

Intellectual capital and new ventures early internationalization: Firm-level analysis of Austrian SMEs

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ABSTRACT

Objective: The objective of the article is to explore the impact of intellectual capital on firms' propensity for early internationalization.

Research Design & Methods: The scientific argument relied on scrutinizing the current knowledge base in the field and conducting empirical studies among Austrian startups. From these studies, we constructed a logistic regression model.

Findings: According to the study findings, there exists a favourable dependence between prior international experience, level of education, and the early internationalization of new ventures.

Implications & Recommendations: The study carries several practical implications. Entrepreneurs aiming for early internationalization should draw on their prior international exposure and recruit employees with similar experience. Furthermore, the significance of education level was noteworthy. A higher level of education correlates with a higher probability of early internationalization.

Contribution & Value Added: The article addresses areas of research that have not yet been explored in early internationalization analyses. It can act as a foundation for more comprehensive studies on this phenomenon, including ventures from different countries.

Article type: research article

Keywords: international new ventures; internationalization; early internationalization; Austria; intellectual capital

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INTRODUCTION

Research on the internationalization of enterprises began gaining traction in the literature around the 1960s. Since the early 1990s, there has been a heightened focus on small and medium-sized enterprises (SMEs). The initial exploration of SME internationalization dates back to the mid-1970s. Swedish researchers Johanson and Vahlne (1974) were pioneers in this respect. They introduced the Uppsala internationalization model (Johanson & Vahlne, 1977; Johanson & Wiedersheim-Paul, 1975), which constitutes a pivotal contribution to shaping the internationalization theory of SMEs within the realm of international entrepreneurship. Oviatt and McDougall (1994) further advanced this theory by defining international new ventures (INV), also known as international start-ups. This emphasis on a distinct type of venture fuelled increased scholarly attention to early internationalization, diverging from traditional sequential models established by Johanson and Wiedersheim-Paul (1975) and Johanson and Vahlne (1977). The exploration of international entrepreneurship and the concept of INV has enriched our understanding of SME internationalization dynamics.

In contrast to the conventional notion of gradual development, early internationalized SMEs place significant emphasis on knowledge as a crucial factor in the initial phase of internationalization

(Schwens *et al.*, 2010). Contemporary perspectives in international entrepreneurship propose that these start-ups actively seek both tangible and intangible resources beyond national borders due to limited access to the domestic market (Bishop, 2008). Being initially obscure to the public and constrained by their small size, these start-ups face challenges in acquiring the necessary resources for survival and early internationalization (Zahra, 2005).

There are several reasons for investigating the phenomenon of early internationalization. Firstly, early internationalization is a relatively new area of research and therefore not yet sufficiently recognized (Pathania & Tanwar, 2024). Research on the internationalization of enterprises began gaining traction in the literature around the 1960s. However, since the early 1990s, there has been a heightened focus on small and medium-sized enterprises (SMEs). Secondly, existing internationalization theories do not adequately explain the phenomenon of the internationalization of new economic entities. Thirdly, there is a relationship between early internationalization and the process of gaining competitive advantage.

Despite progress in research on SME internationalization, there are still many gaps in the literature. One of the main shortcomings in research is the lack of a uniform approach to defining early internationalization and a lack of agreement on the criteria that determine when we can consider a company as early internationalized. Some definitions focus on the time of activity in foreign markets, while others consider the scale of international sales. Research on SME internationalization indicates that scholars typically see early internationalization as a process of international development that begins in the early stages of a firm's existence and involves gradually increasing involvement in foreign markets (Rialp *et al.*, 2005). Furthermore, there is a need to understand how various factors, such as intellectual capital, influence early internationalization. Existing research suggests that intellectual capital may play a crucial role in the early internationalization process (Musteen *et al.*, 2014; Schwens *et al.*, 2011; Zahra, 2005). Another gap in the literature is the limited amount of research on the role of intellectual capital, especially its elements, in the context of SMEs' early internationalization.

After the introduction, we will present a review of previously published scientific research on the role of intellectual capital and its components in the early internationalization process of the enterprise. Next, we will present the results and conclusions arising from our research conducted based on the applied binary logistic regression model.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Intellectual Capital and New Ventures' Early Internationalization

In recent decades, intellectual capital, also referred to as an intangible asset (Keong Choong, 2008; Derun & Mysaka, 2021; Klimontowicz & Majewska, 2022), has played a pivotal role in establishing the international success of start-ups. Despite the heightened attention directed towards the concept of intellectual capital, a lack of consensus persists regarding its components and definition (Choo Huang *et al.*, 2007). Scholars understand this multidisciplinary concept diversely across various business-related dissertations.

Choo Huang *et al.* (2007) cite the definition proposed by the OECD, which defines intellectual capital as the economic value of two categories of intangible assets within a company – organizational (structural) capital and human capital. On the other hand, Edvinsson (1997) asserts that intellectual capital primarily encompasses the knowledge, expertise, processes, and technologies of the company, as well as customer relationships and professional skills. Scholars widely acknowledge that intellectual capital forms the foundation of enterprises' competitive advantage and innovation (García-Perez *et al.*, 2023; Nadeem, 2020; Mishchuk *et al.*, 2023).

Human capital comprises an integral part of the human entity, including skills, knowledge, experience, and ideas that are utilized in the provision of services within a business. However, human capital is not limited solely to the knowledge and skills that individuals possess and utilize; it also encompasses their ability to create these resources. It consists of what people know and their ability to learn and collaborate with others, which can be beneficial to the organization (Kmecová & Androniceanu, 2024). Although a company does not own human capital, it can hire it under specific conditions outlined in a contract (Bryl & Truskolaski, 2017). As Ordóñez de Pablos (2002) indicate, the value of human capital in a

company arises from the total value of the investments made in training employees, developing their competencies, and their future (Androniceanu, 2023). In the competition in the contemporary international market, the value of human capital for a company is even greater because, as noted by Ndinguri *et al.* (2012), due to the specific characteristics of individuals, human capital becomes difficult to imitate and therefore plays a strategic role in maintaining a competitive advantage for the organization.

