firms have greater learning opportunities that can lead to innovation. Given the growing global competitiveness, a proactive stance is an important driver of firm survival and strong commercial performance. International entrepreneurial orientation induces SMEs to adopt innovative, risky and proactive behaviours in international markets (Jin & Cho, 2018).

For many born-global firms, internationalisation is becoming a crucial necessity. The scarcity of resources available for this purpose often means that international operations are conducted through flexible organisational measures, such as partnerships and export networks, without entailing a significant increase in the firms' administrative costs. According to Jin and Cho (2018), a high level of international entrepreneurial orientation in SMEs leads to the search for innovative products and services oriented towards foreign markets, viewing these as opportunities rather than risks and seeking business opportunities and partners abroad.

The relationship between entrepreneurial orientation and performance remains controversial. The vast majority of studies have found a significant influence of entrepreneurial orientation on business performance, while others report an insignificant association (Hossain et al., 2022). Because of this, various conclusions have called for a third variable to find the nature of this relationship (Hossain et al., 2022), such as mediating effects (Monteiro et al., 2017).

This link is based on both the firm's overall performance and its success in the international market. Entrepreneurial orientation contributes favourably to export performance. Firms with a stronger entrepreneurial orientation achieve higher levels of international sales than total sales and operate in a greater number of foreign countries (Celec et al., 2014). Entrepreneurship is closely associated with the adoption of a marketing leadership strategy and with the intensity of response to the opportunities and threats of globalisation, increasing firm performance.

Possible differences in customer needs, competition, and the environment require product, channel, and organisational innovations to overcome barriers to market entry and establish a superior position (Celec et al., 2014). In addition, uncertainties related to market acceptance and local competition require a willingness to take risks. Achieving a competitive advantage in export markets requires a proactive approach that involves developing market knowledge, creating a distinctive range, and entering the market as a first mover.

We therefore intend to test the following research hypothesis:

H3: Entrepreneurial orientation has a positive and significant effect on export performance.

The mediating effect of innovation capabilities on the relationship between entrepreneurial orientation and export performance

Entrepreneurial orientation refers to the organisational attitude that drives the firm to act on identified opportunities, using its resources and skills, so the firm's ability to exploit opportunities depends on its ability to recognise them, its ambition to take action and its effectiveness in responding (Celec et al., 2014). Entrepreneurial orientation plays an essential role in driving decisions and activities related to the proactive utilisation of resources and capabilities for entrepreneurial purposes, as well as accompanying reactive activities, as highlighted by Celec et al. (2014). In the context of internationalisation, entrepreneurial orientation is a significant factor in shaping the relationship between organisational resources and competencies and the performance of export activities, depending on the purpose for which these resources and competencies are applied. By way of example, the firm's market and innovation-oriented capabilities can be directed towards acquiring in-depth knowledge of existing customers, resulting in the development of improved solutions. In addition, they can be used to explore new customers and markets, leading to the creation of solutions that are considerably different from those offered in its existing portfolio (Celec et al., 2014). However, these scholars point out that it is possible to support the idea that entrepreneurial orientation can neutralise the resources allocated to administrative and routine tasks, such as export activities. For example, a significant change in customer service capabilities can lead to a temporary reduction in service quality due to reduced efficiency. As a result, entrepreneurial orientation can mitigate the positive relationship between superior service capacity and export performance.

Finally, we intend to test the last research hypothesis defined:

H4: Innovation capabilities mediate the relationship between entrepreneurial orientation and export performance.

Figure 1 presents the research model, highlighting the complex dynamics among the constructs studied (Entrepreneurial Orientation, Innovation Capabilities, and Export Performance).

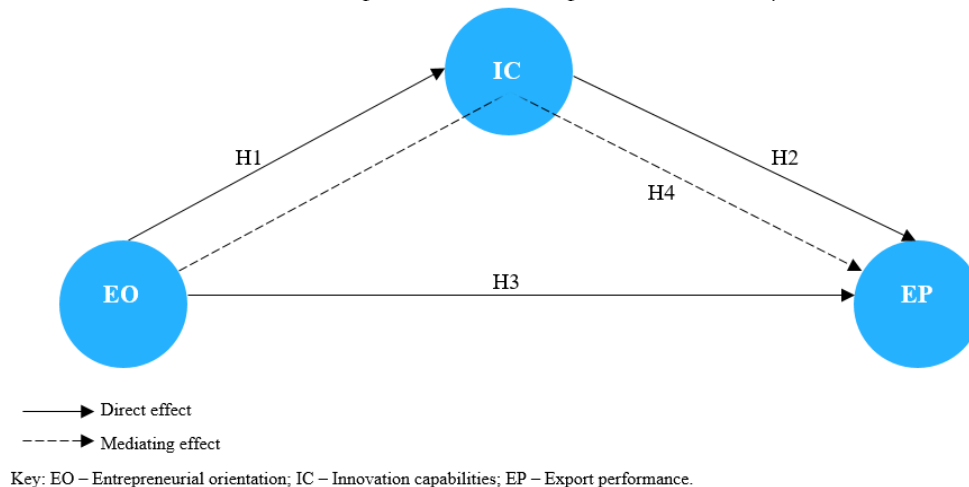


Figure 1. Research model and hypotheses
 Source: own work based on the conducted study

3. Methodology

Sample and data collection

The sample for this empirical study consists of top managers from Portuguese SMEs in the transport sector, specifically those involved in road, sea, and air freight operations. A questionnaire was used as the primary data source. The data collection was carried out between August 1, and February 29, 2023. The firms were identified using the SABI database. The database includes 1,642 SMEs.

