a scientific open access quarterly

International Entrepreneurship Review

ISSN 2658-1841

2025, vol. 11, no. 1

KRAKOW UNIVERSITY OF ECONOMICS
Department of International Trade
Centre for Strategic and International Entrepreneurship

a scientific open access quarterly

International Entrepreneurship Review

ISSN 2658-1841 **2025, Vol. 11, No. 1**

KRACOW UNIVERSITY OF ECONOMICS
Department of International Trade
Centre for Strategic and International Entrepreneurship

Publisher

Krakow University of Economics
Centre for Strategic and International Entrepreneurship
Department of International Trade
ul. Rakowicka 27, 31-510 Kraków, Poland
phone +48 12 293 5929, -5376, -5307, -5381, -5327
e-mail: ier@uek.krakow.pl
www.ier.uek.krakow.pl

Secretariat and Editorial Office

Mrs. Anna Marcinek-Markowska
Building U, Room 300, phone +48 12 293 5929

Executive Team for this Issue

Copyediting: Anna Marcinek-Markowska
Proofreading: Marek Maciejewski, Elżbieta Bombińska
Cover and DTP: Marek Sieja

Reviewers

All articles are double-blinded peer-reviewed at least by two independent reviewers.
The detailed list of reviewers is published at our website once a year.

Original Version

The online journal version has been the only one since 2019.
The online journal is the primary and reference version.

ISSN 2658-1841 (since 2019)
ISSN 2543-537X, eISSN 2543-4934 (in the years 2015-2018)

Copyright and License

Copyright by Authors and by Krakow University of Economics, CC BY 4.0 License
EBER is an open access journal according to DOAJ.

Editorial Board

Editor-in-Chief
Krzysztof Wach

Associate Editors
Armenia Androniceanu (Romania), Zoltán Bartha (Hungary), Krystian Bigos, Elżbieta Bombińska, Beata Buchelt, Mariola Ciszewska-Mlinarič, Dương Công Doanh (Vietnam), Milica Delibašić (Montenegro), Mimo Drašković (Montenegro), Burak Erkut (Cyprus/France), Wojciech Giza, Agnieszka Głodowska, Agnieszka Hajdukiewicz, Gines Hernández Cánovas (Spain), Milós Kozma (Hungary), Michał Lemański (China), Marek Maciejewski (scientific secretary), Ladislav Mura (Slovakia), Bożena Pera, Áron Perényi (Australia), Marcin Salamaga (statistics editor), Aidin Salamzadeh (Iran), Luboš Smutka (Czechia)

Consulting Editors – International Editorial Advisory Board

Adam P. Balcerzak, University of Warmia and Mazury, Poland
Yuriy Bilan, Rzeszów University of Technology, Poland
Sławomir I. Bukowski, Kazimierz Pulaski University of Technology and Humanities in Radom, Poland
Victor Claar, Florida Gulf Coast University, United States
Dafnis N. Coudounaris, University of Tartu, Estonia, Aalborg University, Denmark
Elżbieta Czarny, SGH Warsaw School of Economics, Poland
Rasa Daugėlienė, Kaunas University of Technology, Lithuania
Bogusława Drelich-Skulska, Wroclaw University of Economics and Business, Poland
Antonio Duréndez, Universidad Politécnica de Cartagena, Spain
Ondřej Dvouletý, University of Economics in Prague, Czechia
Geoff A. Goldman, University of Johannesburg, South Africa
Marian Gorynia, Poznan University of Economics and Business, Poland
Andrea S. Gubik, University of Miskolc, Hungary
Marian Holienka, Comenius University in Bratislava, Slovakia
Elena Horska, Slovak University of Agriculture in Nitra, Slovakia
Barbara Jankowska, Poznan University of Economics and Business, Poland
Doris Kiendl, University of Applied Sciences FH Joanneum in Graz, Austria
Blaženka Knežević, University of Zagreb, Croatia
Halyna Mihschuk, National University of Water and Environmental Engineering, Ukraine
Immanuel Azaad Moonesar, Mohammed Bin Rashid School of Government, United Arab Emirates
Cornelia Pop, Babes-Bolyai University, Faculty of Business, Cluj-Napoca, Romania
Ewa Oziewicz, University of Gdansk, Poland
Anna Pilková, Comenius University in Bratislava, Slovakia
Jurgita Raudeliūnienė, Vilnius Gediminas Technical University, Lithuania
Inna Romānova, University of Latvia in Riga, Latvia
Magdolna Sass, Hungarian Academy of Sciences, Hungary
Jurgita Sekliuckienė, Kaunas University of Technology, Lithuania
Maura Sheehan, Edinburgh Napier University, United Kingdom
Gerry Simons, Grand Valley State University, USA
Janusz Świerkocki, University of Łódź, Poland
Tomohiko Takahashi, Takushoku University, Faculty of Political Science and Economics - Tokyo, Japan
Josef Taušer, University of Economics in Prague, Czechia
Mike Troilo, University of Tulsa, USA
Meltem İnce Yenilmez, Yasar University, Turkey
Ana Mol Gomez Vazquez, Universidad de Alicante, Spain
Tiia Vissak, University of Tartu, Estonia
Marzenna Anna Weresa, SGH Warsaw School of Economics, Poland
Crystal Zhang, Coventry University, United Kingdom

Abstracting/Indexing

The journal, and all its articles, is abstracting and/or indexing
in international databases, including:

DOAJ (England, UK)
Sherpa Romeo (England, UK)
ERIH Plus (Norway)
Publons (Beijing, China)
ProQuest (USA)
EBSCO (USA)
Google Scholar (USA)
EconPapers – RePEc (Sweden)
Crossref (USA)
BazEkon (Poland)
BazHum (Poland)
Index Copernicus (Poland)
ROAD (USA)
WorldCat (Netherlands)

Identification and Originality

All articles published in IER are tagged with an identification number
employing the Digital Object Identifier (DOI) System.
IER uses the Crossref Similarity Check service powered by iThenticate to verify the originality of articles
submitted to the journal.

Table of Contents

Ready, steady, who do we know? Internationalization intent among emerging market SMEs in Central Asia 7
Matevž (Matt) Rašković, Nurgul Daminova

Entrepreneurial ecosystem in a post-COVID-19 world: A systematic literature review 23
Zubairu Umar, Abdulwaheed Dauda, Hanson Kufre

Enhancing the relationship between firm's green innovation and external knowledge flows: A review and research agenda 37
Aleksandra Zygmunt

Standardisation versus adaptation in international marketing of Polish companies operating in foreign markets: The case of Maspex 57
Paweł Milka, Jakub Garncarz

Impact of the COVID-19 pandemic on foreign direct investment worldwide 69
Wojciech Zysk

A visual analysis of new technologies and craft aspects in the context of sustainable development 93
Katarzyna Mazur-Włodarczyk

The effect of entrepreneurial self-efficacy on entrepreneurial intentions: The moderating role of entrepreneurial passion for founding 111
Debora Vista Silty Ticoalu, Sarwono Nursito, Jeanne Maria Tuerah

Work engagement and staff turnover in the hospitality industry: An analysis of selected job characteristics 125
Aleksandra Grobelna, Anna Tokarz-Kocik

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.01

Ready, steady, who do we know? Internationalization intent among emerging market SMEs in Central Asia

Matevž (Matt) Rašković, Nurgul Daminova

ABSTRACT

Objective: The objective of our paper is to examine the determinants and moderators of managerial internationalization intent of not yet internationalized emerging market small and medium-sized enterprises (EMSMEs) from Kyrgyzstan, a country in Central Asia.

Research Design & Methods: Analyzing a sample of 178 non-yet-internationalized SMEs in Kyrgyzstan collected through a survey questionnaire, which have indicated willingness to internationalize, we use an OLS regression model to analyze the impact of government support, international market outlook and various kinds of resources, as determinants of two types of internationalization intent: simple internationalization intent (i.e., establishing first contact) and sophisticated internationalization intent (i.e., corresponding to more intense resource commitments). We further test the moderating effect of business network ties and institutional network ties on those relationships.

Findings: We find that government support and international market outlook play equally important roles in simple internationalization intent, while government support becomes crucial for more sophisticated internationalization intent. Business network ties are a significant moderator between international market outlook and simple internationalization intent, while institutional network ties moderate the role of government support, international market outlook and resources for simple internationalization intent. This is almost opposite for more sophisticated internationalization intent, where business network ties moderate all three relationships (i.e., government support, international market outlook, resources) and institutional network ties do not act as a moderator at all.

Implications & Recommendations: Our results challenge the importance of resource in the pre-internationalization phase of EMSMEs. Our results also show that government support is crucial for a more "big jump" approach to internationalization, while institutional ties matter more in the simple, more sequential pre-internationalization path. To promote more sophisticated internationalization, managers need well developed business network ties, as well as strong government support.

Contribution & Value Added: Aside from rare data on EMSMEs from a poorly understood Central Asian economy, we also provide novel insights into the determinants and moderating factors of pre-internationalization behaviour of EMSMEs and add to the growing body of research on the so-called microfoundations of SME internationalization behaviour.

Article type:	research article
Keywords:	Emerging Market SMEs; Central Asia; Pre-internationalization behaviour; Institutional ties; Network ties; Government support
JEL codes:	F23, C83

Received: 30 June 2024 | Revised: 31 October 2024 | Accepted: 3 November 2024

Suggested citation:
Rašković, M.M., & Daminova, N. (2025). Ready, steady, who do we know?. Internationalization intent among emerging market SMEs in Central Asia. *International Entrepreneurship Review,* 11(1), 7-22. https://doi.org/10.15678/IER.2025.1101.01

INTRODUCTION

Small and medium-sized enterprises (SMEs) are the backbone of national economies and increasingly also of the international economy, represent about 90-95% of enterprises in most national

economies, employ over 60% of the labour force and contribute about 40% to the GDPs in their respective national economies (Dabić *et al.*, 2019). This is true not just among developed economies, but also emerging economies (Audretsch & Guenther, 2023). Yet, while the share of SMEs and their economic importance for their respective national economies might not differ significantly between developed and emerging economies, there are significant differences in the internationalization behaviour of SMEs from emerging markets (i.e., EMSMEs) compared to their developed market counterparts (Buyukbalci *et al.*, 2024; Child, 2019; Dikova *et al.*, 2016).

Generally, emerging market firms internationalize differently to developed market firms (Luo & Tung, 2018; Deng *et al.*, 2020). However, while the internationalization of emerging market multinationals (i.e., EMNEs) has attracted considerable research and policy attention (Luo & Tung, 2007; Gaur & Kumar, 2010; Luo & Tung, 2018), much less is known about EMSMEs and their internationalization patterns (Buyukbalci *et al.*, 2024; Zhu *et al.*, 2006; Zhou *et al.*, 2007; Makhmadoshev *et al.*, 2015), which are often escaping from their home markets (Wu & Deng, 2020). This provides a significant impediment to emerging market development.

Internationalization theory sees internationalization as an evolutionary process based on incremental commitment of resources and gradual acquisition of experience (e.g., Johanson & Vahlne, 1977; Cavusgil, 1984). The literature on born global and international new ventures offers an alternative perspective to such sequential logic (e.g., Zander *et al.*, 2015; Cavusgil & Knight, 2015; Ferguson *et al.*, 2019) but such a non-sequential and rapid internationalization lens has been less often applied to SMEs until more recently (e.g., Kalinic & Forza, 2012; Schweizer & Vahlne, 2022). Both the sequential and the rapid perspectives have, however, been more interested in the internationalization *process*, rather than the liminal period before it (Tan *et al.*, 2007) and the readiness of firms to internationalize in the first place (Cavusgil, 1990; Liesch & Knight, 1999). EMSMEs, however, need to more often pursue more aggressive and less sequential internationalization patterns, driven by entrepreneurial thinking and explorative learning (Dikova *et al.*, 2016), as well as network effects (Magni *et al.*, 2022).

The seminal works by Tan *et al.* (2007) and Pedersen and Shaver (2011) have laid the ground work for either a sequential or a discontinuous perspective in the SME pre-internationalization period. However, we have a better understanding of the role of the external environment and resource constraints in the initiation of internationalization (Gerschewski *et al.*, 2020), than we do about managerial attitudes and motivation (Wood *et al.*, 2015); especially for SMEs. Recent research on managerial rigidity (Tan *et al.*, 2018), inertia (Dow *et al.*, 2018) and the role of managerial personalities (Munteanu *et al.*, 2023) have shown how important it is to focus on managers at the pre-internationalization stage in order to understand subsequent internationalization, not just environment factors (Gerschewski *et al.*, 2020). The growing body of research on so-called microfoundations of SME internationalization (e.g., Vanderstraeten *et al.*, 2020) further supports this, also for EMSMEs (e.g., Jafari-Sadeghi *et al.*, 2021). Yet, compared to our understanding of the microfoundational determinants behind SME internationalization among developed market SMEs, limited research is available, especially on managerial intentionality at the pre-internationalization stage for EMSMEs. Research on firm pre-internationalization behavior can help narrow theoretical gaps related to microfoundational processes (Coviello *et al.*, 2017) and the role of social cognition in firm internationalization (Vahlne & Johanson, 2020). It can also help managers take that scary first step towards internationalization and support policy makers looking to facilitate socio-economic development through SME internationalization in EMs (Child, 2019).