Traditionally, intellectual capital can be categorized into three distinct classifications: (1) human capital, (2) structural capital (also referred to as organizational capital), and (3) relational capital (alternatively known as social capital) (Šimpachova Pechrova & Šimpach, 2024; Crupi *et al.*, 2021; Kianto *et al.*, 2017; Seetharaman *et al.*, 2004). These categories are associated with knowledge embedded in individuals, organizational structures, processes and systems, as well as relationships and networks (Kianto *et al.*, 2017; Court & Ariekpar, 2022). Previous researchers examining the components of intellectual capital found that it comprises different levels, encompassing the individual, organizational, and network dimensions. In this context, intellectual capital extends beyond the knowledge possessed by individuals, encompassing the information accumulated in an organization's databases, processes, systems, and business relationships (Crupi *et al.*, 2021).

Peña (2002) emphasized that the human capital of entrepreneurs, specifically the efforts and knowledge possessed by the entrepreneur, stands out as the primary determinant of start-up success. The early stage of a venture's existence positively influences the start-up's business performance. Peña (2002) further highlighted that during the initial phases of a start-up, spanning from its inception through the subsequent years, organizational capital (pertaining to the firm's attributes) and relational capital (related to relationships with external stakeholders) emerge to complement the organization's human capital. These three forms of capital are intricately interrelated and mutually reinforce one another. In a survey of 114 Spanish start-ups, Peña (2002) discovered that elements of entrepreneurial human capital – such as education, prior business experience, and motivation level – positively influence the performance of these ventures. Similarly, components of organizational capital (*e.g.* the venture's adaptability to change, and ability to implement appropriate strategies) and relational capital (*e.g.* effective interaction with diverse stakeholders during the initial years of business) exhibit positive correlations with start-up growth. Moreover, Sardo and Serrasqueiro (2017) noted the dominant role of intellectual capital in augmenting the wealth of European firms. They observed how intellectual capital, encompassing knowledge, expertise, and innovation play a pivotal role in enhancing the competitiveness and prosperity of these companies within the European market. Their findings underscore the importance of effectively managing and leveraging intellectual assets as a strategic imperative for European firms seeking sustained growth and success in today's dynamic business environment.

Moreover, Gerschewski *et al.* (2015) confirmed the positive impact of intellectual capital on the early internationalization process. Furthermore, Oswal *et al.* (2014), and Ling (2012; 2013) further support this notion, indicating the beneficial influence of intellectual capital on early internationalization efforts.

Consequently, intellectual capital emerges as a catalyst propelling the global engagement of enterprises (Kuděj *et al.*, 2023; Civelek & Krajčík, 2022; Ključnikov *et al.*, 2022). The nexus between innovative endeavours and intellectual capital is profound given that innovation stems from a process of creative ideation originating from human cognition. Thus, the inherent potential of individuals serves as the cornerstone for the efficacious operation of firms with the human element within an organizational framework evolving into a fundamental prerequisite and bedrock for innovation – a quintessential and indispensable wellspring of inventive advancement (Belniak, 2015).

Role of Human Capital in New Ventures' Early Internationalization

Human capital encompasses not only the knowledge, talent, and experience of an organization's employees but also extends to factors such as creativity and the ability to generate and implement ideas (Prajogo & Oke, 2016; Stuss, 2023). Knight and Liesch (2016) highlight the indispensable role of human capital in the internationalization process of start-ups. This perspective is echoed by Buzavaite and Korsakiene (2019), who emphasize its impact on the identification and exploitation of international opportunities. Given that start-ups often opt for an early internationalization trajectory, they must cultivate a high level of absorptive capacity to rapidly process and internalize market information (Sapienza *et al.*, 2006). On-

kelinx *et al.* (2016) propose a hypothesis that the level of human capital will vary based on a firm's internationalization strategy, being particularly crucial for ventures that choose to internationalize early. The argument posits that international start-ups lack the time to organically develop organizational capabilities for internationalization, compensating for this gap through the individual experience and skills embodied in human capital (Onkelinx *et al.*, 2016). The presence of additional human capital is correlated with higher export intensity as elucidated by Onkelinx *et al.* (2016). Stucki (2016) contends that the human capital of founders directly influences the overall performance of the firm and holds significance for the export activities of start-ups. Founders' human capital is closely tied to a firm's ability to identify and capitalize on foreign market opportunities, as well as manage business operations across borders. Consequently, it catalyzes the propensity of start-ups to engage in export activities (Stucki, 2016).

Studies indicate that the competencies, as constituents of human capital, demeanour and commitment of employees exert a substantial influence on the process of firm internationalization (Yamao & Sekiguchi, 2015; Nugroho, 2024; Urban *et al.*, 2023). Furthermore, international learning, an inherent component of human capital, functions as a catalytic force, expediting the tempo of internationalization (Chetty *et al.*, 2014). Dar and Mishra (2021) found that education level, knowledge, skills, and international experience are essential predictors of internationalization as dimensions of human capital. Furthermore, Baier-Fuentes *et al.* (2018) research underscores the pivotal role of human capital in facilitating firms' rapid internationalization. It conclusively establishes that factors such as education, experience, and skills within the firm significantly influence swift global expansion, emphasizing the critical importance of human resources in maintaining competitiveness in the global market. On the other hand, Ruzzier *et al.* (2007) also consider foreign language skills influencing internationalization. Manolova *et al.* (2002) argue that the international orientation of managers as measured by the time spent abroad due to study or employment, may be necessary for the internationalization process. Cannone and Ughetto (2014) noted that the experiential knowledge accumulated by the entrepreneur as a result of his or her prior international work experience plays a vital role in early internationalization. Isidor *et al.* (2011) hold a similar view. They found that managers with international experience quickly recognize an internationalization opportunity for the firm. Typically, prior international business experience can be crucial in ensuring the venture's sustainability as entrepreneurs will avoid previous mistakes in the new venture or correct business decisions (Peña, 2002). Other studies also support the positive impact of prior international experience on a firm's commitment to foreign operations (*e.g.* Athanassiou & Nigh, 2002; Herrmann & Datta, 2005; Ibeh & Young, 2001). Chandra *et al.* (2009) argue that the greater the venture's prior experience and knowledge, the more likely the start-up will consciously seek out and identify new international opportunities. Knight and Liesch (2016) also confirm that the early internationalization of start-ups may be due to the founders' distinctive entrepreneurial abilities with knowledge and prior experience in managing markets. Thus, based on the above discussion, we hypothesised:

H1a: Small and medium-sized enterprises whose managers have prior international experience are more likely to be early internationalizers than those whose managers do not have such experience.

H1b: The higher the manager's education, the greater the SMEs' propensity to internationalize early.