In this study, we used non-probabilistic and convenience sampling. The following inclusion criteria guided the sampling process to ensure relevance and consistency with the study's objectives: (1) Firm size: Only SMEs were included, defined according to the European Commission criteria as firms with fewer than 250 employees and an annual turnover not exceeding €50 million, (2) Industry sector: Eligible firms operated within the transport sector, specifically in freight operations by road, sea, or air. Passenger transport firms and firms in unrelated sectors were excluded, (3) Geographic location: Only firms legally registered and operating in Portugal were considered, to ensure consistency with the national context of the study, (4) Respondent profile: Participants had to be top-level managers, such as CEOs, managing directors, or senior executives, directly involved in strategic decision-making processes, particularly those related to innovation, internationalisation, or export performance, and the unit of analysis was the individual, and (5) Operational status: Firms needed to have been in continuous operation for a minimum of three years to ensure respondents could provide informed and reliable insights into the firm's strategic orientation and performance trends.

The research survey was sent to the top manager's professional email, and the addresses in the SABI database were verified and validated. The participants were informed about the survey content to enhance response efficiency, and they provided consent. Whenever one of the following situations occurred, the responses were discarded to avoid possible bias: (1) surveys that did not include all of the responses, (2) when the firm did not have a manager designated for this purpose, and (3) surveys passed on to another type of manager.

A total of 246 fully completed and validated questionnaires were returned. This return corresponds to a response rate of 15%, considered entirely satisfactory, given that the average response rate for top management surveys is 15–20%. Hair et al. (2022) argued that this sample size is suitable for data analysis using partial least squares structural equation modelling (PLS-SEM).

Instrument and measures

The questionnaire was structured into five different sections, each dedicated to a topic: (1) entrepreneurial orientation, (2) innovation capabilities, (3) export performance, (4) the firm's data and (5) the managers' sociodemographic data. Before being distributed to the sample, it underwent a pre-test phase to assess its organisation, formatting, and possible improvements to the wording for clearer interpretation.

This study will use the variables of entrepreneurial orientation (its five dimensions: innovation, risk-taking, proactivity, autonomy, and competitive aggressiveness), innovation capabilities, and export performance. Entrepreneurial orientation comprises 10 items in total, two for the innovation dimension, two for the risk-taking dimension, two for the proactivity dimension, two for the autonomy dimension and two for the competitive aggressiveness dimension (Al Mamun et al., 2017). Innovation capabilities comprise 15 items (Mir et al., 2016). Export performance comprises five items (Zou & Stan, 1998). All these items are based on previous studies by Sariol and Abebe (2017) and Popadić and Černe (2016). Table 1 shows the items of the constructs.

Table 1. Items of the constructs

Construct / Items	Author(s)
Entrepreneurial orientation (EO): E1. Usually, the top management of my company prioritises R&D, technological leadership, and innovation. E2. In my company, we are consistently pioneers in introducing new management techniques, operational technologies, and other advancements. E3. Top managers in my company often show a strong preference for high-risk projects that offer prospects of high returns but involve significant uncertainty. E4. Employees in the company have complete freedom to present ideas or suggestions at any time and are encouraged to make decisions without restrictions. E5. We adopt a reactive posture in response to competitors' actions, aiming to strengthen our market position and reduce our rivals' competitiveness. E6. The top management of my company regularly prioritises marketing existing products and services. E7. My company closely monitors changes initiated by competitors in the market. E8. Top managers at my company often prefer low-risk projects that offer predictable, guaranteed returns. E9. Employees in the company face restrictions when presenting ideas or suggestions and are not encouraged to make decisions freely at any time. E10. My company takes a passive stance toward competitors' actions, weakening its competitive ability.	Covin & Slevin (1989); Al Mamun et al. (2017).
Innovation capabilities (IC): IC1. Innovation projects are aligned with the company's overall strategy. IC2. The company has excellent knowledge of the competitive market environment. IC3. A precise, early definition of the tasks and objectives to be developed is required. IC4. Communication of the information required for innovation projects is especially clear, transparent, and integral. IC5. Mistakes made during innovation projects are seen as opportunities for learning and systematic improvement. IC6. The innovation vision is considered when making strategic decisions in the company. IC7. Innovation projects follow a properly documented innovation process that considers all areas of activity and is carried out according to the planned schedule and budget. IC8. Through innovation, the company has gained larger market shares than its competitors. IC9. Market-oriented distribution channels are identified early in the innovation process. IC10. A budget is allocated for innovation projects that are not directly financed by customer orders. IC11. Coordination with external research sources is maintained to stay informed of relevant technological and research developments. IC12. Members of the management bodies show strong interest in participating in new projects (such as openness to new markets and technologies). IC13. Employees from different backgrounds can work together in innovation project teams. IC14. Risks in innovation projects are systematically controlled using methods and tools such as SWOT analysis. IC14. Clearly defined and precise criteria are used to evaluate and select potential projects for implementation.	Mir et al. (2016).
Export performance (EP): EP1. Our international market has proven to be highly profitable. EP2. We have observed a substantial increase in sales in our international market. EP3. Over the past 3 years, we have experienced significant growth in our international activities. EP4. Over the past 3 years, we have expanded our operations. EP5. Overall, the company's international performance has been highly satisfactory.	Zou & Stan (1998); Kuivalainen et al. (2007)

Source: own work based on the conducted study

Data were collected using the questionnaire, which included scales that were previously adapted, validated, and used in prior studies. Each variable section was assessed using a 10-point Likert scale, allowing respondents to indicate their degree of agreement or disagreement with the statements presented (0 = Strongly disagree; 10 = Strongly agree). Furthermore, the independent variable in this study is entrepreneurial orientation, while the dependent variables are innovation capabilities and export performance.