The goal of our paper is to examine the determinants and moderators of managerial internationalization *intent* of not-yet-internationalized EMSMEs in Central Asia. EMSMEs from the so-called transitional periphery markets remain poorly understood (Makhmadoshev *et al.*, 2015), especially their managers, compared to those in China or other BRIC countries. For example, they may be less driven by asset seeking behaviour or "domestic institutional hardships" (Wu & Deng, 2020, p. 337; Makhmadoshev *et al.*, 2015).

We draw on the conceptualization of managerial intentionality by Lewin and Volberda (1999)[1] and

[1] They defined managerial intent as the ability to make a conscious decision which significantly changes a firm's direction (Lewin & Volberda, 1999; see also Dow *et al.*, 2018).

define managerial *intent* simply as a declared likelihood of engaging in specific types of pre-internationalization behaviour over the next three years. This is also consistent with the transition likelihood perspective in export readiness by Tan *et al.* (2007). Such activities range from contacts with potential customers and distributors (i.e. initial contact) – which we call *simple* internationalization intent – to developing products/services for foreign markets or to foreign operations by dedicating more substantive resources – which we call *sophisticated* internationalization intent.

Analyzing a sample of 178 not-yet-internationalized SMEs in Kyrgyzstan with aspirations to internationalize based on a survey questionnaire, we use a simple OLS regression model and test the impact of resources, international market outlook and government support on two types of managerial internationalization intent. We also examine the moderating impact of business and institutional network ties, building on the importance of social networks for internationalizing SMEs (Coviello & Munro, 1997), especially in EM context (Yiu *et al.*, 2007).

Our paper builds on the early pre-export models from the 1970s and 1980s (e.g., Cavusgil, 1980) which have been used to explore state-to-change mechanisms related to rigidity and inertia within an extension of internationalization process theory (Tan *et al.*, 2018). To the best of our knowledge, ours is a rare study to look at pre-internationalized EMSMEs and explore their intent. We also pay particular attention to government support and the positive effects of institutional ties rather than the negative effect of institutional voids (e.g., Adomako *et al.*, 2019).

Our internationalization intent captures exporting and other more "sophisticated" internationalization modes. This offers important theoretical implications for the big jump/discontinuous perspective proposed by Pedersen and Shaver (2011). Apart from the obvious empirical contribution of providing data on a poorly understood region and a significantly under researched firm population, our research contributes to the conceptual work by Dow *et al.* (2018) on managerial inertia and intentionality. We add a micro-foundational puzzle piece to our understanding of EMSME internationalization processes (Dikova *et al.*, 2016) in a specific liminal period (Prashantham & Floyd, 2019) when the' managers are contemplating either a small first export step or commitment to a more substantive internationalization plunge, which is not born global.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

There has been a great deal of "accumulated knowledge" on SME internationalisation (Kahiya, 2018, p. 1172; see Ruzzier *et al.*, 2006; Ruzzier *et al.,* 2007), particularly related to exporting (Kahiya, 2018; Paul *et al.*, 2017; Leonidou *et al.*, 2010). However, the bulk of research has overwhelmingly focused on the antecedents, determinants and moderators of performance of internationalized firms, or on the various patterns of internationalization. This has left two gaps in the literature; one pertaining to export barriers, and another to export attitudes and behaviour (Kahiya, 2018).

Related to SMEs and exporting, research on challenges (Paul *et al.*, 2017) and barriers has recently gained a more systematic examination (Sannegadu *et al.*, 2023; Steinhäuser *et al.*, 2021; Dabić *et al.*, 2019; Kahiya, 2018; Kahiya, 2017; Kahiya & Dean, 2016). Much less is, however, known about the role of managers (Tan *et al.*, 2018) and managerial intentionality (Dow *et al.*, 2018) in the pre-internationalization phase (Tan *et al.*, 2007). Despite a long tradition of contrasting exporters and non-exporters in the context of barriers and stimuli, there is actually very limited research on the pre-internationalization steps of firms and the mediating role of managerial motivation (Tan *et al.*, 2018; Dow *et al.*, 2018).

Leading research in this area, which emerged in the 1990s, adopted a "narrow" export stimuli perspective consistent with the Theory of the Growth of the Firm. It addressed various types of stimuli for non-exporters (Leonidou, 1995a, 1995b; Morgan & Katsikeas, 1997a), or the managerial perception of export barriers (Shoham & Albaum, 1995; Leonidou, 1995b). While managerial motivation received some attention from the start, it was merely a simple performance-based motive (Bilkey & Tesar, 1977; Bilkey, 1978; Cavusgil & Nevin, 1981; Axinn, 1988). It later became integrated into examining internal organizational factors determining export performance (Leonidou, 1998), or the process of managerial

decision making among SME exporters (Shoham & Albaum, 1995). Only recently, has managerial intentionality (Dow *et al.*, 2018; Tan *et al.*, 2018) and motivation (Wood *et al.*, 2015) started to be more thoroughly examined as an independent concept and a potential mediator.

While the earliest works in international business (IB) focused on managerial decision-making in firm internationalisation (Aharoni, 1966; Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977; Wiedersheim-Paul *et al.*, 1978), as recently as the beginning of the current decade, in their review of 45 years of IB research, Aharoni *et al.* (2011) emphasized the neglected and taken-for-granted aspect of individual-level managerial perceptions in IB scholarship. Such a gap still lingers, despite growing interest in the so-called microfoundations of SME internationalization (Vanderstraeten *et al.*, 2020). Thus, there is a knowledge gap on SME managerial decision-making processes *prior* to the first internationalisation decision (Tan *et al.*, 2018; Lamb & Liesch, 2002), or the role of a manager as "motivated internal change agent or condition" which may mediate the effect of removing relevant "internal and external barriers" (Wood *et al.*, 2015, p. 2358).

Almost all existing research on SME internationalisation decisions has come from developed markets, like the UK (Morgan & Katsikeas, 1997a), the U.S. (Wood *et al.*, 2015), and Australia (Tan *et al.*, 2018). The lack of research from emerging and transition markets on SME pre-internationalisation does not constitute only an empirical gap, but carries more profound macro-development implications for these markets. It also limits the general advancement of IB theory on pre-internationalisation. There is a cogent body of knowledge about the impact of resource constraints, organisational factors and external barriers on SME internationalisation in developed (see Ruzzier *et al.*, 2006), and to lesser extent, EMs (Etemad, 2013; Child, 2019; Wu & Deng, 2020). However, what role managerial motivation and intent play as drivers in the pre-internationalisation stage, among non-internationalized SMEs, it remains quite under-researched.

When it comes to internationalization, EMSMEs differ from EMMNEs not just in terms of their resources, capabilities and motives but also in terms of their decision-making patterns and risk perceptions (Svetličič *et al.*, 2007). According to Bagheri *et al.*, SME "internationalization is highly influenced by the motives and decision makers' level of skills and knowledge" (2019, p. 122). In addition to this, the managers' networks, either informal or formal, also play a much more pivotal role (Coviello & Munro, 1997).

Figure 1 depicts our conceptual model which captures three types of internationalization determinants consistent with the established SME internationalization literature (see Cerrato *et al.*, 2016; Ruzzier *et al.*, 2006). The novelty of the model lies on the dependent variable side, where we have conceptualized two types of internationalization *intent*, as the likelihood of engaging is a specific type of pre-internationalization behaviour over the next three years for firms which have shown interest to internationalize. This is consistent with Lewin and Volberda's (1999) on managerial intentionality, as well as the subsequent works by Tan *et al.* (2007) and Dow *et al.* (2018).

Contrary to the seminal work by Tan *et al.* (2007), however, which focused on export readiness alone, we wanted to capture both the sequential and big-leap aspects in managerial intent. Hence, we specifically distinguished between establishing initial contacts (i.e. so-called *simple* intent, consistent with the sequential logic and export readiness) and higher levels of commitment to foreign markets (i.e. more *sophisticated* intent, consistent with a non-sequential logic). A further aspect of our conceptual model are the two moderators, which capture the importance of network ties in SME internationalization (Coviello & Munro, 1997). They play a particularly important role in a transitional periphery EM, like Kyrgyzstan, where institutional ties (Makhmadoshev *et al.*, 2015) and personal networks are essential for business (Minbaeva & Muratbetkova-Touron, 2013).

H1: Government support will have a positive impact on simple/sophisticated EMSME internationalization intent.

H2: International market outlook will have a positive impact on simple/sophisticated EMSME internationalization intent.

H3: Government support will have a positive impact on simple/sophisticated EMSME internationalization intent.

H4: The positive relationships between the determinants and simple/sophisticated EMSME internationalization intent will be moderated by business network ties.

H3: The positive relationships between the determinants and simple/sophisticated EMSME internationalization intent will be moderated by institutional network ties.

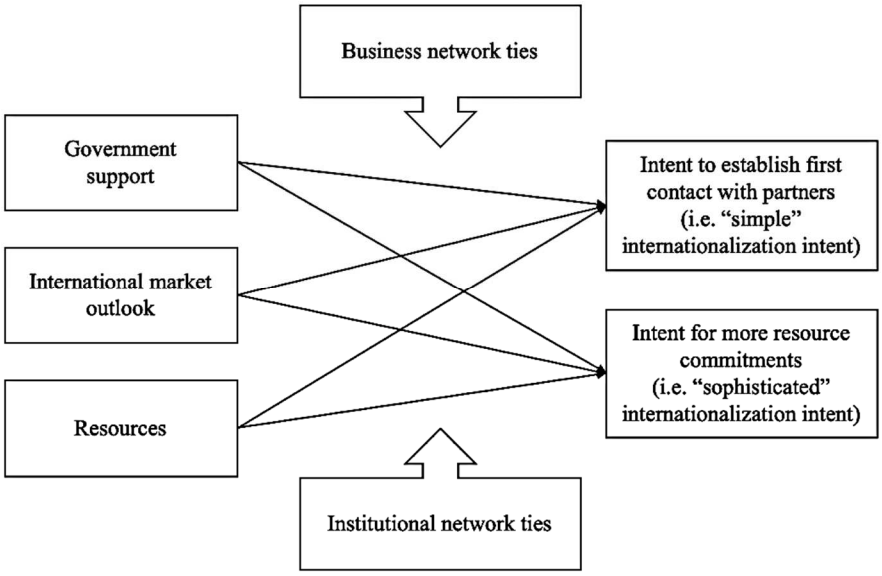


Figure 1. Conceptual model of EMSME internationalization intent
Source: Authors' own representation informed by their literature review.

RESEARCH METHODOLOGY

Data was collected with a paper-based survey questionnaire in Russian language in Bishkek, the capital city of Kyrgyzstan. The original questionnaire was prepared based on an extensive review of the literature and first done in English language. It was then translated and back-translated by two Russian native speakers, with the final Russian version of the questionnaire further checked by a Russian native speaker with an international business (IB) academic background.

In terms of sample characteristics (n=178), the average firm in our sample has 20.8 employees and is 8.37 years old. 49.4% of the firms fall in the category of micro firms (up to 9 employees), followed by 40.6% small firms (10-49 employees) and 10% medium-sized firms (50-250 employees). In terms of industry background, 32% of the firms in our sample come from the service sector (particularly IT), followed by trade (30.9%), agriculture (13.7%), the textile industry (12.6%), and manufacturing (9.1%), followed by other sectors. Table 1 summarizes the background of our measures and corresponding descriptive statistics. All measures were taken from multi-item constructs from the literature and have appropriate internal reliability statistics (Cronbach's α above 0.70).

The sample firms display a relatively high degree of international market outlook and moderate levels of both types of internationalization intent, slightly higher for *simple* than more *sophisticated*, as expected. In terms of network ties, business network ties were stronger than institutional network ties. The level of government support was the lowest among all the measures, which is consistent with the EM context and the institutional voids literature from Central Asia (Makhmadoshev *et al.*, 2015).

We decided to employ OLS regression rather than Structural Equation Modelling (SEM), because of the tentative size of our sample (n=178) and to avoid issues concerning statistical power (Moshagen & Bader, 2024) and the existence of some missing values (MacCallumn *et al.*, 1999). We also did not want to run SmartPLS, as it is less suitable for comparative model testing and does not offer satisfactory goodness of fit statistics. The tested variables in our OLS regression correspond to a simple mean average of the multi-item constructs, given strong internal reliability of the specific items for each construct. We also checked for Common Method Bias using Harman's single-factor approach (Chang *et al.*, 2010).