Role of Structural Capital in New Ventures' Early Internationalization

Structural capital is an organization's inherent attribute designed to facilitate employee learning and skill enhancement. This concept, often referred to as organizational capital in the literature, emphasizes that it pertains to assets intrinsic to the organization and not dependent on individuals. Included within its scope are systems, software, processes, and patents held by the entity. Nawaz *et al.* (2021) argue that organizational capital embodies knowledge embedded within organizational processes and structures. This includes organizational culture, copyrights, trademarks, internal databases, computer systems, and corporate intranets. Ulubeyli and Yorulmaz (2020) assert that structural capital serves as the infrastructure supporting human resources and knowledge within an organization. In addition to the elements previously mentioned by other researchers, they include business development plans, organizational structure, and corporate strategy as components of structural capital. In

his research, Wójcik (2021) highlights the significance of structural capital and its impact on shaping the intangible resources of organizations. He elucidates how the structural framework within an organization contributes to the development and management of intangible assets, influencing their configuration and strategic importance. Hsu and Wang (2012) further divide structural capital into two components: organizational processes and information systems. Organizational processes refer to how individuals utilize information or knowledge resources in the workplace, while information systems encompass the technology employed in knowledge management.

Zakery and Saremi (2021) highlight that ventures can transform experiences and relationships into structural assets that support their international activities. Nawaz *et al.* (2021) argue that entities equipped with comprehensive business processes, reliable ERP systems (including CRM), and well-defined organizational strategies are better equipped to navigate difficulties and challenges during internationalization. Westerlund (2020) observes that internationalized SMEs more frequently leverage CRM systems. The researcher cites studies affirming that effective customer relationship management systems contribute to the growth of start-ups. Given that these ventures need to track and adjust their customer value propositions, as well as communicate both internally and externally, CRM systems become instrumental in delivering high value to customers before, during, and after using products or services (Westerlund, 2020). Rodríguez and Jesús Nieto (2010) found that Spanish knowledge-intensive business service firms exhibit higher export intensity with increasing expenditures on research and development. Cieślík and Michałek (2018) reached similar conclusions demonstrating that R&D investments positively impact firms' export opportunities.

Moreover, Kumar and Sharma (2018) emphasize that the organizational culture of early internationalized start-ups characterized by continuous learning among employees is positively linked to their inclination to internationalize. Moreover, based on the findings of their research involving representatives from business and academia, Korsakienė *et al.* (2017) concluded that various factors, including product technologies, the process of strategy formation, and the culture and organizational structure of an entity play pivotal roles in the internationalization process of ventures.

Within the realm of structural capital, Cho and Kim (2017) propose that safeguarding intellectual property rights can significantly benefit ventures more oriented towards exports in the development of technological innovations. Conversely, Rienda *et al.* (2021) argue that firms with registered trademarks exhibit a stronger presence in international markets, translating into enhanced performance. Thus, we hypothesised:

H2: Small and medium-sized enterprises that sell through online channels are more likely to internationalize early than those that use more traditional on-site channels.

H2a: The relationship between online selling and propensity to early internationalization is moderated by SMEs' manager's experience.

Role of Relational Capital in Early Internationalization

Relational capital, also known as the knowledge residing in the relationships between an organization and its reference groups (Hormiga *et al.*, 2011), is a critical component of intellectual capital. Sharabati *et al.* (2010) further elaborate that within the context of intellectual capital, relational capital represents knowledge embedded in a venture's external relationships with various entities such as agents, customers, suppliers, competitors, partners, shareholders, industry associations, society, and government.

The development of relational capital brings several positive effects to the enterprise. Primarily, it leads to increased innovativeness, as collaboration with various stakeholders generates novel ideas. Products and services co-developed exhibit greater originality and are more difficult to replicate, thereby enhancing competitive advantage. Firm flexibility is heightened through partner involvement in the value chain, facilitating cost reduction through shared resources. Collaboration also fosters knowledge exchange, access to new markets and technologies, and expedited implementation of novel concepts, resulting in time savings (Bombiak, 2021). Ulubeyli and Yorulmaz (2020) assert that relational capital holds crucial significance for organizations as it facilitates the creation of organizational value by connecting internal intellectual resources with external stakeholders. This perspective aligns with the findings of

Hormiga *et al.* (2011), who confirmed that relational capital is grounded in the idea that ventures cannot be treated as isolated systems but rather as entities highly dependent on the relationships they establish in their environment. Seetharaman *et al.* (2004) note that relational capital encompasses the externalities of revenue generation for businesses. For instance, customers may be willing to pay more for a brand with an established market position and reputation than for a lesser-known brand.

Relational capital emerges as a crucial factor in the early internationalization of start-ups (Ulubeyli & Yorulmaz, 2020), playing a compensatory role for resource scarcity in these entities (Zakery & Saremi, 2021). Zakery and Saremi (2021) emphasize that start-ups can enhance their relational capital by strategically forming alliances with other domestic entities to establish an effective presence in foreign markets, participating in business networks and meetings, and establishing communication links with host country governing bodies. This approach is grounded in the idea that higher levels of relational capital foster mutual trust and reduce the risk of opportunism in knowledge sharing among participants (Ryan *et al.*, 2019).

Empirical evidence from case studies affirms the significance of relational capital in influencing export behaviour. Adopting a resource perspective, Federico *et al.* (2010) emphasize that, particularly in the case of start-ups, entrepreneurs/founders constitute the organization's unique resources. This uniqueness primarily stems from the human and relational capital of these individuals. Entrepreneurs play a pivotal role in creating a critical level of firm-specific capabilities that empower their organizations to engage in international markets right from their inception. Jeong (2016) indicates that networks involving suppliers and customers, categorized as components of regional capabilities, significantly impact the firm's internationalization process. The research by Jardon and Molodchik (2017) confirms that relational capital plays a key role at all internationalization stages, bringing significant benefits and supporting the development of companies in the global market, thereby indicating the advantages of utilizing and cultivating strong inter-organizational relationships in foreign expansion strategies. Similarly, drawing insights from 445 high-tech international start-ups, Cannone and Ughetto (2014) confirm that business networks play a positive role in influencing the extent of internationalization for these ventures.