4. Results

Descriptive analysis

The reliability analysis was performed using Cronbach's alpha, which ensured the consistency and stability of the responses while accounting for respondent heterogeneity and opinion differences (Pestana & Gageiro, 2008). The sample reliability was excellent for all variables (0.958). Table 2 shows the descriptive statistics of the sample's demographics.

Table 2. Descriptive analysis

Managers	
Item	%
Gender:	
Male	59.3
Female	40.7
Age (years old):	
< 25	7.7
25-30	13.8
31-40	23.1
41-50	53.8
> 50	1.5
Academic qualifications:	
vocational qualification	33.9
professional qualification	9.2
bachelor degree	44.6
master degree	12.3
PhD	0.0
Professional experience (years):	
< 5	23.1
5-10	23.1
11-15	15.4
16-20	13.8
> 20	24.6
Firms	
Item	%
Firm age (years):	
< 5	20.0
5-10	12.3
11-15	15.4
16-20	7.7
> 20	44.6
Firm dimension:	
Micro	38.5
Small	36.8
Medium	24.7
Markets:	
North America	4.6
South America	6.2
Central America	3.1
North-East Asia	1.5
Northern Europe	12.3
Southern Europe	30.8
Western Europe	35.4
Eastern Europe	4.6
Middle East	1.5
Activity area:	
Air freight	10,8
Sea freight	6.2
Road freight	83.1

Source: own work based on the conducted study

Partial least square structural equations modelling (PLS-SEM)

PLS-SEM was used to test the hypotheses with SmartPLS 3.0 software (Hair et al., 2022). PLS-SEM was best suited to estimate the research model as (1) this research focuses on prediction and explanation of the variance of the model's constructs (in this case, four); (2) the research model has a complex structure; (3) the relationship between open innovation and competitive advantage can be measured directly and indirectly; (4) the study uses first and second-order reflective constructs; and (5) the sample (n = 251) is relatively small. Reflective constructs were used to estimate PLS parameters to maximise the variance explained in observed measures (Anderson & Gerbing, 1988).

Evaluation of the measurement model

The results showed that the measurement model met all general requirements. First, all reflective items have a factor loading greater than 0.707, indicating that the reliability of individual indicators (loadings) was greater than 0.5. Second, all composite reliability values and Cronbach's alpha values were above 0.7, indicating acceptable model reliability. Third, the average variance extracted (AVE) values of all constructs were higher than 0.50, indicating adequate convergent validity and implying that the indicators represent the same underlying constructs (Hair et al., 2022).

In addition, the composite reliability coefficient was used to test the constructs' validity (Chin, 1998). Gefen and Straub (2005) advocate a minimum of 0.6 when the variables exceed the reference value. Fornell and Larcker's (1981) criterion was used in this study, proposing that AVEs must have a minimum value of 0.5 to prove convergent validity. All the constructs reached this value (Table 3).

Table 3. Standardised factor analysis loadings, CR, AVE, Mean and SD

First-order constructs	Items	Loadings	CR	AVE	Mean	SD
Entrepreneurial Orientation ($\alpha = 0.951$)			.958	.696		
	EO1	.758			7.35	2.287
	EO2	.854			6.71	2.367
	EO3	.840			6.93	2.373
	EO4	.838			7.21	2.201
	EO5	.876			6.71	2.377
	EO6	.832			6.68	2.388
	EO7	.836			6.51	2.316
	EO8	.840			6.95	2.126
	EO9	.841			6.81	2.101
	EO10	.823			6.78	2.157
Innovation capabilities ($\alpha = 0.960$)			.965	.655		
	IC1	.555			6.52	2.306
	IC2	.669			7.13	1.594
	IC3	.596			7.12	1.559
	IC4	.718			6.95	1.727
	IC5	.845			6.97	1.677
	IC6	.845			6.96	1.651
	IC7	.748			7.22	1.579
	IC8	.884			7.03	1.649
	IC9	.931			7.01	1.655
	IC10	.848			7.14	1.562
	IC11	.901			7.07	1.611
	IC12	.834			6.97	1.601
	IC13	.885			7.15	1.581
	IC14	.868			6.95	1.689
	IC15	.893			7.00	1.662
Export Performance ($\alpha = 0.890$)			.921	.704		
	EP1	.899			7.01	1.609
	EP2	.942			7.04	1.551
	EP3	.733			7.20	1.296
	EP4	.676			7.26	1.495
	EP5	.911			7.07	1.595

Source: own work based on the conducted study

The discriminant validity of the model was demonstrated, as the results showed that constructs with no theoretical relation were indeed not significantly correlated; this can be gauged from the principle that cross-loadings cannot exceed the loading of each indicator (Hair et al., 2022). Based on Chin's (1998) classification of explanatory power as moderate/substantial, the data in Table 3 indicate that the discriminant validity results were satisfactory; that is, the construct measures were significantly different. The Fornell-Larcker (1981) criterion (FLC) specifies that the AVE should be greater than the variance between constructs of the same model. Henseler et al. (2015) proposed a new and advanced criterion (Heterotrait-Monotrait Ratio - HTMT) to assess discriminant validity. They accept that the FLC is still an acceptable method for evaluating discriminant validity. However, the FLC

fails to assess the lack of discriminant validity in various research situations. Therefore, the present study used the HTMT to evaluate the constructs' discriminant validity; these values are presented in Table 4. All values were less than 0.9.

Table 4. Discriminant validity and HTMT

FLC	1.	2.	3.
1. Entrepreneurial orientation	.665		
2. Export performance	.486	.950	
3. Innovation capabilities	.846	.476	.805
HTMT	1.	2.	3.
1. Entrepreneurial orientation			
2. Export performance	.440		
3. Innovation capabilities	.906	.488	

Source: own work based on the conducted study.