Table 1. Measures, descriptive statistics (means and std. deviations) and scale background

Measure	Cronbach α /Factor loading	Simple mean (1-5)	Standard deviation
Government support (Adapted from Mogos Descotes & Walliser, 2011)	**0.845**	**2.428**	**0.757**
1. Government institutions in Kyrgyzstan assist SMEs in their internationalization (e.g. by providing information, education, services etc.)	*0.601*		
2. The government provides financial aid to help SMEs internationalize (e.g. subsidies, loans, lower taxation, and customs rates).	*0.627*		
3. The government provides support programs for SMEs willing to internationalize.	*0.818*		
4. At both local and national levels governmental bodies provide special support for SMEs willing to internationalize (e.g. tax breaks).	*0.877*		
5. The government assists SMEs in starting to internationalize even if they have previously failed.	*0.818*		
International market outlook (Adapted from Morgan & Katsikeas, 1997a)	**0.771**	**3.612**	**0.707**
1. I believe our company would benefit from internationalization.	*0.789*		
2. We have people employed in our company which are internationally minded.	*0.544*		
3. We have excess time in our company that could be devoted to internationalization.	*0.711*		
Resources (Adapted from Navarro *et al.*, 2010)	**0.866**	**3.279**	**0.875**
1. Our company has sufficient financial resources necessary for successful internationalization.	*0.816*		
2. Our company has sufficient human resources necessary for successful internationalization.	*0.747*		
3. Compared to the Kyrgyz market, our company has sufficient resources available to internationalize.	*0.816*		
Business network ties (Adapted from Yiu *et al.*, 2007)	**0.820**	**3.655**	**1.078**
1. Interaction closeness with customers.	*0.556*		
2. Interaction closeness with distributors.	*0.712*		
3. Interaction closeness with suppliers.	*0.707*		
Institutional network ties (Adapted from Yiu *et al.*, 2007)	**0.826**	**3.007**	**1.499**
1. Interaction closeness with government officials.	*0.856*		
2. Interaction closeness with bankers and financial institutions.	*0.671*		
3. Interaction closeness with professors, scientists and engineers.	*0.572*		
4. Interaction closeness with key members of trade associations and the like.	*0.518*		
Simple int'l intent (contact) (Adapted from Morgan and Katsikeas, 1997b)	**0.888**	**3.395**	**0.909**
1. Likelihood of internationalization in next 3 years…engage contact with customers abroad.	*0.882*		
2. Likelihood of internationalization in next 3 years…engage contact with partners/distributors abroad.	*0.757*		
3. Likelihood of internationalization in next 3 years…engage contact with suppliers abroad.	*0.763*		
"Sophisticated" int'l intent (commitment) Adapted from Morgan and Katsikeas, 1997b)	**0.714**	**3.028**	**0.961**
1. Likelihood of internationalization in next 3 years…set up operations abroad (e.g. sales/purchasing office, production, distribution centre, a new company.	*0.958*		
2. Likelihood of internationalization in next 3 years…develop new products/services for markets abroad.	*0.579*		
3. Likelihood of internationalization in next 3 years…cooperate with at least one other Kyrgyz SME abroad.	*0.569*		

Note: Measures were calculated as simple means from corresponding construct items. Exploratory factor analysis based on Varimax rotation.
Source: own study.

A one-factor solution explained less than 35% of the variance. Hence, we established that common method variance was not a concern in our study (Fuller *et al.*, 2016).

RESULTS AND DISCUSSION

Table 2 summarizes the results of our OLS regression model. We ran two sets of models for both types of internationalization intent. As we can see from the full models with control variables (Models 3 and 6) international market outlook is a key determinant of the simple internationalization intent, followed also by government support. On the other hand, government support is a much stronger determinant for more sophisticated internationalization intent, while international market outlook becomes only marginally significant. Interestingly, in both cases, the impact of resources is *not* significant, which provides more nuance than the established resource-based view understanding of SME internationalization (Ruzzier *et al.*, 2006); particularly when it comes to EMSMEs (Kazlauskaitė *et al.*, 2015).

When it comes to the moderating role of network ties, business network ties moderate the relationship between international market outlook and simple internationalization intent, while institutional network ties moderate all three relationships between government support, international market outlook and resources via-a-vis simple internationalization intent.

When it comes to more sophisticated internationalization intent, business network ties moderate all three relationships (government support, international market outlook, resources), and institutional network ties do not act as a moderator at all.

In terms of the control variables, firm size *does* play a role, with micro and small firms displaying significantly lower sophisticated internationalization intent, as expected. Firm size does *not* play a role when it comes to simple internationalization intent, however. Age also does have a significant effect in the case of both types of internationalization intent. Interestingly, the effect is small in size, but negative, implying older firms generally display somewhat lower levels of internationalization intent, which seems to support evidence on the role of inertia in pre-internationalization behaviour (Tan *et al.*, 2018).

Our results challenge the importance of resource in the pre-internationalization phase of EMSMEs (Ruzzier *et al.*, 2006). We can see that government support becomes crucial for supporting internationalization intent by way of more sophisticated internationalization modes, which is consistent with findings on the role of government support in SME internationalization (Child *et al.*, 2022) and its timing (Tinitis & Fey, 2022). In the case of simple internationalization intent, both international market outlook and government support are equally important, which support the findings by Kahiya (2018) and Kahiya and Dean (2016).

Interestingly, institutional network ties seem to moderate the relationships between government support, international market outlook and resources in the case of simple internationalization intent, while business network ties only moderate the relationship between international market outlook and simple internationalization intent. These findings are consistent with the generally well-established findings on the importance of network ties for firm internationalization (Stoian *et al.*, 2018; Brzozowska & Zdziarski, 2016) in regionally-oriented settings (Hitt *et al.*, 2002), particularly relevant for EMSME internationalization (Bai *et al.*, 2022).The opposite holds for the case of more sophisticated internationalization intent, where any moderating role of institutional network ties disappear, and business network ties become an important moderator (Stoian *et al.*, 2018). This is consistent with the importance of informal 'psychological contracts' in SME exporting (Kahiya & Butler, 2022), as well as informal institutions and network, particularly in emerging markets with significant institutional voids (Stojčić *et al.*, 2024; Wu & Deng, 2020), like Central Asia (Makhmadoshev *et al.*, 2015; Minbaeva & Muratbetkova-Touron, 2013) and Asia in general (Stojčić *et al.*, 2024).

Our results also clearly show that government support is crucial for a more big jump approach to internationalization. While this may not be surprising per se, our findings do provide more theoretical nuance beyond the role of government export support (Kahiya, 2024), the role of government support in EMNE internationalization (Ricz *et al.*, 2024) and the impact of more targeted government support

focusing on SMEs' innovation capabilities (Nguyen *et al.*, 2023). The findings also point to the importance of EMSMEs developing specific network-institutional capabilities (Bai *et al.*, 2022), especially for more sophisticated internationalization activities beyond simply exporting.

Table 2. Determinants and moderators of different types of EMSME internationalization intent (OLS regression; n=178)

Statistics	Simple internationalization intent			Sophisticated internationalization intent		
	Model 1	***Model 2***	***Model 3***	***Model 4***	***Model 5***	***Model 6***
Constant	0.000 (0.065)	0.017 (0.058)	0.382 (0.249)	0.001 (0.071)	0.134 (0.066)	0.965 (0.297)
Gov. support	0.328*** (0.065)	0.220*** (0.061)	0.219*** (0.058)	0.192*** (0.072)	0.317*** (0.070)	0.313*** (0.070)
Int. mkt outlook	0.409*** (0.076)	0.330** (0.079)	0.289*** (0.078)	0.352*** (0.83)	0.172* (0.091)	0.166* (0.093)
Resources	0.042 (0.076)	0.084 (0.070)	0.085 (0.068)	-0.098 (0.084)	-0.101 (0.080)	-0.089 (0.081)
Biz network ties		0.314*** (0.070)	0.291*** (0.075)		0.216*** (0.080)	0.188** (0.089)
Inst. network ties		0.243** (0.094)	0.153 (0.094)		0.049 (0.108)	-0.004 (0.112)
Gov. support*Biz network		0.179** (0.076)	0.081 (0.078)		-0.207** (0.087)	-0.273*** (0.093)
Int. mkt outlook*Biz network		0.210** (0.084)	0.195** (0.085)		-0.342*** (0.096)	-0.320*** (0.101)
Resources*Biz network		-0.153* (0.092)	-0.076 (0.096)		0.611*** (0.105)	0.614*** (0.115)
Gov. support*Inst. network		-0.305** (0.117)	-0.204* (0.117)		-0.060 (0.134)	0.022 (0.140)
Int. mkt outlook*Inst. network		-0.401*** (0.123)	-0.366*** (0.119)		-0.183 (0.140)	-0.154 (0.142)
Resources*Inst. network		0.236* (0.128)	0.261** (0.126)		0.121 (0.146)	0.118 (0.151)
Size_micro_dummy			-0.073 (0.235)			-0.643** (.281)
Size_small_dummy			-0.132 (0.195)			-0.497** (.233)
Age of firm			-0.021** (0.010)			-0.024* (.012)
Ind_agri_forest_fish_dummy			-0.259 (0.208)			-0.350 (.249)
Ind_textile_manufact_dummy			0.199 (0.192)			-0.167 (.230)
Ind_trade_dummy			-0.362** (0.161)			-0.029 (.192)
Adj. R square	0.261	0.502	0.538	0.115	0.348	0.369
F-statistic	21.756***	17.145***	12.854***	8.609***	9.547***	6.956***

Note: Variables have not been mean-centered; analysis based on standardized variables. Standard errors shown in parentheses. Significance levels: * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Source: own study.

CONCLUSIONS

The goal of our paper was to examine the determinants and moderators of managerial internationalization *intent* of not-yet-internationalized EMSMEs in Central Asia, thereby adding to the relatively underdeveloped IB/SME literature on internationalization readiness (Tan *et al.*, 2007; Gerschewski *et al.*, 2020) and pre-internationalization behaviour (Tan *et al.*, 2012). Such research can in turn also enrich existing research on internationalization speed (Romanello *et al.*, 2024) and its intersection with more microfoundational aspects of SME internationalization speed (Hsieh *et al.*, 2019) – especially when it comes to a transition periphery market, like Kyrgyzstan (Makhmadoshev *et al.*, 2015).

Our results challenge the importance of resource in the pre-internationalization phase of EMSMEs and further show that government support is crucial for a more "big jump" approach to internationalization, while institutional ties matter more in the simple, more sequential pre-internationalization path. Our results also carry some IB policy implications, again beyond the existing export-assistance and export-promotion orientated SME policies (Freixanet, 2022). For example, they share light on the types of networking and network-related capabilities (Kahiya & Warwood, 2022) government initiatives should focus on in supporting SMEs in their first-ever and subsequent internationalization efforts. This doesn't mean that resources are also not important (Oparaocha, 2015). Rather, it means that IB policy and government support should be more nuanced and should have a multi-pronged approach focusing on both resources and capabilities (Tallman & Fladmoe-Lindquist, 2002).

In terms of managerial recommendations, managers considering internationalizing their SME ventures, particularly beyond simple exporting, should focus on developing their business network ties through government assistance (Fiedler *et al.*, 2021). They should also proactively seek out ways to work with government through various support initiatives and internationalization promotion initiatives, which requires a strong entrepreneurial mindset/orientation (Prasannath *et al.*, 2024; Wach, 2015) not just in terms of opportunity identification but also networking opportunities and the diversity of various networks (Fernhaber & Li, 2013). This in turn also provides new insights on the interplay between entrepreneurial and non-entrepreneurial forms of SME internationalization (Nummela *et al.*, 2022) – less well understood in emerging market contexts than developed market contexts.

Like with all types of survey questionnaire research, ours' also comes with a few limitations, like using just one respondent per firm, the representativeness of the sample, generalizability of our findings and drawing causal inference from cross-sectional data. The use of simple OLS regression over more 'robust' structural equation modeling is also a limitation of our research – a decision we had to make in the absence of sufficient statistical power (given our relatively small sample). However, in the end, we hope that the empirical contributions of our dataset – coming from one of the least studied countries in the world and one of the least explored regions within the IB and/or international entrepreneurship discipline – can make up for the methodological limitations of our study. We also hope the readers of this paper are able to appreciate the difficulty of conducting primary data collection in such distant and geographically remote locations.

REFERENCES

Adomako, S., Amankwah-Amoah, J., Dankwah, D.O., Danso, A., & Donbesuur, F. (2019). Institutional voids, international learning effort and internationalization of emerging market new ventures. *Journal of International Management, 25*(4), 100666. https://doi.org/10.1016/j.intman.2019.04.001

Aharoni, Y. (1966). *The foreign investment decision process*. Harvard University Press.

Aharoni, Y., Connelly, B.L., & Tihanyi, L. (2011). Managerial Decision-Making in International Business: A Forty-Five-Year Retrospective. *Journal of World Business*, *46*(2), 135-142. https://doi.org/10.1016/j.jwb.2010.05.001

Audretsch, D.B., & Guenther, C. (2023). SME research: SMEs' internationalization and collaborative innovation as two central topics in the field. *Journal of Business Economics*, *93*(6), 1213-1229. https://doi.org/10.1007/s11573-023-01152-w

Axinn, C.N. (1988). Export performance: Do managerial perceptions make a difference?. *International Marketing Review*, *5*(2), 61-71. https://doi.org/10.1108/eb008353

Bagheri, M., Mitchelmore, S., Bamiatzi, V., & Nikolopoulos, K. (2019). Internationalization orientation in SMEs: The mediating role of technological innovation. *Journal of International Management*, *25*(1), 121-139. https://doi.org/10.1016/j.intman.2018.08.002

Bai, W., Johanson, M., Oliveira, L., Rajtajczak-Mrozek, M., & Francioni, B. (2022). Where business networks and institutions meet: Internationalization decision-making under uncertainty. *Journal of International Management*, *28*(1), 100904. https://doi.org/10.1016/j.intman.2021.100904

Bilkey, W.J., & Tesar, G. (1977). The export behaviour of smaller-sized Wisconsin manufacturing firms. *Journal of International Business Studies*, *8*(1), 93-98. https://doi.org/10.1057/palgrave.jibs.8490783

Bilkey, W.J. (1978). An Attempted Investigation of the Literature on the Export Behaviour of Firms. *Journal of International Business Studies*, *9*(1), 33-46. https://doi.org/10.1057/palgrave.jibs.8490649

Brzozowska, A., & Zdziarski, M. (2016). Review of network research in scientific journal 'Entrepreneurship Theory and Practice'. *International Entrepreneurship Review*, *2*(2), 93-107. Retrieved from https://ier.uek.krakow.pl/index.php/pm/article/view/1116 on August 2, 2024.