Businesses can leverage institutional relationships to their advantage. When expanding internationally, it is crucial to cultivate these relationships to enhance the company's relationship capital. The stronger the relationship capital, the greater the likelihood of gaining a competitive edge. To expedite this process in a foreign market, companies might pursue partnerships with entities that have already built their own relationship capital and are willing to share it for mutual gain (Deszczyński *et al.*, 2017). Monteiro (2019) contends that growth-oriented companies prioritize personalized interactions with customers and strive to enhance customer satisfaction rather than focus solely on cost reduction. Consequently, based on the preceding discussion, we hypothesised:

H3: Small and medium-sized enterprises belonging to business networks are more prone to early internationalization than those that do not belong to any organization.

H3a: The relationship between business networks and propensity to early internationalization is moderated by SMEs' manager's experience.

RESEARCH METHODOLOGY

Sample and Data Collection

Our analysis is based on the firm-level data retrieved from the World Bank Enterprise Survey (The World Bank Group, 2021). Initially, we included 600 enterprises coming from Austria. We surveyed respondents in 2021 and randomly chose the ventures. In the next step, we deleted all missing data and included only firms with less than 50 workers as international ventures are often considered micro or small. We omitted the second criterion for firm size classification as there was no information about this in firm-level data. Finally, we retained 501 ventures. Next, we created a new variable by calculating the difference measured in years between the establishment date and each firm's first overseas sales. We assigned number 1 to those entities that first exported within three years. To the rest of the firms,

we assigned the number 0 (including those firms that realize foreign sales in traditional ways and those that focus only on domestic sales). Table 1 presents the description of all variables used in the study.

Table 1. The list of variables

Variable	Description	Scale
EARLY INTERNATIONALIZATION	First exporting within three years from the establishment (1 = yes, 0 = no).	Nominal
SIZE	Natural logarithm of number of permanent, full-time individuals working in each establishment.	Continuous
FOREIGN OWNERSHIP	Existence of foreign ownership in total firm's ownership (1 = yes, 0 = no).	Nominal
NON-FAMILY BUSINESS	Existence of family ownership in total firm's ownership, which means the same family owns that venture (1 = no, 0 = yes).*	Nominal
GENDER	Gender of top manager (1 = man, 0 = woman)	Nominal
AGE	Age of top manager (in years).	Continuous
R&D	Research and development expenditure (1 = yes, 0 = no).	Nominal
INT EXPERIENCE	Top manager's experience in a multinational firm.	Nominal
EDUCATION	The highest level of education of top manager (1 = no formal education, 2 = primary, 3 = secondary/diploma, 4 = secondary/technical/vocational training, 5 = bachelor's degree, 6 = Master's or PhD degree).	Ordinal
ONLINE SALES	Any part of sales is realized online (1 = yes, 0 = no).	Nominal
MEMBERSHIP	Firm's participation in business organization/network (1 = yes, 0 = no).	Nominal
EXPERIENCE	Manager's experience in the sector (in years)	Continuous

Note: * we assigned number 0 to 'yes' as we consider that family firms are less likely to early internationalize.

Source: own study.

In our sample, 52% were microenterprises that employed less than 10 workers, but the rest of the sample (48%) represented small enterprises that hired less than 50 workers. This distinction between the two categories of companies is in line with the EU proposal for firm classification. Over half of the surveyed firms belonged to the service sector (56%), while 29% represented the manufacturing segment and the rest were retailers (15%).

Research Model

We applied a binomial logistic regression model (Hosmer *et al.*, 2013) to verify the dependence between the endogenous variable describing propensity to early internationalization and the exogenous variable describing intellectual capital. Moreover, the logistic regression model is recommended when the assumption of normality distribution of variables may not be met (Hair *et al.*, 1998). The dependent variable was a dummy (dichotomous) variable (Hosmer *et al.*, 2013), where when a measured phenomenon occurs then 1 is assigned, but if otherwise then 0 (Sperandei, 2014). The estimation of model parameters $\beta_1, \beta_2, \dots, \beta_k$ is usually performed using the maximum likelihood method. We maximized the logarithm of the likelihood function with model parameters using iterative numerical procedures.

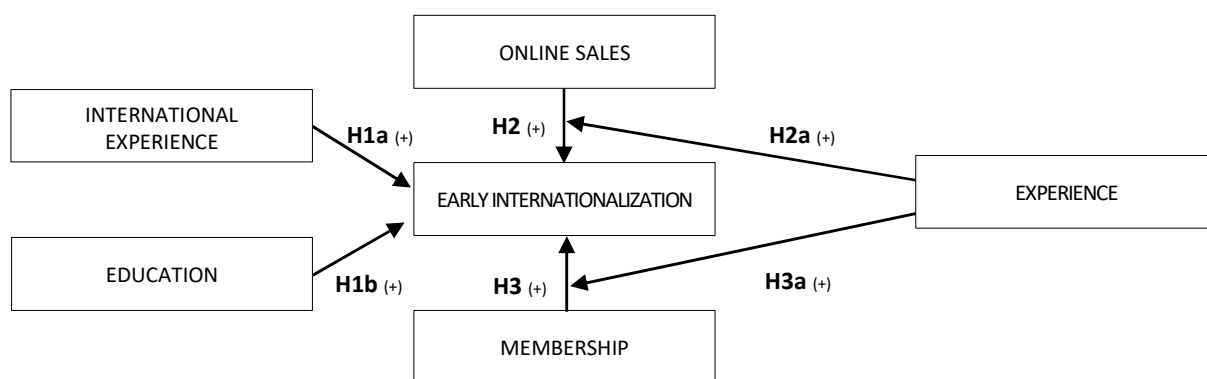


Figure 1. Proposed research model

Source: own elaboration.

The proposed research model (Figure 1) suggests a positive relationship between the three components of intellectual capital and new ventures' early internationalization. To verify such a relationship, we used five variables. The dependent variable represented early internationalization (Table 1). Furthermore, we included seven control variables and we checked the interaction between variables describing both structural and relational capital, and experience. Moreover, in our research, we distinguished those ventures which are internationalizing early and those which are incrementally realizing internationalization. We also checked whether there are differences between innovative new ventures' early internationalization and those that are not innovative.

Measures

Dependent Variable

In our research (Figure 1), the dependent variable was the early internationalization measured dichotomously. If a proper start-up was an early internationalizer, which means that the entity realizes its first foreign sales at most three years after its establishment, we assigned number 1. If the venture started selling its goods or services after three years of inception, we assigned the number 0. Among researchers who understand early internationalization similarly, we can name *e.g.* Li *et al.* (2012), Knight *et al.* (2004) or Santhosh (2019).