Evaluation of the structural model

The significance of the model was assessed based on path coefficients, t-values and standard errors. The hypotheses were tested for main and indirect effects through the bootstrapping procedure (Ringle et al., 2005). Based on Chin's (1998) criterion that the minimum structural coefficient should be 0.2, the effects proposed in the hypotheses were shown to be significant. Entrepreneurial orientation has a direct effect on innovation capabilities ($\beta=.223$, $t=4.648$; $LL=.098$, $UL=.293$), so H1 is supported, as the lower and upper limits include the value zero, indicating that the relationship is significant. Innovation capabilities have a direct effect on export performance ($\beta=.604$, $t=12.856$; $LL=.507$, $UL=.689$); therefore, H2 is supported. On the other hand, entrepreneurial orientation also has a direct effect on export performance ($\beta=.997$, $t=53.050$; $LL=.961$, $UL=1.035$); thus, H3 is supported. We used the bootstrap technique to test the research hypothesis that there is a mediating effect (Preacher & Hayes, 2008). Mediation exists when the indirect effect is positive (Hair et al., 2022). Thus, innovation capabilities present a mediating effect on the relationship between entrepreneurial orientation and export performance ($\beta=.603$; $t=11.458$; $LL=.496$, $UL=.701$); consequently, Hypothesis 4 is supported. Table 4 and Figure 2 show the effects demonstrated.

Table 5. Results of the structural equations modelling: Direct and indirect effects

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T-Statistics (O / STERR)	L.L.	U.L.	Results
Direct Effects							
H1. EO $\rightarrow$ IC	.223	.223	.027	4.648*	.098	.293	Supported
H2. IC $\rightarrow$ EP	.604	.605	.047	12.856*	.507	.689	Supported
H3. EO $\rightarrow$ EP	.997	.998	.019	53.050*	.961	1.035	Supported
Indirect Effect							
H4. EO $\rightarrow$ IC $\rightarrow$ EP	.603	.604	.053	11.458*	.496	.701	Supported

Notes:

* t-values significant at $p<0.001$.

* t-values significant at $p<0.05$.

Source: own work based on the conducted study

Figure 2 shows the structural model assessment, considering both direct and indirect effects.

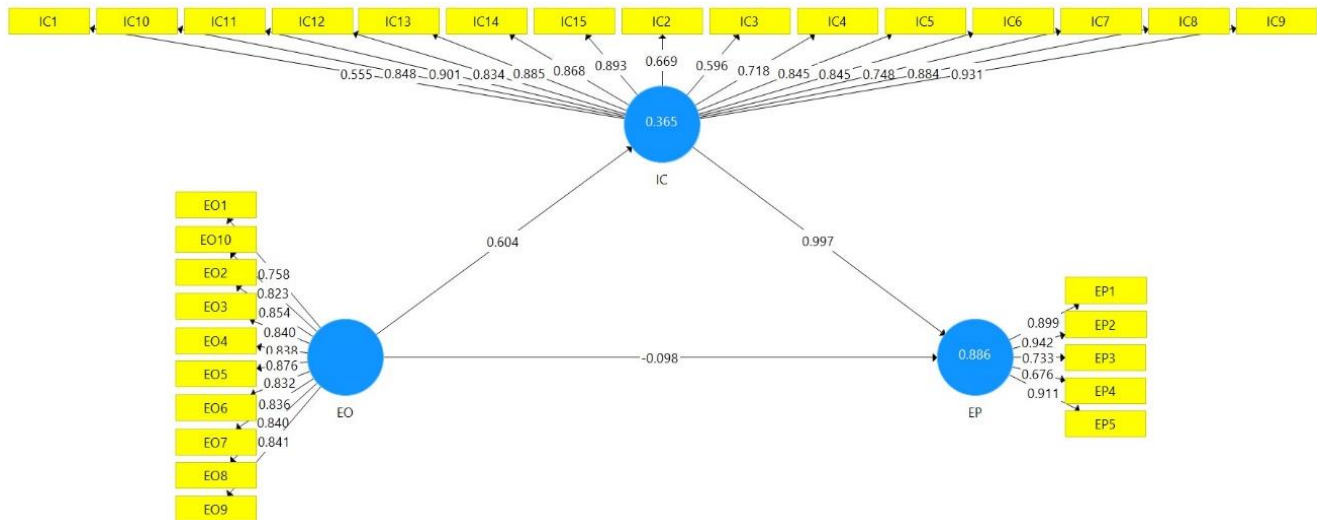


Figure 2. Structural model assessment

Source: own work based on the conducted study.

The explanatory power of the model was assessed by examining the coefficient of determination R-square (R^2) for the endogenous constructs. As presented in Table 5, entrepreneurial orientation explains 36.5% of the variance in innovation capabilities and 88.6% in export performance. According to Chin's (1998), these R^2 values suggest a moderate level of explanatory power for innovation capabilities (>0.33) and a substantial explanatory power for export performance (≥ 0.67), indicating a very strong model fit for this outcome. Furthermore, the model's predictive relevance was assessed using PLS predict, which generated Q^2 values. Table 5 indicates Q^2 (Stone-Geisser's Q^2) values of 0.207 for innovation capabilities and 0.676 for export performance, both of which are above zero, thereby confirming the model's predictive capability in line with the standards outlined by Hair et al. (2022). Hence, we conclude that our research model demonstrates a high predictive relevance.