Buyukbalci, P., Urfa, A.M., & Can, E. (2024). A review on the internationalisation of emerging market SMEs. *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00400-1

Cavusgil, S.T., & Nevin, J.R. (1981). Internal determinants of export marketing behavior: An empirical investigation. *Journal of Marketing Research*, *18*(1), 114-119. https://doi.org/10.1177/002224378101800114

Cavusgil, S.T. (1984). Differences among exporting firms based on their degree of internationalization. *Journal of Business Research*, *12*(2), 195-208. https://doi.org/10.1016/0148-2963(84)90006-7

Cavusgil, S.T. (1990). Assessment of company readiness to export. In Thorelli, H.B., & Cavusgil, S.T. (Eds.), *International Marketing Strategy* (pp. 129-139). Pergamon Press.

Cavusgil, T.S., & Knight, G. (2015). The born global firm: an entrepreneurial and capabilities perspective on early and rapid internationalization. *Journal of International Business Studies*, *46*(1), 3-16. https://doi.org/10.1057/jibs.2014.62

Cerrato, D., Crosato, L., & Depperu, D. (2016). Archetypes of SME internationalization: A configurational approach. *International Business Review*, *25*(1), 286-295. https://doi.org/10.1016/j.ibusrev.2015.05.010

Chang, S-J., van Witteloostujin, A., & Eden, L. (2010). From the Editors: Common Method Variance in International Business Research. *Journal of International Business Studies*, *41*(2), 178-184. https://www.jstor.org/stable/27752488

Child, J. (2019). Innovation and Internationalization of SMEs in Emerging Markets. In Grosse, R., Meyer, K. E. (Eds.), *The Oxford Handbook of Management in Emerging Markets* (pp. 495-526). Oxford University Press.

Child, J., Karmowska, J., & Shenkar, O. (2022). The role of context in SME internationalization – A Review. *Journal of World Business*, *57*(1), 101267. https://doi.org/10.1016/j.jwb.2021.101267

Coviello, N.E., & Munro, H. (1997). Network relationships and the internationalisation process of small software firms. *International Business Review*, *6*(4), 361-386. https://doi.org/10.1016/S0969-5931(97)00010-3

Coviello, N., Kano, L., & Liesch, P.W. (2017). Adapting the Uppsala model to a modern world: Macro-context and microfoundations. *Journal of International Business Studies*, *48*(9), 1151-1164. https://doi.org/10.1057/s41267-017-0120-x

Dabić, M., Maley, J., Dana, L.-P., Novak, I., Pellegrini, M.M., & Caputo, A. (2019). Pathways of SME internationalization: a bibliometric and systematic review. *Small Business Economics*, *55*(5), 705-725. https://doi.org/10.1007/s11187-019-00181-6

Deng, P., Delios, A., & Peng, M.W. (2020). A geographic relational perspective on the internationalization of emerging market firms. *Journal of International Business Studies*, *51*(1), 50-71. https://doi.org/10.1057/s41267-019-00276-y

Dikova, D., Jaklič, A., Burger, A., & Kunčič, A. (2016). What is beneficial for first-time SME-exporters from a transition economy: A diversified or a focused export-strategy?. *Journal of World Business*, *51*(2), 185-199. https://doi.org/10.1016/j.jwb.2015.05.00

Dow, D., Liesch, P., & Welch, L. (2018). Inertia and Managerial Intentionality: Extending the Uppsala model. *Management International Review*, *58*(3), 465-493. https://doi.org/10.1007/s11575-017-0340-0

Ferguson, S., Henrekson, M., & Johannesson, L. (2019). Getting the facts right on born globals. *Journal of International Business Studies*, *56*(1), 259-276. https://doi.org/10.1007/s11187-019-00216-y

Fernhaber, S.A., & Li, D. (2013). International exposure through network relationships: Implications for new venture internationalization. *Journal of Business Venturing*, *28*(2), 316-344. https://doi.org/10.1016/j.jbusvent.2012.05.002

Fiedler, A., Fath, B., Sinkovics, N., & Sinkovics, R.R. (2021). Exporting from a remote, open economy during covid-19: Challenges and opportunities for SMEs. In Husted, K., & Sinkovics, R. R. (Eds.), *Management Perspectives on the Covid-19 Crisis: Lessons from New Zealand* (pp. 71-82). Edward Elgar. https://doi.org/10.4337/9781800882096.00014

Freixanet, J. (2022). Export promotion programs: A system-based systematic review and agenda for future research. *Journal of World Business*, *57*(4), 101344. https://doi.org/10.1016/j.jwb.2022.101344

Fuller, C.M., Simmering, M.J., Atinc, G., Atinc, Y., & Babin, B.J. (2016). Common method variance detection in business research. *Journal of Business Research*, *69*(8), 3192-3198. https://doi.org/10.1016/j.jbusres.2015.12.008

Gaur, A., & Kumar, V. (2010). Internationalization of Emerging Market Firms: A Case for Theoretical Extension. In Devinney, T., Pedersen, T., & Tihanyi, L. (Eds.), *The past, present and future of international business and management,* (Vol. 23*,* pp. 603-627). Emerald Publishing.

Gerschewski, S., Scott-Kennel, J., & Rose, E.L. (2020). Ready to export? The role of export readiness for superior export performance of small and medium-sized enterprises. *World Economy*, *43*(5), 1253-1276. https://doi.org/10.1111/twec.12928

Hitt, M.A., Lee, H., & Yucel, E. (2002). The importance of social capital to the management of multinational enterprises: relational networks among Asian and western firms. *Asia Pacific Journal of Management*, *19*(2/3), 353-372. https://doi.org/10.1023/A:1016247920461

Hsieh, L., Child, J., & Narooz, R. *et al.* (2019). A multidimensional perspective of SME internationalization speed: The influence of entrepreneurial characteristics. *International Business Review*, *28*(2), 268-283. https://doi.org/10.1016/j.ibusrev.2018.09.004

Kahiya, E.T., & Dean, D.L. (2016). Export stages and export barriers: Revisiting traditional export development. *Thunderbird International Review*, *58*(1), 75-89. https://doi.org/10.1002/tie.21741

Kahiya, E.T. (2017). Export barriers as liabilities: Near perfect substitutes. *European Business Review*, *29*(1), 61-102. https://doi.org/10.1108/EBR-12-2015-0160

Kahiya, E. (2018). Five decades of research on export barriers: Review and future directions. *International Business Review*, *27*(6), 1172-1188. https://doi.org/10.1016/j.ibusrev.2018.04.008

Kahiya, E.T., & Butler, P. (2022). Forget it, let's go with a handshake: contracting practices of small to medium sized enterprises (SMEs). *Journal of Business & Industrial Marketing*, *37*(3), 549-563. https://doi.org/10.1108/JBIM-05-2020-0246

Kahiya, E.T., & Warwood, C. (2022). What do we know about capabilities and early internationalization? A review and synthesis. *Review of International Business Strategy*, *32*(4), 602-654. https://doi.org/10.1108/RIBS-06-2021-0088

Kahiya, E.T. (2024). A problematization review of export assistance: Debates and future directions. *International Business Review*, *33*(1), 102202. https://doi.org/10.1016/j.ibusrev.2023.102202.

Kalinic, I., & Forza, C. (2012). Rapid internationalization of traditional SMEs: Between gradualist models and born globals. *International Business Review*, *21*(4), 694-707. https://doi.org/10.1016/j.ibusrev.2011.08.002

Kazlauskaitė, R., Autio, E., Gelbūda, M., & Šarapovas, T. (2015). The Resource-based View and SME Internationalisation: An Emerging Economy Perspective. *Entrepreneurial Business and Economics Review*, *3*(2), 53-64. https://doi.org/10.15678/EBER.2015.030205

Jafari-Sadeghi, V., Sukumar, A., Pagán-Castaño, E., & Dana, L-P. (2021). What drives women towards domestic vs international business venturing? An empirical analysis in emerging markets. *Journal of Business Research*, *134*(September), 647-660. https://doi.org/10.1016/j.jbusres.2021.05.055

Johanson, J., & Wiedersheim-Paul, F. (1975). The internationalisation of the firm: Four Swedish cases. *Journal of Management Studies*, *12*(3), 305-32. https://doi.org/10.1111/j.1467-6486.1975.tb00514.x

Johanson, J., & Vahlne, J.-E. (1977). The internationalisation process of the firm: A model of knowledge development and increasing foreign commitments. *Journal of International Business Studies*, *8*(1), 23-32. https://doi.org/10.1057/palgrave.jibs.8490676

Lamb. P.W., & Liesch, P. (2002). The internationalisation process of the smaller firm: reframing the relationship between market commitment, knowledge and involvement. *Management International Review*, *42*(1), 7-26.

Leonidou, L.C. (1995a). Export stimulation. *European Journal of Marketing*, *29*(8), 17-36. https://doi.org/10.1108/03090569510097538

Leonidou, L.C. (1995b). Export barriers: non-exporters' perceptions. *International Marketing Review*, *12*(1), 4-25. https://doi.org/10.1108/02651339510080070

Leonidou, L.C. (1998). Organizational determinants of exporting: Conceptual, methodological and empirical insights. *Management International Review*, *38*(1), 7-52. Retrieved from http://www.jstor.org/stable/40228472 on April 1, 2024.

Leonidou, L.C., Katsikeas, C., & Coudounaris, D.N. (2010). Five decades of business research into exporting: A bibliographic analysis. *Journal of International Management*, *16*(1), 78-91. https://doi.org/10.1016/j.intman.2009.06.001

Lewin, A., & Volberda, H.W. (1999.) Prolegomena on coevolution: A framework for research on strategy and new organizational forms. *Organization Science*, *10*(5), 519-553. Retrieved from https://www.jstor.org/stable/2640315 on April 3, 2024.

Liesch, P., & Knight, G. (1999). Information internalization and hurdle rates in small and medium sized enterprises internationalization. *Journal of International Business Studies*, *30*(1), 383-394. Retrieved from https://www.jstor.org/stable/155318 on April 3, 2024.

Luo, Y., & Tung,. R. (2007). International expansion of emerging market enterprises: A springboard perspective. *Journal of International Business Studies*, *38*(4), 481-498. https://doi.org/10.1057/palgrave.jibs.8400275

Luo, Y., & Tung, R. (2018). A general theory of springboard MNEs. *Journal of International Business Studies*, *49*(2), 129-152. https://doi.org/10.1057/s41267-017-0114-8

Magni, D., Chierici, R., Fait, M., & Lefebvre, K. (2022). A network model approach to enhance knowledge sharing for internationalization readiness of SMEs. *International Marketing Review*, *39*(3), 626-652. https://doi.org/10.1108/IMR-03-2021-0110

Makhmadoshev, D., Ibeh, K., & Crone, M. (2015). Institutional influences on SME exporters under divergent transition paths: Comparative insights from Tajikistan and Kyrgyzstan. *International Business Review*, *24*(6), 1025-1038. https://doi.org/10.1016/j.ibusrev.2015.02.010

MacCallumn, R.C., Widaman, K.F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*(1), 84-99. https://doi.org/10.1037/1082-989X.4.1.84

Minbaeva, D.B., & Muratbetkova-Touron, M. (2013). Clanism: Definition and implications for Human Resource Management. *Management International Review*, *53*(1), 109-139. https://doi.org/10.2307/23464448

Mogos Descotes, R., & Walliser, B. (2011). The Process of Export Information Exploitation in French and Romanian SMEs. *Journal of Small Business and Enterprise Development*, *18*(2), 311-330. https://doi.org/10.1108/14626001111127098

Moshagen, M., & Bader, M. (2024). semPower: General power analysis for structural equation models. *Behavior Research Methods*, *56*(6), 2900-2922. https://doi.org/10.3758/s13428-023-02254-7

Morgan, R.E., & Katsikeas, C. (1997a). Export Stimuli: Export Intention Compared with Export Activity. *International Business Review*, *6*(5), 477-499. https://doi.org/10.1016/S0969-5931(97)00017-6

Morgan, R.E., & Katsikeas, C.S. (1997b). Obstacles to Export Initiation and Expansion. *Omega: the International Journal of Management Science*, *25*(6), 677-690. https://doi.org/10.1016/S0305-0483(97)00035-2

Munteanu, D.R., Vanderstraeten, J., & van Witteloostuijn, A. *et al* (2023). A systematic literature review on SME internationalization: a personality lens. *Management Review Quarterly*, *73*(4), 1457-1518. https://doi.org/10.1007/s11301-022-00279-4