Independent Variables

Primary independent variables can be divided into three groups: (1) human capital, (2) structural capital, and (3) relational capital. To the first group, we assigned two variables: INTERNATIONAL EXPERIENCE and EDUCATION. INTERNATIONAL EXPERIENCE is measured by a top manager's previous experience in a multinational firm. This variable is dummy, which means that if a top manager has such experience, then we assigned number 1; otherwise, we assigned number 0. EDUCATION indicates the highest level of a top manager's formal education. This variable was ordinal (1 – no formal education, 2 – primary, 3 – secondary/diploma, 4 – secondary/technical/vocational training, 5 – bachelor's degree, 6 – Master's or PhD degree). We considered that both INTERNATIONAL EXPERIENCE and EDUCATION can serve as some researchers also considered variables describing human capital as such variables, *e.g.* Onkelinx *et al.* (2016) or Jiang *et al.* (2016). We described structural capital using ONLINE SALES dummy variable, which means that if a new venture makes any sales of its product/services via web-based platforms (social media, its own website) or smartphone application, we assigned number 1; otherwise, we assigned number 0. Based on Westerlund (2020), we assumed that early internationalized start-ups were more willing to use online sales channels than traditional exporters. Finally, in our research, we measured relational capital by MEMBERSHIP, related to start-up participation in a business membership organization, trade association, or other business support group. This variable was a dummy, and we assigned the number 1 if the new venture belongs to any business organization, but otherwise, we assigned the number 0. Some research, *e.g.* Baier-Fuentes *et al.* (2018), states that firms' network presence could be related to their early internationalization.

Control Variables

We included several control variables that could potentially impact the results. Firstly, we controlled SIZE (measured by the natural logarithm of the number of workers) as we considered that relatively larger firms have relatively more resources than smaller ones, and it can potentially affect early internationalization. We also controlled FOREIGN OWNERSHIP (measured by the existence of foreign capital in the new venture's ownership structure) as foreign capital investments positively influence firms' internationalization (Woo, 2020). The following control variable was NON-FAMILY BUSINESS (measured by the existence of family ownership in total firm ownership, which means the same family owns that venture). We considered that family businesses are less willing to internationalize earlier (Arregle *et al.*, 2021). Wach (2014) confirmed it when he empirically verified such interdependence between family and non-family firms. It turned out that the average time of internationalization is longer in a family business than those assigned to a non-family group. We also controlled GENDER as we assumed that men are more likely to develop new international business directions than women. It is related to risk propensity. Fur-

ther research shows that women have a higher aversion to risk than men in new venture planning (e.g. Ivanova Yordanova *et al.*, 2011; Zhang *et al.*, 2014). We controlled AGE as we assumed that older top managers may identify an entrepreneurial opportunity quicker than younger ones thanks to their professional experience (Reuber & Fischer, 1999; Zucchella *et al.*, 2007; Zucchella & Scabini, 2007). Lastly, we controlled R&D as some research demonstrates a positive association between R&D spending and early internationalization (e.g. Fernhaber & Li, 2013; Sheppard & McNaughton, 2012).

Moderator

Some studies emphasize that experience could affect whether firms spot international entrepreneurial opportunities (e.g. Cock *et al.*, 2021; D'Angelo & Presutti, 2019; Magnusson & Boggs, 2006; Reuber & Fischer, 1997). One can intuit that managers' work experience may reinforce sales via an alternative path, e.g. Internet. Their experience helps them recognize the importance of participating in business networks for further venture development. Online sales may provide an additional source of revenue for the new venture, thereby reducing the cost of international operations, which is critical for micro and small enterprises. We claim that new ventures are more willing to sell via the Internet whose managers have significant sector experience. Moreover, participation in a business network also relates to top managers' experience and their reputation. Extensive experience in the sector could be reflected in higher profits from overseas sales and may indicate the strength of alternative foreign sales channels. Therefore, we decided to include EXPERIENCE (measured by the number of years of professional experience a top manager in the sector has) into our analysis. Work experience in the sector can determine the direction and strength of sales through online channels and influence whether a company integrates into the business network, thus enhancing the moderation effect.

RESULTS AND DISCUSSION

Initially, we checked the credibility of the logistic regression model. We used two criteria that had to be met. Firstly, the likelihood ratio test estimated with the maximum probability should be statistically significant. Secondly, the Hosmer-Lemeshow test should be statistically insignificant (Hair *et al.*, 1998). In the first model, the likelihood ratio test was statistically significant (chi-square=74.960, df=10, $p<0.001$). The same situation occurred for model 2, where chi-square=68.531 (df=10, $p<0.001$), model 3 (chi-square=40.751, df=10, $p<0.001$), and model 4 (chi-square=27.798, df=10, $p<0.001$). Model 5 (chi-square=81.184, df=10, $p<0.001$), model 6 (chi-square=71.058, df=10, $p<0.001$), model 7 (chi-square=46.053, df=10, $p<0.001$), and model 8 (chi-square=31.631, df=10, $p<0.001$) were also statistically significant in terms of likelihood ratio test. In terms of the Hosmer-Lemeshow test, all models were statistically insignificant, which was the desired result for our deliberations.

In the binomial logistic regression model, the coefficient of determination R-square is not an adequate measure of the quality of model adjustment to variables. Therefore, scholars do not recommend to apply it (Blomstermo *et al.*, 2006). Some researchers suggest using Nagelkerke pseudo R-square or Cox-Snell pseudo R-square (Smith & McKenna, 2013), which for the first model were 0.196 and 0.139, respectively. In terms of model 2, Nagelkerke pseudo R-square was 0.289, but Cox-Snell pseudo R-square was equal to 0.179. For the rest of the models, Nagelkerke (NPRsq) and Cox-Snell pseudo R-square (CSPRsq) was between 0.127 and 0.299.

We also checked the relationship between variables used in the analysis (Table 2) by calculating the V-Cramer coefficient. Based on Table 2, we observed that there was no strong correlation between the independent variables used in the analysis. The highest relationship occurred between AGE and EXPERIENCE ($v=0.389$, $p<0.001$). The manager's age goes hand in hand with their total work experience, which could explain such a noticeable relationship. We resigned from AGE control variable to avoid disturbing the test results while we analysed the interaction between EXPERIENCE and ONLINE SALES and EXPERIENCE and MEMBERSHIP. In contrast, the lowest dependence occurred between NON-FAMILY BUSINESS and INT EXPERIENCE ($v = 0.003$) and between FOREIGN OWNERSHIP and ONLINE SALES ($v=0.008$).