Table 5. R^2 and Q^2 predict values

Constructs	R^2	Q^2 predict
Innovation capabilities	.365	.207
Export performance	.886	.676

Source: own work based on the conducted study

Competing models fit measures

Paulraj et al. (2008) advocate that the proposed model should be compared with others to assess which one presents the best fit whenever the structural equation model is used. In our case, the proposed model, expressed in the previous figures, corresponds to Model 1. Next, we established Model 2, corresponding to the direct relationships between entrepreneurial orientation and export performance and innovation capabilities and export performance. The following criteria were adopted to determine the model that presents the best fit: SRMR with a value less than .10 or of .08 (Hu & Bentler, 1999) and NFI with a value between zero and one (Hair et al., 2022). Model 1 is the one that presents the best fit. Although there are no significant changes between the SRMR and NFI values, this model is the one that shows the most significant relationships ($p \leq .001$) between the model constructs (Table 6).

Table 6. Competing models

Hypotheses	Proposed Model (Model 1)	Direct Model (Model 2)
EO→ IC	3.648*	--
IC→ EP	12.856*	54.627*
EO→ EP	53.050*	2.912**
EO→ IC→ EP	11.458*	--
SRMR	.096	.095
d_ ULS	4.259	4.329
d_ ULS	3.234	3.216
Chi-square	3263.701	3254.375
NFI	.671	.670

Notes:

* *t-values* significant at $p<0.001$.

* *t-values* significant at $p<0.05$.

Source: own work based on the conducted study

5. Discussion

The results of this study corroborate those of previous studies (e.g., Aljanabi, 2017; Alshanty & Emeagwali, 2019; Ferreira et al., 2020), supporting the direct relationship between entrepreneurial orientation and innovation capabilities (H1 supported). Innovation capabilities are considered a dimension of entrepreneurial orientation (Miller, 1983). Alshanty and Emeagwali (2019) validated the convergence and divergence of their constructs, emphasising the relevance of market perception and customer needs in acquiring knowledge and thus boosting innovation capabilities. Both exploratory and exploitative innovation affect innovation, with the latter standing out, indicating the progress of Portuguese firms in the European innovation ranking (Ferreira et al., 2020). These two types of innovation are essential for understanding the creative process, as they incorporate past success as an influencing factor in the propensity to explore new ideas. In addition, Ferreira et al. (2020) highlighted the mediating influence of entrepreneurial orientation on the relationship between self-efficacy and business performance, i.e., firms that adopt proactive and innovative strategies are more likely to explore new ideas and products. Aljanabi (2017) emphasised that entrepreneurial attitudes drive technological innovation and the adoption of external knowledge, highlighting the importance of entrepreneurial orientation and its dimensions in strengthening SMEs' innovation capabilities.

As highlighted by Zhang and Jedin (2022), there is a solid direct correlation between innovation capabilities and export performance, since firms' distinctive capabilities provide positive results in international markets (H2 supported). Furthermore, acquiring these capabilities in advance of the competition gives firms a significant advantage in export performance. Vieira et al. (2022) reinforce this relationship, arguing that the assessment of innovation in international contexts seeks to capture the firm's ability to adapt to market changes, whether in response to uncertain contextual situations or in identifying and exploiting new opportunities. Similarly, several scholars (e.g., Alegre et al., 2022; Kolbe et al., 2021; Moreira et al., 2022) share the view that innovation capabilities play a crucial role in exporting firms, promoting stronger performance in international markets by enabling adaptation to customer needs, the development of multiple dimensions of innovation capability and the creation of a multidimensional construct that reflects the unique characteristics of the innovation activities of exporting firm. This broad convergence of evidence supports the validity of hypothesis H2 and reinforces the importance of innovation capabilities in improving export performance.

In this study, the results also support the existence of a direct effect of entrepreneurial orientation on export performance (H3 supported). This conclusion is in line with a wide range of studies that have traditionally supported this relationship (Miller, 1983). It is based on the idea that an entrepreneurial orientation focused on internationalisation stimulates international growth, innovation, and exports in foreign markets, with reinforcement coming from firm size and organisational culture. According to Monteiro et al. (2017), export

performance is positively affected, directly and indirectly, by entrepreneurial orientation. Monteiro et al. (2019) also found support for the impact of entrepreneurial orientation on export performance. It is important to note the lack of specific studies that verify this dimension of internationalisation, in contrast to the relationship between entrepreneurial orientation and performance in general. However, Jin and Cho (2018) point out that, despite previous studies highlighting the crucial role of international entrepreneurial orientation in export performance, this effect only manifests itself when entrepreneurial orientation promotes technological and marketing capabilities, which, in turn, directly influence export performance.

Innovation capabilities are theorised to mediate the relationship between entrepreneurial orientation and export performance. Entrepreneurial orientation, encompassing dimensions such as innovativeness, proactivity, and risk-taking, provides a strategic foundation for developing innovation-related competencies within the firm. Innovation capabilities refer to the firm's ability to systematically generate, manage, and apply new knowledge to develop products, services, or processes that create value. These capabilities are essential for firms seeking to adapt to dynamic international markets and enhance their competitive positioning abroad. While entrepreneurial orientation reflects a firm's strategic intent toward entrepreneurial behaviour, it does not inherently ensure improved export performance. Rather, translating entrepreneurial intentions into tangible performance outcomes often requires robust innovation capabilities. Therefore, innovation capabilities serve as a mediating mechanism through which entrepreneurial orientation influences export performance. Firms with a strong entrepreneurial orientation but lacking innovation capabilities may be limited in their ability to respond effectively to external opportunities or challenges in international markets. This conceptualisation underscores the importance of internal dynamic capabilities in leveraging strategic orientations for superior performance outcomes (H4 supported).