Navarro, A., Acedo, F.J., Robson, M.J., Ruzo, E., & Losada, F. (2010). Antecedents and consequences of firms' export commitment: an empirical study. *Journal of International Marketing*, *18*(3), 41-61. https://doi.org/10.1509/jimk.18.3.41

Nguyen, T., Verreyenne, M-L., Steen, J., & Torres de Oliveira, R. (2023). Government support versus international knowledge: Investigating innovations from emerging-market small and medium enterprises. *Journal of Business Research*, *154*(January), 113305. https://doi.org/10.1016/j.jbusres.2022.113305

Nummela, N., Vissak, T., & Francioni, B. (2022). The interplay of entrepreneurial and non-entrepreneurial internationalization: an illustrative case of an Italian SME. *International Entrepreneurship and Management Journal*, *18*(1), 295-325. https://doi.org/10.1007/s11365-020-00673-y

Oparaocha, G.O. (2015). SMEs and international entrepreneurship: An institutional network perspective. *International Business Review*, *24*(5), 861-873. https://doi.org/10.1016/j.ibusrev.2015.03.007

Paul, J., Parthasarathy, S., & Gupta, P. (2017). Exporting challenges of SMEs: A review and future research agenda. *Journal of World Business*, *52*(3), 327-342. https://doi.org/10.1016/j.jwb.2017.01.003

Pedersen, T., & Shaver, M.J. (2011). Internationalization revisited: the big step hypothesis. *Global Strategy Journal*, *1*(3-4), 263-274. https://doi.org/10.1002/gsj.20

Prasannath, V., Adhikari, R.P., & Gronum, S. *et al.* (2024). Impact of government support policies on entrepreneurial orientation and SME performance. *International Entrepreneurship and Management Journal*, *20*(3), 1533-1595 (2024). https://doi.org/10.1007/s11365-024-00993-3

Prashantham, S., & Floyd, S.W. (2019). Navigating liminality in new venture internationalization. *Journal of Business Venturing*, *34*(3), 513-527. https://doi.org/10.1016/j.jbusvent.2019.01.001

Ricz, J., Sallai, D., & Sass, M. (2024). The role of the state in shaping the internationalization of firms in the twenty-first century. *Competition & Change*. https://doi.org/10.1177/10245294241229359

Romanello, R., Balboni, B., Chiarvesio, M., & Paul, J. (2024). Early, Rapid or Global? Internationalization Speed and SME's Performance. *Global Business Review*. https://doi.org/10.1177/09721509231221915

Ruzzier, M., Hisrich, R.D., & Antoncic, B. (2006). SME internationalisation research: Past, present, and future. *Journal of Small Business and Enterprise Development*, *13*(4), 476-497. https://doi.org/10.1108/14626000610705705

Ruzzier, M., Antoncic, B., Hirsch, R., & Konecnik, M. (2007). Human capital and SME internationalisation: A structural equation model study. *Canadian Journal of Administrative Science*, *24*(1), 15-29. https://doi.org/10.1002/cjas.3

Sannegadu, R., Batra, B., & Mehta, K. (2023). Internationalisation of SMEs: a systematic literature review and future research directions. *International Journal of Business & Emerging Markets*, *15*(4), 428-454. https://doi.org/10.1504/IJBEM.2023.134079

Schweizer, R., & Vahlne, J.-E. (2022). Non-linear internationalization and the Uppsala model – On the importance of individuals. *Journal of Business Research*, *140*(February), 583-592. https://doi.org/10.1016/j.jbusres.2021.11.025

Shoham, A., & Albaum, G.S. (1995). Reducing the Impact of Barriers to Exporting: A Managerial Perspective. *Journal of International Marketing*, *3*(4), 85-105. https://doi.org/10.1177/1069031X9500300410

Steinhäuser, V.P.S., de Oliveira Paula, F., & van Aduard de Macedo-Soares, T.D. (2021). Internationalization of SMEs: a systematic review of 20 years of research. *Journal of International Entrepreneurship*, *19*(2), 164-195. https://doi.org/10.1007/s10843-020-00271-7

Stoian, M-C., Dimitratos, P., & Plakoyiannaki, E. (2018). SME internationalization beyond exporting: A knowledge-based perspective across managers and advisers. *Journal of World Business*, *53*(5), 768-779. https://doi.org/10.1016/j.jwb.2018.06.001

Stojčić, N., Dabić, M., & Musteen, M. (2024). With a little help from my friends: Institutional obstacles, networking, and SME exporting in emerging European and Asian economies. *International Business Review*, *33*(3), 102258. https://doi.org/10.1016/j.ibusrev.2024.102258

Svetličič, M., Jaklič, M., & Burger, A. (2007). Internationalization of small and medium-sized enterprises from selected central European economies. *East European Economics*, *45*(4), 36-65. https://doi.org/10.2753/EEE0012-8775450402

Tallman, S., & Fladmoe-Lindquist, K. (2002). Internationalization, globalization, and capability-based strategy. *California Management Review*, *45*(1), 116-135. https://doi.org/10.2307/41166156

Tan, A., Brewer, P., & Liesch, P.W. (2007). Before the first export decision: Internationalisation readiness in the pre-export phase. *International Business Review*, *16*(3), 294-309. https://doi.org/10.1016/j.ibusrev.2007.01.001

Tan, A., Brewer, P., & Liesch, P.W. (2012). *Understanding the pre-internationalization phase decision heuristic of Australian SMEs.* AIB 2012 Annual Meeting, Washington, DC, United States, 30 June - 3 July 2012.

Tan, A., Brewer, P., & Liesch, P.W. (2018). Rigidity and SME commencement export decisions. *International Business Review*, *27*(1), 46-55. https://doi.org/10.1016/j.ibusrev.2017.05.002

Tinitis, P., & Fey, C.F. (2022). The Effects of Timing and Order of Government Support Mechanisms for SME Exports. *Management International Review*, *62*(2), 285-323. https://doi.org/10.1007/s11575-022-00465-2

Vahlne, J.-E., & Johanson, J. (2020). The Uppsala model: networks and micro-foundations. *Journal of International Business Studies*, *51*(1), 4-10. https://doi.org/10.1057/s41267-019-00277-x

Vanderstraeten, J., Loots, E., Hamelin, A., & van Witteloostujin, A. (2020). Micro-foundations of small business internationalization: introduction to the Special Section. *Cross Cultural & Strategic Management*, *27*(3), 265-283. https://doi.org/10.1108/CCSM-04-2020-0100

Wach, K. (2015). Entrepreneurial Orientation and Business Internationalisation Process: The Theoretical Foundations of International Entrepreneurship. *Entrepreneurial Business and Economics Review*, *3*(2), 9-24. https://doi.org/10.15678/EBER.2015.030202

Wiedersheim-Paul, F., Olson, H.C., & Welch, L.S. (1978). Pre-Export Activity: The First Step in Internationalisation. *Journal of International Business Studies*, *9*(1), 47-58. https://doi.org/10.1057/palgrave.jibs.8490650

Wood, A., Logar, C.M., & Riley, W.B.Jr. (2015). Initiating exporting: The role of managerial motivation. *Journal of Business Research*, *68*(11), 2358-2365. https://doi.org/10.1016/j.jbusres.2015.03.043

Wu, B., & Deng, P. (2020). Internationalization of SMEs from emerging markets: An institutional escape perspective. *Journal of Business Research*, *108*(1), 337-350. https://doi.org/10.1016/j.jbusres.2019.10.037

Yiu, D.W., Lau, C.M., & Bruton, G.D. (2007). International venturing by emerging economy firms: the effects of firm capabilities, home country networks, and corporate entrepreneurship. *Journal of International Business Studies*, *38*(4), 519-540. https://doi.org/10.1057/palgrave.jibs.8400278

Zander, U., McDougall-Covin, P., & Rose, E.L. (2015). Born globals and international business: evolution of a field of research. *Journal of International Business Studies*, *46*(1), 27-35. https://doi.org/10.1057/jibs.2014.60

Zhou, L., Wu, W.-P., & Luo, X. (2007). Internationalization and the performance of born-global SMEs: the mediating role of social networks. *Journal of International Business Studies*, *38*(4), 673-690. https://doi.org/10.1057/palgrave.jibs.8400282

Zhu, H., Hitt, M.A., & Tihanyi, L. (2006). The internationalization of SMEs in emerging markets: institutional embeddedness and absorptive capacities. *Journal of Small Business Strategy*, *17*(2), 1-26. Retrieved from The Internationalization of SMES in Emerging Economies: Institional Embeddedness and Absorptive Capacities | Semantic Scholar on April 2, 2024.

Authors

The leading author contributed 70% and the second author contributed 30%. MR – contributed to the conceptualization, methodology, analysis and discussion. ND – contributed to the literature review and data collection.

Matevž (Matt) Rašković
Associate Professor of International Business & Strategy at Auckland University of Technology, New Zealand and visiting professor at Zhejiang University School of Management, China. His research interest include international business non-market strategy, social identity issues and wicked problems at the intersection of global business, society and policymaking.
Correspondence to: Matevž (Matt) Rašković, Auckland University of Technology, 55 Wellesley Street, 1010 Auckland CBD, New Zealand; e-mail: matt.raskovic@aut.ac.nz
ORCID https://orcid.org/0000-0001-5311-4050

Nurgul Daminova
Senior Teacher at Diplomatic Academy of Ministry of Foreign Affairs of the Kyrgyz Republic. Her research interest include higher education reform, SME internationalization in Central Asia and entrepreneurship in Central Asia.
Correspondence to: Mrs. Nurgula Daminova, Academy of the Ministry of Foreign Affairs, 99 Sumskov Street, 720005 Bishkek, Kyrgyzstan; e-mail: nndaminova@gmail.com
ORCID https://orcid.org/0009-0002-2568-4480

Acknowledgements and Financial Disclosure

The authors would like to thank the anonymous referees for their useful comments, which allowed to increase the value of this article.

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.

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.02

Entrepreneurial ecosystem in a post-COVID-19 world: A systematic literature review

Zubairu Umar, Abdulwaheed Dauda, Hanson Kufre

ABSTRACT

Objective: The objective of the article is to provide insights into focus areas and research directions within the context of the entrepreneurial ecosystem following the pandemic era.

Research Design & Methods: The article is a qualitative systematic literature review that collects and analyses the studies related to the subject matter written after COVID-19 using a systematic quantitative assessment technique (SQAT).

Findings: Evidence from the review strongly suggests that spatial context plays a crucial role in shaping the trajectory of entrepreneurial activities. This influence is particularly evident in how a localized network of actors and resources dynamically contributes to the evolution of cities, transforming them into vibrant hubs, which is conducive to entrepreneurship. In essence, the geographical environment in which the entrepreneurial efforts are rooted has a substantial impact on business growth and success.

Implications & Recommendations: This study is devoted to exploring the thematic shift in entrepreneurial ecosystem research during the review period. Initiatives that encourage innovation districts, technology clusters, and collaborative spaces should be encouraged to foster the growth of venture creation.

Contribution & Value Added: This review has contributed value by updating and presenting thematic aspects of research focus within the entrepreneurial ecosystem, particularly in the aftermath of the global health crisis.

Article type: literature review

Keywords: entrepreneurial ecosystem; technology transfer office; university spin-offs; regional entrepreneurship; COVID-19

JEL codes: L26, L10

Received: 18 April 2024 Revised: 28 August 2024 Accepted: 31 August 2024

Suggested citation:
Umar, Z., Dauda, A., & Hanson, K. (2025). Entrepreneurial ecosystem in a post-COVID-19 world: A systematic literature review. *International Entrepreneurship Review,* 11(1), 23-36. https://doi.org/10.15678/IER.2025.1101.02

INTRODUCTION

The trajectory of our world was irrevocably altered when the World Health Organization confirmed the existence of a global virus that posed a serious threat to the fundamental structure of society. The repercussions of the crisis and the ensuing worldwide lockdown have not just transformed work dynamics and social interactions, but it has also exerted a profound impact on the economies of nations resulting in a situation where up to 60% of SMEs experienced liquidity shortage (Bartik *et al.,* 2020). Given the strategic importance of SMEs to the economic competitiveness of any nation (Gamidullaeva *et al.*, 2020); challenges as this pose a critical threat to their sustainability, hindering their ability to maintain optimum employment levels and contribute to overall economic resilience (Barboza & Capocchi, 2020).

LITERATURE REVIEW

Recognizing the urgency to recalibrate the economy, researchers swiftly initiated an assessment of the pandemic to understand current vulnerabilities and emerging trends that could coalesce into a blueprint for the future to bolster resilience. For instance, Brown *et al.* (2020) examined the financing gap

that emerged during the crisis period in the UK, findings indicated that early-stage startups were adversely affected by a drastic reduction in the availability of seed funding in the first quarter of 2020. In response, the United Kingdom government introduced a new funding strategy that offered a matching fund for equity-funded startups providing support in the range of USD 37 500 to USD 6.7 million.

Furthermore, the COVID-19 pandemic caused a severe global economic downturn, with the IMF forecasting a 3% GDP loss in 2020 and a 5.8% growth rebound in 2021 (Malliet *et al.,* 2020). EU nations, facing increased unemployment and business suspensions, implemented measures like tax deferrals and direct cash transfers to support SMEs and stimulate job creation (Aga & Maemir, 2021).