Table 2. V-Crammer coefficient

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. EARLY INTERNATIONALIZATION	1.000	–	–	–	–	–	–	–	–	–	–	–
2. SIZE	0.294	1.000	–	–	–	–	–	–	–	–	–	–
3. FOREIGN OWNERSHIP	0.185***	0.248	1.000	–	–	–	–	–	–	–	–	–
4. NON-FAMILY BUSINESS	0.119**	0.314	0.161***	1.000	–	–	–	–	–	–	–	–
5. GENDER	0.135**	0.338†	0.132**	0.095*	1.000	–	–	–	–	–	–	–
6. AGE	0.330	0.332***	0.330	0.318	0.316	1.000	–	–	–	–	–	–
7. R&D	0.291***	0.359*	0.092*	0.139**	0.207***	0.267	1.000	–	–	–	–	–
8. INT EXPERIENCE	0.178***	0.290	0.120**	0.003	0.142**	0.359 †	0.135**	1.000	–	–	–	–
9. EDUCATION	0.242***	0.350***	0.219***	0.162*	0.149*	0.285	0.170*	0.185**	1.000	–	–	–
10. ONLINE SALES	0.014	0.265	0.008	0.045	0.161***	0.302	0.007	0.005	0.134†	1.000	–	–
11. MEMBERSHIP	0.074 †	0.312	0.021	0.160***	0.034	0.289	0.041	0.042	0.144 †	0.030	1.000	–
12. EXPERIENCE	0.320	0.288	0.332	0.335	0.344 †	0.389***	0.320	0.311	0.284	0.276	0.281	1.000

Note: † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: own study.

Table 3. Binomial logistic regression models

Variables	Model 1			Model 2			Model 3			Model 4		
	Coeff.	Exp	Wald	Coeff.	Exp	Wald	Coeff.	Exp	Wald	Coeff.	Exp	Wald
Const.	-2.972*** (0.888)	0.051	11.206	-8.286*** (1.537)	0.000	29.073	-2.783** (1.090)	0.062	6.519	-1.836 (1.676)	0.159	1.201
SIZE	0.107 (0,15)	1.113	0.507	1.016*** (0.229)	2.763	19.763	0.032 (0.185)	1.033	0.030	0.014 (0.298)	1.014	0.002
FOREIGN OWNERSHIP	0.968** (0.391)	2.633	6.144	0,015 (0.745)	1.015	0.000	1.152** (0.492)	3.164	5.483	0.270 (0.778)	1.310	0.121
NON-FAMILY BUSINESS	0,314 (0.246)	1.369	1.626	-0.440 (0.400)	0.644	1.211	0.203 (0.305)	1.225	0.444	1.020* (0.478)	2.774	4.555
GENDER	0.360 (0.319)	1.433	1.269	0.426 (0.448)	1.531	0.904	0.037 (0.409)	1.038	0.008	0.476 (0.578)	1.609	0.678
AGE	-0.001 (0.011)	0.999	0.017	0.048** (0.017)	1.050	8.129	-0.005 (0.014)	0.995	0.124	0.008 (0.023)	1.008	0.121
R&D	1.067*** (0.229)	2.907	21.797	1.786*** (0.350)	5.967	25.977	0.767** (0.267)	2.153	8.273	1.702*** (0.542)	5.484	9.858
INT EXPERIENCE (H1a)	0.536** (0.226)	1.709	5.603	-0.430 (0.383)	0.650	1.261	0.483 † (0.276)	1.620	3.065	0.836† (0.446)	2.308	3.522
EDUCATION (H1b)	0.287** (0.111)	1.332	6.728	0.284† (0.170)	1.328	2.799	0.389** (0.135)	1.475	8.342	-0.087 (0.227)	0.917	0.146
ONLINE SALES (H2)	0.157 (0.234)	1.170	0.446	0.376 (0.343)	1.456	1.199	0.336 (0.280)	1.400	1.438	-0.509 (0.512)	0.601	0.986
MEMBERSHIP (H3)	-0.473† (0.275)	0.623	2.954	-0.104 (0.432)	0.901	0.058	-0.089 (0.331)	0.915	0.072	-1.109* (0.535)	0.330	4.290
EXPERIENCE	-	-	-	-	-	-	-	-	-	-	-	-
EXPER. x ONLINE SALES (H2a)	-	-	-	-	-	-	-	-	-	-	-	-
EXPER. x MEMBERSHIP (H3a)	-	-	-	-	-	-	-	-	-	-	-	-
N	501			348			297			204		
Likelihood test	74.960*** (p < 0.001)			68.531*** (p < 0,001)			40.751*** (p < 0,001)			27.798** (p < 0,01)		
H.-L. test	4.074 (p = 0.850)			5.842 (p = 0.665)			8.083 (p = 0.425)			6.857 (p = 0.552)		
Pseudo-R2	0.122			0.205			0.102			0.149		
R2(Nagelkerke)	0.196			0.289			0.174			0,212		
R2(Coxa-Snella)	0.139			0.179			0.128			0.127		

Note: † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: own study.

Table 3. Binomial logistic regression model – cont'