Celec et al. (2014) refer that innovation and market capabilities have a positive and significant impact on export performance, especially when entrepreneurial orientation reaches high levels. This emphasises the importance of ambition and the ability to identify and exploit opportunities. This positive effect is also supported by Monteiro et al. (2019), who highlight the contribution of both dynamic capabilities and entrepreneurial orientation to export performance. Monteiro et al. (2017) reinforce this relationship, showing that export performance benefits directly and indirectly from dynamic capabilities and entrepreneurial orientation. Furthermore, as in our study, the relationship between entrepreneurial orientation and export performance manifests directly, but is established indirectly when innovation capabilities are included as a mediating effect. This shows that the continuous search for new opportunities strengthens entrepreneurial orientation, allowing firms, especially SMEs, to direct their entrepreneurial strategies towards innovation, risk-taking and proactivity, resulting in superior export performance. Ferreira et al. (2020) emphasise that an entrepreneurial orientation values innovation capabilities, which contribute significantly to improving business performance, especially in SMEs. Therefore, innovation capabilities play a vital role in enabling SMEs to proactively exploit opportunities, which are essential for successful export performance.

6. Conclusion

Final remarks

SMEs represent more than 99 per cent of Portugal's firms and play an essential role in the economic, social and financial growth of their country. In an increasingly competitive global context, improving their competitiveness and providing added value to their customers is becoming a necessity. In turn, it is important to achieve greater overall and sustainable performance in the long term.

This study contributes to understanding the importance of the interaction between entrepreneurial orientation, innovation capabilities and export performance in exporting firms in the air, sea and land transport sectors in Portugal. Firms that demonstrate proactivity in the continuous search for opportunities, as well as the competence to conceive and develop new ideas, taking associated risks, mainly in financial terms, while responding to the

actions of the competition, play a leading role in the development of innovation capabilities. These, in turn, have a positive and significant impact on export performance.

These conclusions are in line with previous studies and emphasise the importance of the complementary roles that each variable plays in the development of exporting firms. First, it examines the relationships between entrepreneurial orientation, innovation capabilities, and export performance within the transport sector, an industry that has received limited attention in previous research compared with manufacturing and technology-intensive sectors. By focusing on road, sea, and air freight SMEs, the study extends the applicability of entrepreneurial orientation and innovation theories to a distinct service-based and logistics-oriented context. Second, the study advances existing knowledge by empirically testing and confirming the mediating role of innovation capabilities in the relationship between entrepreneurial orientation and export performance. While prior research has predominantly focused on direct effects, the present findings demonstrate that entrepreneurial orientation enhances export performance not only directly but also indirectly through the development of innovation capabilities. This provides a more comprehensive understanding of the mechanisms through which entrepreneurial strategies generate international competitive advantages. Third, the research offers original empirical evidence from Portuguese SMEs operating in the transport sector. The regional and sectoral focus enriches the literature by providing insights from a specific economic and cultural context that remains underrepresented in international studies. The results show that innovation capabilities constitute a critical pathway by which entrepreneurial orientation translates into superior export outcomes, thereby highlighting the strategic importance of innovation for international business success.

Overall, the study contributes theoretically by integrating entrepreneurial orientation, innovation capabilities, and export performance into a single explanatory framework and empirically validating this framework in an underexplored sector and geographical setting.

Implications for theory and practice

The study contributed to the literature regarding the relationship between entrepreneurial orientation and export performance. Limited scholarly attention has been paid to examining this relationship, particularly regarding the mediating role of innovation capabilities between the two constructs. Additionally, this study contributes to the theoretical advancement of the export performance construct, which remains conceptually underdeveloped and lacks a universally accepted definition.

The results obtained make a relevant contribution to clarifying how entrepreneurial orientation and innovation capabilities influence the export performance of transport SMEs in the sectors mentioned above in northern Portugal. This research underscores the significant link between entrepreneurial orientation and innovation capabilities, affirming the proposition that entrepreneurial orientation functions as a core strategic orientation that propels innovation processes. Innovation capabilities, which include both exploratory and exploitative dimensions, are vital for maintaining a sustainable competitive edge, particularly within volatile environments that demand continuous adaptation to evolving market conditions and customer expectations. Furthermore, innovation capabilities act as a mediator in the entrepreneurial orientation-export performance nexus, indicating that the strategic intentions inherent in entrepreneurial orientation must be effectively transformed into concrete innovation competencies to yield measurable export outcomes. As such, innovation capabilities constitute dynamic resources that enable firms to respond agilely to global uncertainty and shifting consumer demands, thereby enhancing their international competitiveness.

The findings also corroborate the influence of entrepreneurial orientation on export performance, aligning with perspectives that regard entrepreneurial strategies focused on international market engagement as catalysts for growth and innovation in foreign contexts. A strategic emphasis on research and development, technological advancement, and continual innovation is essential for fostering firm-level innovation capacities that, in turn,

drive superior performance. Export-oriented firms are advised to cultivate a multidimensional construct of innovation capabilities that effectively encompasses the diverse innovation activities required to succeed in heterogeneous international markets.

This study also presents relevant practical implications for top-level managers and strategic decision-makers, policy-makers and innovation support agencies, and SMEs in the transport sector.

Entrepreneurial orientation, characterised by innovativeness, proactiveness, and risk-taking, is not sufficient on its own to improve export performance. Top-level managers must also ensure the firm develops robust innovation capabilities to translate strategic intent into measurable outcomes. Innovation capabilities enable firms to adapt to market volatility, identify and seize new international opportunities, and deliver customised value to global customers. Firms should proactively invest in systems and processes that foster both exploratory and exploitative innovation. Understanding customer needs and competitive dynamics is essential for building innovation capabilities. Top-level managers should emphasise market sensing and knowledge acquisition as part of the innovation process to strengthen responsiveness in export markets.