The hope was that restoring the global supply chain and aggregate demand would save the economy. For example, during the lockdown, agricultural enterprises faced the challenge of logistics disruption, especially shortages of key inputs such as labour, feed, and delivery problems. About 60% of agricultural enterprises surveyed in China have encountered input shortages, which disrupted the livestock sector (Zhang, 2020). Moreover, smallholder farms experienced disruption in the supply of livestock feeds and a shortage of other essential raw materials due to logistics problems (Zhang *et al.*, 2020). Due to the drop in the global supply chain and disruption to consumption activities occasioned by the lockdown resulting in a large negative demand shock, several nations experienced low economic activities which led to a GDP decline. A study by Bekaert *et al.* (2020) showed that the 2020:Q1 real GDP growth shock resulted largely from an aggregate demand shock and also in 2020:Q2 – from both aggregate demand and aggregate supply shock in the United States.

Moreover, SMEs account for a staggering 99.8% of all employer firms, 65% of private sector employment and 54% of private sector gross output in the EU (Acharya & Steffen, 2020). Similarly, in Ghana, approximately 92% of registered businesses, 71% of employment, and 49% of gross domestic product (GDP) are attributed to the SME sector. The statistics emphasize the crucial nature of productive entrepreneurship as a job creation driver and employment generation (Doran *et al.*, 2016) and as a contributor to local economic growth through poverty reduction (Wairimu, 2015). The ramifications of a crisis like the COVID-19 pandemic on this vital sector could have far-reaching consequences on the entrepreneurial ecosystem and induce unplanned changes within the domain whose specific dynamics should be of interest to the academia.

Entrepreneurial ecosystem (EE) constitutes a distinct research field which characterizes entrepreneurship as a collaborative endeavour involving the efforts of several actors. Globally, it has gained recognition as a catalyst for regional innovation (Sambo, 2018); economic development (Gómez *et al.,* 2020; Guerrero *et al.*, 2021); and promoting industry-university collaboration (Fernandes & Ferreira, 2022). Entrepreneurial ecosystem embraces the analogy of natural biology to explain the intricacies of exploring opportunities within a network of interdependent actors. Similar to various terms in the realm of social science, EE has given rise to a range of definitions, with each author contributing a distinct perspective to this evolving concept. According to Stam (2015, p. 5) EE is a "set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship." Furthermore, Spigel (2017, p. 2) describes EE as "combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks off starting, funding, and otherwise assisting high-risk ventures". While these definitions differ, they share a common belief that certain attributes outside the individual ventures coalesce to create systemic conditions that support the resultant outcome of aggregate value creation which shape and sustain an environment conducive for entrepreneurship to thrive in a particular geographic region.

A case in point is a study by Xie *et al.* (2021). They suggest that the Chinese government plays a more significant role in promoting entrepreneurship compared to Western economies. Their study was based on a fuzzy-set quantitative competitive analysis of 173 Chinese cities. It indicates that achieving high-quantity and high-quality entrepreneurship depends on various factors rather than a single factor. Similarly, in Nigeria, the city of Yaba in Lagos State is emerging as a tech startup hub, driven by private initiatives like Co-Creation Hub, despite limited government involvement. Supported by tertiary education institutions, banks, technical facilities, and robust physical infrastructure, Yaba's ecosystem has led to the emergence of numerous startups with ripple effects observed in other regions of Lagos, surpassing even

the startup activity in European city like Berlin (Gomez *et al.*, 2023; Tiba *et al.,* 2020). Hence, examining the evolving dynamics of the EE during crises is crucial for understanding how actors respond within the ecosystem during trying times. In light of the above, the study aimed to systematically review and synthesize research on EE in the context of the transformative impacts of the COVID-19 pandemic. The gathered studies included in this review came from five databases: Emerald, Elsevier, Sage, Springer, and Taylor & Francis. Databases selection resulted from their reputation for publishing a substantial number of peer-reviewed articles. This review is time-bound as it covers articles published between 2020 and 2023. The rationale behind this specific timeline is to concentrate on recent developments in the EE domain to examine unintended changes induced by the pandemic and its associated dynamics during this specified period. The subsequent sections of this article are structured as follows. Section 2 will describe the methodology adopted in the review. Section 3 will lay out the analysis and results. Finally, section 4 will provide a conclusion on general trends and areas for future studies.

RESEARCH METHODOLOGY

This study adopted the systematic quantitative assessment technique (SQAT) developed by Pickering and Byrne in 2014. This technique employs a systematic approach to evaluate articles for inclusion or exclusion in a review process. It emphasizes screening peer-reviewed original journal publications to ensure only a high-standard article is included (Pickering & Byrne, 2014). Moreover, SQAT enables the researcher to identify "important geographic, scalar, theoretical and methodological gaps in the literature" (Pickering & Byrne, 2014, p. 11). It follows a repeatable, logical and easily applicable pattern which are all important components of a systematic review (Zubairu, 2019). Finally, SQAT recommends five steps for an effective systematic review. Table 1 describes each step and how the current study applied it.

Table 1. Description and Application of SQAT

S/N	Step	Application in the current study
1	Define topic	Entrepreneurial ecosystem articles published between 2020 and 2023
2	Formulate research questions	Five research questions: 1. What is the time distribution of EE research articles? 2. In which countries were these articles written? 3. What methods were used to collect data? 4. What kind of EE articles were published? (conceptual vs. empirical) 5. What are the specific themes these articles explored, and what were the major findings in each theme?
3	Identify Keywords	"Entrepreneurial Ecosystem"
4	Identify and search databases	1. 5 databases utilized: Emerald, Elsevier, Sage, Springer, Taylor and Francis 2. "All in title search" using the phrase "Entrepreneurial Ecosystem"
5	Read and assess publications	1. Abstracts of articles found were read to ensure that they were dealing with an entrepreneurial ecosystem. 2. Literature reviews, book chapters and conference proceedings were not included; only peer-reviewed conceptual and empirical articles.

Source: own study, 2024.

A total of 122 peer-reviewed EE articles met the selection criteria from 6 prominent academic

Table 2. EE Articles reviewed by publisher (2020-2023)

S/N	Publisher	Number of EE Article
1	Emerald	28
2	Elsevier	32
3	Sage	8
4	Springer	20
5	Taylor and Francis	34
	Total	**122**

Source: own study, 2024.

journal publishers. Table 2 presents the EE articles breakdown by publisher.

RESULTS AND DISCUSSION

Time Distribution of EE Articles

Figure 1 presents the time distribution of the 122 entrepreneurial ecosystem (EE) articles examined in this study across the span of four years (2020-2023). The analysis disclosed a peak in 2021, when 40 articles were published, followed by 33 articles during the pandemic year of 2020. The research output exhibited a decline in 2022, with 29 articles. The lowest number of publications occurred in 2023, totalling 20 articles.

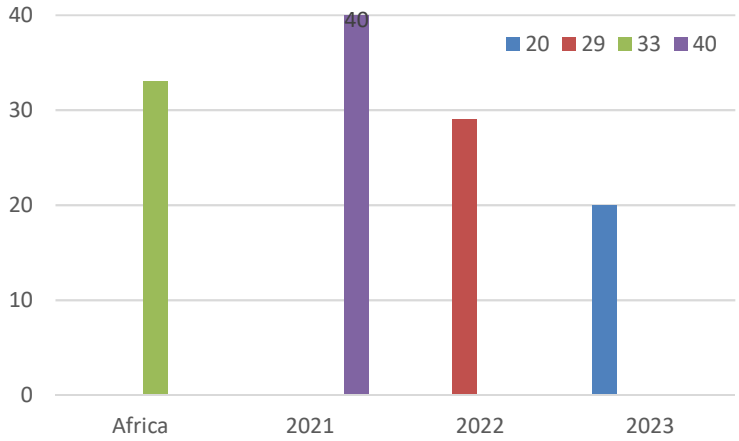


Figure 1. Time distribution of EE articles
Source: own elaboration.

Geographic Distribution of SL Articles

Figure 2 presents the geographic distribution of the 122 EE articles included in this study. The figure showed that Europe has the highest number of articles published (55), followed by Asia (21), Africa and North America (12) respectively, South America (4), and finally Australia (2). Australia had the least number of studies during the review period. To provide an additional perspective on the geographic distribution of EE articles during the review period, let us note that China had the greatest number of EE articles with 10, closely followed by the United States of America with nine, and then the United Kingdom with eight and finally, Italy with seven articles.

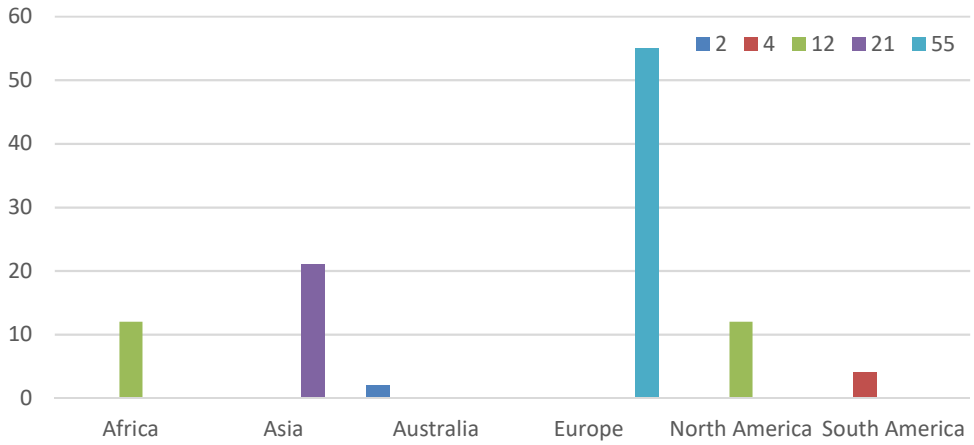


Figure 2. Geographic distribution of EE articles
Source: own elaboration.

Article type

The study adopted a distinction between conceptual and empirical articles. The distribution of the 122 articles based on this classification was: 16 conceptual and 106 empirical. A substantial majority of the reviewed articles, totalling 86% (106 out of 122), were empirical, while the remaining articles were conceptual. This observation is noteworthy, especially considering previous criticisms of EE research for its perceived lack of empirical support (Spigel & Harrison, 2017; Roundy, 2017). The post-COVID-19 period has witnessed a response to this critique, with a discernible shift towards addressing this gap through an increased focus on empirical studies in the field of EE.

Figure 3 below presents the different data collection methods employed by the 106 empirical EE articles reviewed for this study. The data reveals a predominant reliance on secondary data in 40 studies, indicating a significant trend within the field. Interviews emerged as the second most commonly employed method, with 30 studies opting for this approach. Questionnaires were also a frequent part of studies (19 cases), and then a subset of studies (15) adopted a mixed-methods approach, showcasing a growing recognition of the value of combining various data collection strategies. On the other hand, focus groups and observation methods were less frequent (each used once). The findings hold several implications for the EE field. The prevalence of secondary data usage suggests a reliance on pre-existing information and databases, potentially indicating the need for more original research and first-hand data collection efforts. The popularity of interviews and questionnaires highlights a commitment to engaging with participants directly, emphasizing the importance of personal perspectives and experiences in EE research.

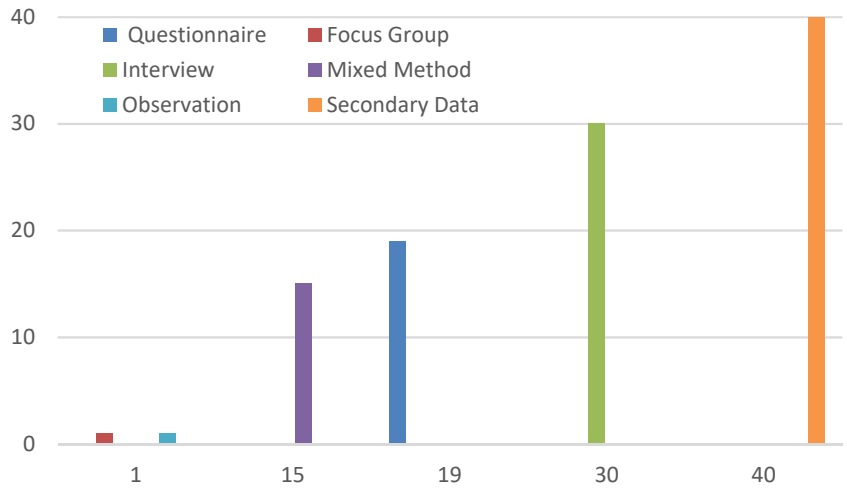


Figure 3. Data collection methods
Source: own elaboration.

Themes

Analysis of the 122 articles in the field of EE indicates that authors examined a diverse array of themes. Given that entrepreneurship draws its roots from disciplines such as economics, sociology, and management, a broad spectrum of issues will probably further enrich and influence the field, resulting in a multidisciplinary approach that enhances our understanding of entrepreneurial dynamics. To sieve through the diverse topics, the study categorized the examined variables into macro, meso, and micro levels. Only those variables highlighted in at least two articles are selected to contribute to the overarching theme. This methodical approach allows for a focused and comprehensive analysis, ensuring that the most recurrent and significant aspects are considered in shaping the overall understanding of the subject matter.