Variables	Model 5			Model 6			Model 7			Model 8		
	Coeff.	Exp	Wald	Coeff.	Exp	Wald	Coeff.	Exp	Wald	Coeff.	Exp	Wald
Const.	-3.284*** (0.925)	0.037	12.598	-8.061*** (1.758)	0.000	21.031	-2.911** (1.135)	0.054	6.576	-1.535 (1.834)	0.215	0.700
SIZE	0.124 (0.151)	1.132	0.680	1.040*** (0.232)	2.830	20.121	0.076 (0.188)	1.079	0.162	0.022 (0.302)	1.022	0.005
FOREIGN OWNERSHIP	0.928** (0.394)	2.529	5.555	0.141 (0.758)	1.152	0.035	1.154** (0.495)	3.171	5.433	-0.048 (0.800)	0.953	0.004
NON-FAMILY BUSINESS	0.262 (0.250)	1.299	1.095	-0.394 (0.404)	0.675	0.951	0.156 (0.310)	1.169	0.253	0.917† (0.485)	2.503	3.573
GENDER	0.407 (0.326)	1.503	1.565	0.288 (0.447)	1.334	0.415	0.042 (0.418)	1.043	0.010	0.521 (0.592)	1.684	0.774
AGE	–	–	–	–	–	–	–	–	–	–	–	–
R&D	1.079*** (0.231)	2.940	21.795	1.808*** (0.353)	6.096	26.290	0.766** (0.271)	2.150	8.005	1.765** (0.570)	5.844	9.589
INT EXPERIENCE (H1a)	0.542** (0.226)	1.720	5.775	-0.260 (0.375)	0.771	0.482	0.466† (0.275)	1.594	2.885	0.983* (0.458)	2.674	4.607
EDUCATION (H1b)	0.279** (0.112)	1.322	6.237	0.337* (0.173)	1.401	3.785	0.405** (0.137)	1.499	8.723	-0.130 (0.235)	0.878	0.306
ONLINE SALES (H2)	1.431** (0.598)	4.183	5.727	-0.603 (0.975)	0.547	0.383	1.802** (0.729)	6.061	6.101	0.778 (1.265)	2.178	0.379
MEMBERSHIP (H3)	-0.473 (0.702)	0.623	0.454	1.178 (1.299)	3.249	0.823	-1.029 (0.882)	0.357	1.361	-0.219 (1.301)	0.803	0.028
EXPERIENCE	0.009 (0.023)	1.009	0.142	0.072† (0.039)	1.074	3.414	-0.009 (0.029)	0.991	0.103	0.007 (0.043)	1.007	0.026
EXPER. x ONLINE SALES (H2a)	-0.051* (0.022)	0.950	5.368	0.033 (0.032)	1.034	1.089	-0.057* (0.027)	0.945	4.546	-0.050 (0.049)	0.951	1.032
EXPER. x MEMBERSHIP (H3a)	-0.001 (0.025)	0.999	0.002	-0.046 (0.040)	0.955	1.316	0.034 (0.032)	1.034	1.127	-0.033 (0.046)	0.968	0.503
N	501			348			297			204		
Likelihood test	81.184*** (p < 0.001)			71.058*** (p < 0.001)			46.053*** (p < 0.001)			31.631*** (p < 0.001)		
H.-L. test	7.925 (p = 0.441)			4.109 (p = 0.847)			4.581 (p = 0.801)			6.339 (p = 0.609)		
Pseudo-R2	0.132			0.212			0.115			0.169		
R2(Nagelkerke)	0.212			0.299			0.194			0.239		
R2(Coxa-Snella)	0.150			0.185			0.144			0.144		

Note: † p < 0.1, * p < 0.05, ** p < 0.01, ***p < 0.001.

Source: own study.

We created eight binomial logistic regression models (see Table 3). The first model explained ventures' early internationalization in comparison to those that either internationalize in a sequential path or focus only on the domestic market. The second model refers to late internationalizers (thus we omitted early internationalized ventures). Therefore, we created this model to check whether there were differences between early and late internationalized start-ups. In the third model, we checked the propensity to early internationalization among innovation ventures. In the fourth model, we checked factors affecting early internationalization among non-innovation ventures. Next, the fifth model checked whether EXPERIENCE moderated the strength between online sales and membership and the propensity to early internationalization. We conducted the same procedure for models 6-8 but we checked this relation in reference to late internationalized businesses, innovative ventures, as well as non-innovative enterprises.

Discussion

We observed that among SMEs, those ventures that employ more workers were 1.113 times more prone to internationalize early than those that follow an incremental internationalization path or focus on domestic sales. However, SIZE was statistically insignificant (odd ratio = 1.113, Wald=0.507), thereby we could not interpret it (Table 3). The situation was different for late internationalizers (model 2 and model 6). In this case, a number of workers played an essential role in explaining incremental internationalization. It means that among micro and small enterprises, those with a higher number of workers were almost three times more prone to internationalization in traditional ways than those internationalizing earlier or focusing only on domestic markets.

In terms of NON-FAMILY BUSINESS (model 1: odd ratio=1.369, Wald=1.626), we saw that 1.369 times more often ventures were early internationalizing their business in the non-family firm rather than in family companies, but the variable was statistically insignificant. Admittedly, in model 4 (odd ratio=2.774, Wald=4.555, $p<0.05$), in which we considered non-innovative ventures, the variable showed statistical significance confirming the propensity for early internationalization in this type of entity was nearly three times higher than in non-innovative family firms. Both GENDER and AGE were statistically insignificant, except AGE in model 2. It turned out that top managers' AGE was more likely to contribute to traditional internationalization than early internationalization or firms focusing on the domestic market (model 2: odd ratio=1.05, Wald=8.129, $p<0.01$).

We found that expenditure on research and development (R&D) in all models could affect the propensity to internationalize. We noticed that ventures that spent some part of their revenue on R&D were almost three times more willing to internationalize earlier than those firms which did not allocate expenditure for those matters (model 1: odd ratio=2.907, Wald=21.797, $p<0.001$; model 5: odd ratio=2.940, Wald=21.795, $p<0.001$). We also noted that the same held true for innovative ventures, where R&D spending may predict a firm's propensity for early internationalization (model 3: odd ratio=2.153, Wald=8.273, $p<0.01$; model 7: odd ratio=2.150, Wald=8.005, $p<0.01$). Our research also confirmed that the existence of FOREIGN CAPITAL in start-ups ownership structure could predict early internationalization (model 1: odd ratio=2.633, Wald=6.144, $p<0.01$; model 5: odd ratio=2.529, Wald=5.555, $p<0.01$), though we could see that this inclination was relatively higher for innovative ventures (model 3: odd ratio=3.164, Wald=5.483, $p<0.01$; model 7: odd ratio=3.171, Wald=5.433, $p<0.01$). Nonetheless, for late internationalizers and non-innovators, this relationship appeared to be statistically insignificant.