Public institutions should design initiatives to assist SMEs in developing dynamic capabilities, particularly in innovation and internationalisation, by providing access to funding, training, and knowledge networks. As entrepreneurial orientation positively affects export performance, policy should encourage firms to adopt international entrepreneurial strategies, supported by innovation capacity development, especially in high-growth-potential sectors such as transport and logistics.

SMEs should recognise that an entrepreneurial posture alone (e.g., being proactive or taking risks) does not guarantee export success. Building innovation capabilities, such as knowledge management, R&D capacity, and adaptive learning, is essential. Both exploratory innovation (new ideas, markets, and products) and exploitative innovation (refinements of existing processes and offerings) are key to sustaining international performance. SMEs should integrate both approaches into their innovation strategies. Entrepreneurial orientation drives innovation, which in turn mediates export success. SMEs that systematically cultivate innovation capabilities are better positioned to translate entrepreneurial vision into export performance. Developing a culture that supports continuous innovation and opportunity-seeking will strengthen SMEs' competitiveness abroad. This involves encouraging creativity, tolerating failure in the pursuit of new ideas, and empowering employees to contribute to innovation initiatives.

Limitations

As with most empirical studies, this study has limitations that should be considered when interpreting the results and providing guidelines for future research. In particular, it is important to note that the sample in question was selected using a non-probability convenience sampling method because the firms included were not chosen at random but were selected based on specific sector- and location-related criteria. Therefore, the results obtained in this study are only applicable to the specific context defined and cannot be generalised to all exporting firms in Portugal. The questionnaire was distributed by email to top managers, using the addresses provided in the SABI database. However, we cannot say with absolute certainty that the firms' top managers provided the answers obtained. Therefore, some bias in the responses is admitted. Regarding the database used, several problems arose, such as inactive firms and incorrect or non-existent contact information, which made the study difficult.

Future research lines

In the future, this study must be carried out with a broader, more representative sample of the target population. Subsequent studies could even extend this research to include firms across different export-related sectors and geographical contexts. They could also explore the influence of moderating variables, including the dimensions of entrepreneurial orientation and exploratory and exploitative innovation capabilities, such as international market

heterogeneity, institutional support, and export motivations. It would also be relevant to analyse the impact of innovation strategies and other types of innovation on the relationships addressed throughout the study.

Finally, this study lays a solid foundation for future research to deepen understanding of this topic by exploring how entrepreneurial orientation and innovation capabilities influence export performance in a constantly evolving, globalised world.

References

- Al Mamun, A., Kumar, N., Ibrahim, M.D., Bin Yusoff, M.N.H. (2017). Validating the Measurement of Entrepreneurial Orientation. *Economics and Sociology*, 10(4), 51-66. <https://doi.org/10.14254/2071-789X.2017/10-4/5>
- Alegre, J., Ferreras-Méndez, J. L., Fernández-Mesa, A., & Strange, R. (2022). Innovation capabilities and export performance in manufacturing SMEs. *Tec Empresarial*, 16(3), 55-71. <https://doi.org/10.18845/te.v16i3.6367>
- Aljanabi, A.Q.R.A. (2018). The mediating role of absorptive capacity on the relationship between entrepreneurial orientation and technological innovation capabilities. *International Journal of Entrepreneurial Behaviour and Research*, 24(4), 818-841. <https://doi.org/10.1108/IJEBR-07-2017-0233>
- Alshanty, A.M., & Emeagwali, O.L. (2019). Market-sensing capability, knowledge creation and innovation: The moderating role of entrepreneurial-orientation. *Journal of Innovation and Knowledge*, 4(3), 171-178. <https://doi.org/10.1016/j.jik.2019.02.002>
- Anderson, J.C., & Gerbing, D.W. (1998). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin*, 103(3), 411-423. <https://psycnet.apa.org/doi/10.1037/0033-2909.103.3.411>
- Benner, M. I., & Tushman, M. L. (2003). Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited. *Academy of Management Review*, 28(2). <https://doi.org/10.5465/amr.2003.9416096>
- Celec, R., Inovativni, R.C., Robert Celec, M., Globocnik, D., & Kruse, P. (2014). Resources, capabilities, export performance and the moderating role of entrepreneurial orientation in the context of SMEs. *European Journal of International Management*, 8(4), 440-464. <https://doi.org/10.1504/EJIM.2014.062971>
- Chin, W.W. (1998). Modern methods for business research. (1.^a ed.). Lawrence Erlbaum Associates, Inc., Publishers.
- Covin, J.G., & Slevin, D.P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75-87. <https://doi.org/10.1002/smj.4250100107>
- Dao, T.H.T., Nguyen, G.D., & Pham, T.T.T. (2026). Manufacturing Technology, Innovation, Market Orientation, and Experience on SME Export Performance. *International Journal of Asian Business and Information Management*, 17(1) <https://doi.org/10.4018/IJABIM.404016>
- Ferreira, J., Coelho, A., & Moutinho, L. (2020). Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation*, 92-93, 102061. <https://doi.org/10.1016/j.technovation.2018.11.004>
- Fornell, C., & Larcker, D. (1981). Evaluating Structural Equation models with unobserved variables and measurement error. *Journal of Marketing Research*, 18, 39-50. <https://doi.org/10.1177/002224378101800104>
- Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using PLS-graph: Tutorial and annotated example. *Communications of the Association for Information Systems*, 16(1), 91-109. <https://doi.org/10.17705/1CAIS.01605>
- Gupta, A. K., Smith, K., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*, 49, 693-706. <https://doi.org/10.5465/amj.2006.22083026>
- Hair, J., Hult, G.T.M., Ringle, C., & Sarstedt, M. (2022). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). London, UK: Sage. <https://doi.org/10.1007/978-3-030-80519-7>