Table 3. EE theme categorization

Dominant variables	Variable category	Authors
Regional entrepreneurship, political entrepreneurship, SME aggregate performance, SME internationalization, SME support policy, ecosystem support policy	Macro	Ferreira *et al.,* 2023; Arabi & Abdalla, 2020; Theodoraki & Catanzaro, 2022; Audretsch & Belitski, 2021; Content *et al.,* 2020; Biru *et al.*, 2021; Jabulile & Buntu, 2022; Jabeur *et al.,* 2022; Sohns & Wójcik, 2020, Egere *et al.,* 2022.
Academic entrepreneurship, gender entrepreneurship, spin-offs,	Meso	Prencipe *et al.,* 2020; Abootorabi *et al.,* 2021; Prokop, 2020; Vega-Gómez *et al.,* 2020; Secundo *et al.,* 2021; Wang *et al.,* 2023; Robyn *et al.,* 2023; Longva, 2021; Motoyama *et al.,* 2021.
Measurement framework, ecosystem characteristics, intermediary organizations, resource allocation/acquisition;	Micro	Leendertse *et al.,* 2022; Rocha *et al.,* 2022; Kanesha *et al.,* 2023; Gueguen *et at.,* 2021; Johnson *et al.,* 2022, Hassen, 2020; Beyhan *et al.,* 2022; Torres & Godinho, 2022; Alaassar *et al.,* 2022; van Rijnsoever, 2020; Vardhan, J. & Mahato, 2022; Yang & Zhan, 2022; Scheidgen, 2020; Adams, 2021.

Source: own study, 2024.

Macro Level Theme

Dominant themes under the macro level include regional entrepreneurship (see Content *et al.,* 2020; Audretsch & Belitski, 2021; Arabi & Abdalla, 2020); SME aggregate performance (see Biru *et al.,* 2021; Ferreira *et al.,* 2023; Jabulile & Buntu, 2022). Prior studies demonstrate that factors such as economic environment, government and education levels are essential determinants of entrepreneurship (Jabeur *et al.,* 2022). Content *et al.* (2020) used a latent class model to analyze the relationship between entrepreneurial activity and economic growth across 25 European nations. Their findings revealed that regions with stronger entrepreneurial ecosystems, such as those in eastern Germany, experienced more positive impacts on economic growth, with Eastern member states recovering quicker from the COVID-19 crisis compared to regions like Ireland, Greece, and Spain. Scholars attributed these differences to differences in regional characteristics related to the quality of EE present in each region.

Furthermore, Audretsch and Belitski (2021) investigated the drivers of regional economic development within entrepreneurial ecosystems, focusing on creative industries across nine countries in Europe. Their study revealed that regions with a higher concentration of creative industries tend to attract productive entrepreneurship, leading to accelerated growth and significant impacts on regional economic development. Creative industries foster a culture of innovation, facilitating the accumulation of successful and innovative entrepreneurs who drive creativity and knowledge for sustained economic growth. Similarly, Arabi and Abdalla (2020) aimed to examine the components of EE influencing regional economic growth. Employing a survey of 106 manufacturing firms in Sudan, the results revealed that the human capital component exerted the most substantial impact on entrepreneurial activities. This discovery holds particular significance when juxtaposed with the economic context of European nations, showcasing a stark contrast between Sudan's less developed economy and the more advanced European economies. The similarity in findings across such disparate economic landscapes suggests the universal importance of human capital in fostering entrepreneurial activity.

Meso Level Theme

Moving to the meso-level theme, academic entrepreneurship has become a prominent subject of study within the entrepreneurial ecosystem. Among 122 studies reviewed, 14 examined various facets of academic entrepreneurship (see Prencipe *et al.,* 2020; Abootorabi *et al.,* 2021; Prokop, 2020; Vega-Gómez *et al.,* 2020; Secundo *et al.,* 2021; Wang *et al.,* 2023; Robyn *et al.,* 2023; Longva, 2021). Encour-

aging the development of University Spin-Offs (USOs) has become a crucial concern for both universities and governments due to their potential to generate value through research and knowledge transfer, thereby contributing to socio-economic growth.

Prencipe *et al.* (2020) conducted a cross-national analysis focusing on the growth of University USOs in Spain and Italy. While the regional context significantly influenced the growth of Spanish USOs in terms of both employment and sales, this effect was not observed for Italian USOs. The study suggested that factors such as the absence of technology transfer offices (TTOs), reduced regional public spending, cuts to public funds for Italian universities, and fragmented innovation policies across sectors might explain the limited impact of Italian regions on the growth of USOs.

In a similar study, Prokop (2020) examined four universities in the UK to determine the impact of EE on USOs adopting variables such as academic founders, incubators, access to VC, and the roles of TTOs and external entrepreneurs. The study revealed that the outcomes of university entrepreneurial ecosystems are contingent on the level of connectivity and filtration, with geographic characteristics also affecting the USOs' success.

Furthermore, Abootorabi *et al.* (2021) conducted a longitudinal study between 2000 and 2015. They analyzed USOs in Norway using 374 new ventures initiated within an academic setting that are either formed by a faculty member, staff member, or graduate student. They found higher economic activity in Oslo, Trondheim, and Kjeller, identified as industrial-academic hubs, suggesting that regional EEs with dense resources foster entrepreneurial dynamism. While incubation services initially supported startup survival, they did not significantly impact the long-term viability or growth of startups.

Micro Level Theme

Here, themes related to individual components of EE are examined in the reviewed articles at the micro level. The ones that at least two authors discussed include measurement framework (see Leendertse *et al.*, 2022; Johnson *et al.*, 2022; Rocha *et al.*, 2022; Rocha *et al.*, 2022); ecosystem characteristics (see Torres & Godinho, 2022; Kansheba *et al.*, 2023; Hassen, 2020; Gueneau *et al.*, 2022; Yang & Zhan, 2022); and intermediary organizations (see Vardhan & Mahato, 2022; Beyhan *et al.*, 2022; Alaassar *et al.*, 2022; Alaassar *et al.*, 2022; Rijnsoever, 2022). The scarcity of standardized metrics for evaluating entrepreneurial ecosystems (EE) has prompted concerns among researchers. Addressing this challenge, Leendertse *et al.* (2022) conducted pioneering research to create a unified dataset aimed at measuring EE at the regional level, identifying key elements such as physical infrastructure, finance, formal institutions, and talent as fundamental for fostering entrepreneurship.

On the other hand, Evan *et al.* (2022) proposed a comprehensive framework for measuring entrepreneurial ecosystems (EE), emphasizing the interdependence among entrepreneurs, enterprises, government entities, and research institutions. Their database, "APPRISE RDBMS," integrates various data sources to assess EE quality and performance, aiding policymakers in making informed decisions. Similarly, Rocha *et al.* (2022) utilized real-time event-based social media data and social network analysis to evaluate EE at macro, meso, and micro levels, revealing spatial concentration's significance, active technology and business communities, and individuals' belief in achieving outcomes through social interactions.

The EE characteristics was another prominent theme see Kansheba *et al.*, 2023; Hassen, 2020; Gueneau *et al.*, 2022; Yang & Zhan, 2022). Kanesheba *et al.* (2023) suggested that the performance of businesses within an ecosystem during crises can be understood by examining how the EE is affected. Drawing insights from a study conducted on a sample of 237 EE in Tanzania, the researchers investigated the role played by stakeholder engagement, collaboration, and support in the face of crises. The findings indicate that pandemic shocks, exacerbated by the stringent countermeasures implemented by governments, render EEs more vulnerable and have adverse effects on their quality and overall performance. Furthermore, Guéneau *et al.* (2022) adopted a mixed method of fuzzy-set qualitative comparative analysis and quantity graph theory to study closeness, cohesiveness, and inter-connectedness as attributes of EE network in five low-income African countries to determine its outcomes. The findings provided evidence supporting the idea that these attributes serve as foun-

dational elements contributing to the intensified total entrepreneurship activity (TEA) rate. In essence, the research identified strong closeness among EE actors as the primary and universally applicable causal condition for achieving a high TEA level or rate.

Furthermore, Hassen (2020) examined the forces shaping the entrepreneurial ecosystem (EE) in Qatar's ICT sector, identifying the rentier state model and the government's commitment to economic diversification as crucial factors. However, the rentier economy's reliance on oil revenue presented challenges, including a lack of STEM skills in the workforce and a prevailing preference for government employment among youth, which hinders entrepreneurial growth. Moreover, many entrepreneurs treated their businesses as supplementary income sources while maintaining public sector jobs, resulting in a lower incentive for full commitment to entrepreneurial ventures and potentially stagnating TEA levels.

The last sub-theme under the micro level theme that emerged from the review articles was intermediary organizations related to accelerators and incubators (see Vardhan & Mahato, 2022; Beyhan *et al.*, 2022; Alaassar *et al.*, 2022; Rijnsoever, 2022). Intermediary entities are inherently important in the ecosystem in facilitating and accelerating the integration of new ideas. Vardhan and Mahato (2022) analyzed 937 universities partnered with incubators in India, focusing on variables such as location, affiliation, innovation activities, and Ease of Doing Business (EODB). Their findings revealed a significant lack of engagement in innovation activities among state universities, with half of the universities in each category showing no participation in entrepreneurial initiatives. Moreover, they discovered a negative correlation between EODB and the presence of business incubators, suggesting universities' ineffective strategy in translating knowledge into meaningful services through innovative practices.

Furthermore, Beyhan *et al.* (2022) explored how accelerators establish their identity and mobilize resources to attain legitimacy, identifying two main strategies: "deal flow makers" and "welfare stimulators." These categories differ in various dimensions, particularly in their strategic focus, funding structure, and program design, with deal flow makers prioritizing attracting private investors by nurturing startups and welfare stimulators focusing on enhancing entrepreneurial skills and activities among founders.

CONCLUSIONS

The study was a systematic review of the EE research landscape aiming to shed light on thematic trends within the domain in the aftermath of the COVID-19 pandemic. The SQAT methodology served to evaluate articles for inclusion. Previous systematic reviews conducted in this domain after the pandemic focused on examining measurement frameworks, methodologies, theories, geographic and industry focus, as well as analysis unit (Mago & Merwe, 2023). This study adopted a different approach to pinpoint emerging thematic trends and unravel tropical issues addressed by researchers. The review article addressed a gap in the EE research domain by providing an overview of research priorities in the aftermath of COVID-19. The review themes were collated into three categories reflecting the analysis level. At the macro level, regional entrepreneurship and its impact on economic growth garnered the most studies with most authors dedicated to exploring the theme. Entrepreneurship is often demonstrated as a means of creating economic prosperity through the exploitation of opportunities inherent in a given environment (Neck & Greene, 2010). Research on entrepreneurship seems to suggest that the level of entrepreneurial activity varies meaningfully across countries and regions (Naude, 2018). Research increasingly establishes a connection between the upsurge in entrepreneurial activities to externalities within specific geographically bounded locations (Prencipe *et al.,* 2020; Prokop, 2020; Audretsch & Belitski, 2021). This underlines the pivotal role of geography as knowledge tends to flourish within the space of localized networks deeply embedded in specific regions. In essence, the evidence suggests that the spatial context significantly influences the development of entrepreneurial activities through the dynamics of localized networks.

It is pertinent to highlight that China, the epicentre of the pandemic, emerged as the most prolific region in EE research following the global health crisis. The prevalence of research output from this region is particularly noteworthy, and it is not merely coincidental. A substantial portion of the articles emanating from China focuses on regional entrepreneurship, the digital transformation of traditional

industries, and policies specifically aimed at fostering the creation of more unicorns (Yang *et al.,* 2022; Teresa *et al.,* 2023; Wang *et al.,* 2023; Song *et al.,* 2022; Yang & Zhang, 2022). This convergence of research themes strongly implies a deliberate and strategic focus, suggesting that the geographical context, compounded by the impact of the pandemic, has fuelled a concentrated effort in China towards investigating and promoting key facets of entrepreneurial development.

At the meso level, academic entrepreneurship was the most prominent research dimension after the pandemic focusing on diverse variables such as USOs, university-community collaborations, student venture creation and financing commercialization of university research. A significant proportion of the research originated in Europe (see Atonio *et al.,* 2020; Satu *et al.,* 2023; Stolz, 2023). We may attribute this prevalence primarily to the accessibility of public funding sources dedicated to R&D and the commercialization of innovative solutions in the region. The academic landscape plays a dual role in facilitating entrepreneurship, manifesting in two key ways. Firstly, academia serves as a conduit for fostering entrepreneurship by actively engaging in the commercialization of research outcomes. This is particularly crucial given the scarcity of individuals possessing both entrepreneurial capabilities and research expertise. The translation of academic research into viable commercial solutions not only contributes to economic development but also addresses the gap in entrepreneurial talent. Secondly, academia contributes to entrepreneurship by creating awareness about entrepreneurial opportunities and instilling the requisite entrepreneurial behaviour. This is achieved through an experiential learning approach, which equips aspiring entrepreneurs with practical insights and skills to translate ideas into products.