In the binomial logistic regression models, we measured the affect of intellectual capital on the propensity to early internationalization. We found that top manager's prior international experience may be a predictor of venture's early internationalization (model 1: odd ratio=1.709, Wald=5.603, $p<0.01$; model 5: odd ratio=1.720, Wald=5.775, $p<0.01$). Almost two times more often, start-ups managed by top managers with prior international experience were willing to internationalize earlier than other ventures. We see that such experience plays a crucial role rather in non-innovative (model 4: odd ratio=2.308, Wald=3.522, $p<0.1$; model 8: odd ratio=2.674, Wald=4.607, $p<0.05$) than innovative ventures (model 3: odd ratio=1.620, Wald=3.065, $p<0.1$; model 7: odd ratio=1.594, Wald=2.885, $p<0.1$), which mean that non-innovative firms rely more on prior international experience in explaining prone to early interna-

tionalization. It does not mean that innovators are not relying on such experience, they do but with a little bit weaker. Based on the above, we may accept hypothesis 1a. Skills and experience of the owner/manager in the international market are consistently identified in numerous scientific studies as one of the primary barriers to the company's internationalization process (Nurfarida *et al.*, 2022). The owner/manager's skills will impact managerial capabilities, which determine the ability to formulate competitive strategies (product, competitive pricing, target market, marketing strategy, etc.) in the international market. The owner/manager's proficiency is instrumental in shaping the company's approach to international expansion, influencing decisions that navigate diverse cultural, regulatory, and competitive landscapes, and ultimately impacting the success of international ventures.

Similarly, EDUCATION, where a higher level of education translates into ca. 1.3 times higher likelihood of early internationalization (model 1: odd ratio=1.332, Wald=6.728, $p<0.01$; model 5: odd ratio=1.322, Wald=6.237, $p<0.01$). The situation was similar for late internationalized firms, except that the statistical significance is relatively weaker than for early internationalized firms (model 2: odd ratio=1.328, Wald=2.799, $p<0.1$; model 6: odd ratio=1.401, Wald=3.785, $p<0.05$). Noteworthy, among innovative ventures, the top manager's level of education contributed to almost 1.5 times higher propensity of the entity to early internationalization (model 3: odd ratio=1.475, Wald=8.342, $p<0.01$; model 7: odd ratio=1.499, Wald=8.723, $p<0.01$). The case was different for non-innovators, where both model 4 and model 8 showed a lack of statistical significance in this regard. Therefore, we could partially accept hypothesis 1b.

In model 1, we found that among the firms selling via the Internet (odd ratio=1.170, Wald=0.446), the likelihood of early internationalization was 1.17 times higher than in the rest of the ventures, but unfortunately variable was insignificant. Similarly, among innovative ventures (model 3: odd ratio=1.400, Wald=1.438) and late internationalizers (model 2: odd ratio=1.456, Wald=1.199), where online sales increased early internationalization inclination, but both variables were statistically insignificant. Therefore, we must reject hypothesis 2. Surprisingly, we noticed that EXPERIENCE was a significant moderator in explaining the relationship between selling via the Internet and the likelihood of early internationalization. In model 5, we could observe a statistically significant interaction between experience and online sales (model 5: odd ratio=0.950, Wald=5.368, $p<0.01$; model 7: odd ratio=0.945, Wald=4.546, $p<0.01$). This relationship was especially well-demonstrated in innovative ventures, where EXPERIENCE moderates the effect of ventures' early internationalization inclination among the firms selling online (model 7: odd ratio=6.061, Wald=6.101, $p<0.001$). Such relations were not confirmed in the case of non-innovators (model 8: odd ratio=2.178, Wald=0.379) as the variable was not statistically significant. Therefore, we could partially accept hypothesis 2a.

As evidenced by studies conducted on Polish enterprises, the findings from research examining the impact of intellectual capital on the early internationalization endeavours of startups also echoed similar conclusions (Bigos & Pera, 2022). Our findings also align with the results of the study conducted by Zucchella *et al.* (2007). Their analyses distinctly illustrate that the salience of antecedent, specific experiences, notably within the realm of internationalization, wielded a substantial influence on the early stages of internationalization, a phenomenon further corroborated by the research undertaken by Debrulle and Maes (2015). The outcomes emanating from the study executed by Wach and Głodowska (2021) additionally corroborate our findings, elucidating the nexus between the educational attainment of entrepreneurs and the momentum of the internationalization endeavour. Their inquiry underscores the pivotal role of educational background in molding the tempo of international expansion.

Based on the result of the binomial logistic regression models, we could not confirm hypothesis 3 that MEMBERSHIP plays an essential role in explaining the propensity to early internationalization. Our research confirmed (weak) legitimacy only for non-innovators (model 4: odd ratio=0.330, Wald=4.290, $p<0.05$), which was not sufficient as we did not confirm such relation in the other models, except model 1 (odd ratio=0.623, Wald=2.954, $p<0.1$). Moreover, we noticed that experience did not moderate the relationship between the business network and propensity to early internationalization. Thus, we did not confirm either hypothesis 3 or hypothesis 3a.

CONCLUSIONS

The research confirmed the significance of intellectual capital in the context of early internationalization which is consistent with previous findings. However, not all anticipated hypotheses were confirmed due to lack of statistical significance. Noteworthy, while results concerning the influence of human and structural capital did not yield surprising outcomes, the situation differed regarding the impact of firm membership in business networks on early internationalization processes. Therefore, given these reasons and the understandable research constraints, a continuation of investigations to deepen understanding in this area seems justified. Additional studies may facilitate a better comprehension of why we did not corroborate certain hypotheses and what factors may influence firms' early internationalization. This could lead to a more comprehensive understanding of how intellectual capital and its constituent elements affect firms' international development.

As with all empirical studies, this research has several limitations. Firstly, the research applied the (computer-assisted personal interview. On the one hand, this type of study technique can be considered effective and appropriate. On the other hand, there is always a risk in this type of research that the respondent will not answer honestly, which may distort the results' objectivity. Furthermore, the sample was not large enough and did not include most Austrian firms, which may have resulted in a risk of a lack of representativeness. Another research limitation was that it focused only on micro and small enterprises, while we omitted medium and large enterprises. Furthermore, we based the study on the results of a survey of Austrian enterprises, and thus only in a selected cultural context. Consequently, we should treat such results cautiously, as they may not necessarily be replicated against enterprises in other countries.

Further research on early internationalization also needs to consider changes in the international environment, such as technological advancements, regulatory changes, and changes in trade policy, which may have a significant impact on SME internationalization strategy (Bigos & Michalik, 2023; Gerschewski *et al.*, 2015; Steinhäuser *et al.*, 2021; Wach, 2015).

The study has several practical implications. Entrepreneurs willing to internationalize earlier should rely on their own previous international experience and hire employees with such experience. The level of education is also of considerable importance – the higher the level, the greater the likelihood of early internationalization.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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