- Henseler, J., Ringle, C.M. & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hossain, K., Che Abdullah, A.S., Mohd Balwi, M.A.W.F., Lubis, A., Azizan, N.A., Alam, M.N., & Taha, A.Z. (2022). Linking entrepreneurial orientation with export performance: mediation effects of multiple differentiation strategies. *Journal of Business and Industrial Marketing*, 38(9), 1769-1793. <https://doi.org/10.1108/JBIM-07-2021-0326>
- Jin, B., & Cho, H.J. (2018). Examining the role of international entrepreneurial orientation, domestic market competition, and technological and marketing capabilities on SME's export performance. *Journal of Business and Industrial Marketing*, 33(5), 585-598. <https://doi.org/10.1108/JBIM-02-2017-0043>
- Kang, J. Y., & Lee, J. E. (2025). External Orientations, Internal Capabilities, and Firm Performance: Pathways to Global Competitiveness of Korean SMEs. *Journal of Korea Trade*, 29(8) <https://doi.org/10.35611/jkt.2025.29.8.51>
- Kolbe, D., Frasquet, M., & Calderon, H. (2021). The role of market orientation and innovation capability in export performance of small- and medium-sized enterprises: a Latin American perspective. *Multinational Business Review*, 30(2), 289-312. <https://doi.org/10.1108/MBR-10-2020-0202>
- Kuivalainen, O., Sundqvist, S., & Servais, P. (2007). Firms' degree of born-globalness, international entrepreneurial orientation and export performance. *Journal of World Business*, 42(3), 253-267. <https://doi.org/10.1016/j.jwb.2007.04.010>
- Miller, D. (1983). The Correlates of Entrepreneurship in Three Types of Firms. *Management Science*, 29(7), 770-791. <https://doi.org/10.1287/mnsc.29.7.770>
- Mir, M., Casadesús, M., & Petnji, L.H. (2016). The impact of standardised innovation management systems on innovation capability and business performance: An empirical study. *Journal of Engineering and Technology Management*, 41, 26-44. <https://doi.org/10.1016/j.jengtecman.2016.06.002>
- Monteiro, A.P., Soares, A.M., & Rua, O.L. (2017). Linking intangible resources and export performance: The role of entrepreneurial orientation and dynamic capabilities. *Baltic Journal of Management*, 12(3), 329-347. <https://doi.org/10.1108/BJM-05-2016-0097>
- Monteiro, A.P., Soares, A.M., & Rua, O.L. (2019). Linking intangible resources and entrepreneurial orientation to export performance: The mediating effect of dynamic capabilities. *Journal of Innovation and Knowledge*, 4(3), 179-187. <https://doi.org/10.1016/j.jik.2019.04.001>
- Moreira, A., Navaia, E., & Ribau, C. (2022). Moderation Effects of Government Institutional Support, Active and Reactive Internationalization Behavior on Innovation Capability and Export Performance. *Economies*, 10(8). <https://doi.org/10.3390/economies10080177>
- Oura, M.M., Zilber, S.N., & Lopes, E.L. (2016). Innovation capacity, international experience and export performance of SMEs in Brazil. *International Business Review*, 25(4), 921-932. <https://doi.org/10.1016/j.ibusrev.2015.12.002>
- Perera, S.R., Sinha, P., Gilbert-Saad, A. (2026). From entrepreneurial orientation to export performance: A pathway through vicarious learning and absorptive capacity in international SMEs. *Journal of International Management*, 32(2) <https://doi.org/10.1016/j.intman.2026.101339>
- Pestana, M.H. & Gageiro, J.N. (2010). *Análise de dados para ciências sociais: a complementaridade do SPSS (5.ª ed.)*. Lisboa: Edições Sílabo.
- Popadić, M., Černe, M., & Černe, M. (2016). Exploratory and exploitative innovation: The moderating role of partner geographic diversity. *Economic Research-Ekonomska Istrazivanja*, 29(1), 1165-1181. <https://doi.org/10.1080/1331677X.2016.1211951>
- Preacher, K.J., & Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing effects in a multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. <https://doi.org/10.3758/BRM.40.3.879>
- Ringle, C.M., Sarstedt, M., Mitchell, R., & Gudergan, S.P. (2018). Partial least squares structural equation modelling in HRM research. *The International Journal of Human Resource Management*, 31(12). <https://doi.org/10.1080/09585192.2017.1416655>
- Sariol, A.M., & Abebe, M.A. (2017). The influence of CEO power on explorative and exploitative organisational innovation. *Journal of Business Research*, 73, 38-45. <https://doi.org/10.1016/j.jbusres.2016.11.016>

Sriboonlue, O., & Sriboonlue, U. (2026). Unlocking export performance: the strategic impact of international entrepreneurial orientation and dynamic capabilities in Thai SMEs. *Cogent Business & Management*, 13(1), Article Number 2656052
<https://doi.org/10.1080/23311975.2026.2656052>

Vieira, J., Frade, R., Martinho, F., & Martinho, D. (2022). Does Uncertainty Boost Exports? A Study on the Effect of Innovation and Marketing Capabilities in a Small and Innovation-Intensive Sector. *Economies*, 11(1). <https://doi.org/10.3390/economies11010001>

Zhang, M., & Jedin, M.H. (2022). Firm innovation and technical capabilities for enhanced export performance: the moderating role of competitive intensity. *Review of International Business and Strategy*. <https://doi.org/10.1108/RIBS-01-2022-0015>

Zou, S., & Stan, S. (1998). The determinants of export performance: a review of the empirical literature between 1987 and 1997. *International Marketing Review*, 15(5), 333-356. <https://doi.org/10.1108/02651339810236290>

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