At the micro level, research focused on ecosystem characteristics within the EE domain. Given the severity of the pandemic's impact, the dynamics of the EE domain were inevitably influenced in significant ways thereby leading scholars to direct their attention towards understanding how these characteristics have evolved or adapted in response to the unprecedented challenges posed by the pandemic (Pocek, 2022). The focus here revolved around the important role of informal ties within the EE, particularly in accentuating the functions of intermediary organisations. These intermediaries play a critical role as connectors, facilitating the flow of a wide array of resources to entrepreneurs. Moreover, the efficacy of the EE network is contingent upon the expert management of relationships, establishing robust communication ties that align with both local and national agendas. Furthermore, the cultivation of a shared collaborative culture stands out as a key determinant in the success of the ecosystem.

This review acknowledges certain limitations that provide opportunities for refinement in future research. Firstly, the scope of the study was confined to articles published exclusively on platforms such as Emerald, Elsevier, Sage, Springer, Taylor and Francis. This selective approach might have resulted in the exclusion of valuable studies on EE published by other publishers during the period. Future researchers could broaden the selection criteria to cover a more diverse range of publishing sources. Secondly, the inclusion criterion focused solely on articles explicitly featuring "entrepreneurial ecosystem" in their titles. This might have overlooked relevant contributions, in which authors did not employ the term in their titles. A more expansive search strategy could address this limitation by considering articles that explore EE without necessarily having it in their titles. Lastly, the timeframe for article selection was constrained to the years 2020 to 2023, introducing a temporal limitation to the study. Future research could benefit from a more extensive temporal scope to capture a broader spectrum of EE developments and ensure a more comprehensive understanding of the field's evolution.

REFERENCES

Abootorabi, H., Wiklund, J., Johnson, A.R., & Miller, C.D. (2021). A holistic approach to the evolution of an entrepreneurial ecosystem: An exploratory study of academic spin-offs. *Journal of Business Venturing*, *36*(5), 106143. https://doi.org/10.1016/j.jbusvent.2021.106143

Adams, S.B. (2021). From orchards to chips: Silicon Valley's evolving entrepreneurial ecosystem. In S.B. Adams (Ed.) *The Dynamics of Entrepreneurial Ecosystems* (pp. 15-35). Routledge. https://doi.org/10.1080/08985626.2020.1734259

Acharya, V.V., & Steffen, S. (2020). The risk of being a fallen angel and the corporate dash for cash in the midst of COVID. *The Review of Corporate Finance Studies, 9*(3), 430-471. https://doi.org/10.1093/rcfs/cfaa013

Aga, G., & Maemir, H. (2021). COVID-19 and African Firms: Impact and Coping Strategies. Policy Research Working Paper 9642.

Alaassar, A., Mention, A.L., & Aas, T.H. (2022). Ecosystem dynamics: Exploring the interplay within fintech entrepreneurial ecosystems. *Small Business Economics, 58*(4), 2157-2182. https://doi.org/10.1007/s11187-021-00505-5

Arabi, N.G., & Abdalla, A.M. (2020). The role of ecosystem for entrepreneurship development in Sudan. World Journal of Entrepreneurship. *Management and Sustainable Development, 16*(4), 307-326. https://doi.org/10.1108/WJEMSD-09-2019-0075

Audretsch, D.B., & Belitski, M. (2021). Towards an entrepreneurial ecosystem typology for regional economic development: The role of creative class and entrepreneurship. *Regional Studies, 55*(4), 735-756. https://doi.org/10.1080/00343404.2020.1854711

Barboza, G., & Capocchi, A. (2020). Innovative startups in Italy. Managerial challenges of knowledge spillovers effects on employment generation. *Journal of Knowledge Management, 24*(10), 2573-2596. https://doi.org/10.1108/jkm-08-2019-0436

Bartik, A.W., Bertrand, M., & Cullen, Z.B. (2020). How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey (No. w26989). Cambridge, MA: National Bureau of Economic Research.

Bekaert, G., Engstrom, E., & Ermolov, A. (2020). Aggregate demand and aggregate supply effects of COVID-19: A real-time analysis. FEDS Working Paper No. 2020-49 https://doi.org/10.17016/FEDS.2020.049

Beyhan, B., Akcomak, I.S., & Cetindamar, D. (2024). How do technology-based accelerators build their legitimacy as new organizations in an emerging entrepreneurship ecosystem?. *Journal of Entrepreneurship in Emerging Economies*, *16*(4), 954-976. https://doi.org/10.1108/JEEE-06-2022-0161

Biru, A., Gilbert, D., & Arenius, P. (2021). Unhelpful help: the state of support programmes and the dynamics of entrepreneurship ecosystems in Ethiopia. *Entrepreneurship & Regional Development, 33*(1-2), 108-130 https://doi.org/10.1080/08985626.2020.1734267

Brown, R., Rocha, A., & Cowling, M. (2020). Financing entrepreneurship in times of crisis: exploring the impact of COVID-19 on the market for entrepreneurial finance in the United Kingdom. *International Small Business Journal, 38*(5), 380-390. https://doi.org/10.1177/0266242620937464

Carree, M., Congregado, E., Golpe, A., & van Stel, A. (2015). Self-Employment and Job Generation in Metropolitan Areas, 1969-2009. *Entrepreneurship & Regional Development, 27*(3-4) 181-201. https://doi.org/10.1080/08985626.2015.1025860

Content, J., Bosma, N., Jordaan, J., & Sanders, M. (2020). Entrepreneurial ecosystems, entrepreneurial activity and economic growth: new evidence from European regions. *Regional Studies, 54*(8), 1007-1019. https://doi.org/10.1080/00343404.2019.1680827

Doran, J., Noirin, M., & Marie, O. (2016). Entrepreneurship and Employment Growth across European Regions. Regional Studies. *Regional Science, 3*(1), 121 128. https://doi.org/10.1080/21681376.2015.1135406

Egere, O.M., Maas, G., & Jones, P. (2022). A critical analysis of the Nigerian entrepreneurial ecosystem on transformational entrepreneurship. *Journal of Small Business Management*, *62*(3), 1187-1218. https://doi.org/10.1080/00472778.2022.2123109

Fernandes, A.J., & Ferreira, J.J. (2022). Entrepreneurial ecosystems and networks: a literature review and research agenda. *Review of Managerial Science, 16*(1), 189-247. https://doi.org/10.1007/s11846-020-00437-6

Ferreira, J.J., Fernandes, C.I., & Veiga, P.M. (2023). The role of entrepreneurial ecosystems in the SME internationalization. *Journal of Business Research, 157*, 113603. https://doi.org/10.1016/j.jbusres.2022.113603

Gamidullaeva, L.A., Vasin, S.M., & Wise, N. (2020). Increasing small-and medium-enterprise contribution to local and regional economic growth by assessing the institutional environment. *Journal of Small Business and Enterprise Development, 27*(2), 259-280. https://doi.org/10.1108/JSBED-07-2019-0219

Gómez, G.M., Chawla, S., & Fransen, J. (2020). Exploring the entrepreneurial ecosystem within the informal economy with a multifactor framework. *Urban Studies and Entrepreneurship*, 181-202. https://doi.org/10.1007/978-3-030-15164-5_10

Gómez, G.M., Manya, V., & Fransen, J. (2023). Vital entrepreneurial ecosystems: The case of ICT in Yaba, Nigeria. *Cities, 137*, 104289. https://doi.org/10.1016/j.cities.2023.104289

Guéneau, G., Chabaud, D., & Sauvannet, M.C.C. (2022). Opening entrepreneurial ecosystem's black box: the power of networks in African low-income countries. *International Entrepreneurship and Management Journal*, *18*(2), 753-772. https://doi.org/10.1007/s11365-021-00775-1

Guerrero, M., Liñán, F., & Cáceres-Carrasco, F.R. (2021). The influence of ecosystems on the entrepreneurship process: a comparison across developed and developing economies. *Small Business Economics, 57*(4), 1733-1759. https://doi.org/10.1007/s11187-020-00392-2

Hassen, T.B. (2020). The entrepreneurship ecosystem in the ICT sector in Qatar: Local advantages and constraints. *Journal of Small Business and Enterprise Development, 27*(2), 177-195. https://doi.org/10.1108/JSBED-04-2019-0119

Jabeur, S.B., Ballouk, H., Mefteh-Wali, S., & Omri, A. (2022). Forecasting the macrolevel determinants of entrepreneurial opportunities using artificial intelligence models. *Technological Forecasting and Social Change, 175*, 121353. https://doi.org/10.1016/j.techfore.2021.121353

Jabulile, M., & Buntu, M. (2022). Mapping the needs and challenges of SMEs: A focus on the city of Johannesburg entrepreneurship ecosystem. *Cogent Business & Management*, *9*(1), 2094589, https://doi.org/10.1080/23311975.2022.2094589

Johnson, E., Hemmatian, I., Lanahan, L., & Joshi, A.M. (2022). A framework and databases for measuring entrepreneurial ecosystems. *Research Policy, 51*(2), 104398. https://doi.org/10.1016/j.respol.2021.104398

Leendertse, J., Schrijvers, M., & Stam, E. (2022). Measure twice, cut once: Entrepreneurial ecosystem metrics. *Research Policy, 51*(9), 104336. https://doi.org/10.1016/j.respol.2021.104336

Longva, K.K. (2021). Student venture creation: developing social networks within entrepreneurial ecosystems in the transition from student to entrepreneur. *International Journal of Entrepreneurial Behavior & Research, 27*(5), 1264-1284. https://doi.org/10.1108/IJEBR-09-2020-0661

Kansheba, J.M.P., Marobhe, M.I., & Wald, A.E. (2023). Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders Engagement, Collaboration, and Support. *Journal of African Business, 24*(2), 214-234. https://doi.org/10.1080/15228916.2022.2078933

Mago, S., & van der Merwe, S. (2023). Exploring Entrepreneurial Ecosystems in Developed Countries: A Systematic Review. *SAGE Open, 13*(4), 21582440231217886. https://doi.org/10.1177/21582440231217886

Malliet, P., Reynès, F., Landa, G., Hamdi-Cherif, M., & Saussay, A. (2020). Assessing short-term and long-term economic and environmental effects of the COVID-19 crisis in France. *Environmental and Resource Economics, 76*(4), 867-883. https://doi.org/10.1007/s10640-020-00488-z

Motoyama, Y., Muntean, S.C., Knowlton, K., & Ozkazanc-Pan, B. (2021). Causes of the gender divide within entrepreneurship ecosystems. *Local Economy, 36*(3), 187-204. https://doi.org/10.1177/0269094221995783

Naude, W., Gries, T., Wood, E., & Meintjies, A. (2008). Regional determinants of entrepreneurial start-ups in a developing country. *Entrepreneurship and Regional Development, 20*(2), 111-124. https://doi.org/10.1080/08985620701631498

Neck, H.M., & Greene, P.G. (2010). Entrepreneurship education: Known worlds and new frontiers. *Journal of Small Business Management, 49*(1), 55-70. https://doi.org/10.1111/j.1540–627x.2010.00314.x

Padilla-Meléndez, A., Fuster, E., Lockett, N., & del-Aguila Obra, A.R. (2020). Knowledge spillovers, knowledge filters and entrepreneurial university ecosystems: Emerging role of university-focused venture capital firms. *Knowledge Management Research & Practice*. https://doi.org/10.1080/14778238.2020.1740626

Pickering, C., & Byrne, J. (2014). The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers. *Higher Education Research & Development, 33*(3), 534-548. https://doi.org/10.1080/07294360.2013.841651

Prencipe, A., Corsi, C., Rodríguez-Gulías, M.J., Fernández-López, S., & Rodeiro-Pazos, D. (2020). Influence of the regional entrepreneurial ecosystem and its knowledge spillovers in developing successful university spin-offs. *Socio-Economic Planning Sciences, 72*, 100814. https://doi.org/10.1016/j.seps.2020.100814

Pocek, J. (2022). Tendencies towards integration and disintegration of the entrepreneurial ecosystem: an institution-based view of the dynamics. *European Planning Studies, 30*(12), 2575-2594. https://doi.org/10.1080/09654313.2022.2043831

Prokop, D. (2021). University entrepreneurial ecosystems and spinoff companies: Configurations, developments and outcomes*. Technovation, 107*, 102286.

Robyn, O., Lakshmi, N.V., & Javed, H. (2023). The role of the university entrepreneurial ecosystem in entrepreneurial finance: case studies of UK innovation knowledge centres. *Venture Capital*, https://doi.org/10.1080/13691066.2023.2205606

Rocha, A., Brown, R., & Mawson, S. (2022). Reprint of: Capturing conversations in entrepreneurial ecosystems. *Research Policy, 51*(9), 104666. https://doi.org/10.1016/j.respol.2022.104666

Roundy, P.T. (2017). Small town' entrepreneurial ecosystems. *Journal of Entrepreneurship in Emerging Economies, 9*(3), 238-262. https://doi.org/10.1108/jeee–09–2016–0040

Sambo, W. (2018). A Conceptual Study of an Intrapreneurship Ecosystem at South African Universities. *Problemy Zarzadzania-Management Issues, 16*(1), 192-215. https://doi.org/10.7172/1644-9584.73.12

Satu, R., Suvi, K., & Katja, L. (2023). University as an opportunity space enabler in a regional entrepreneurial ecosystem. *European Planning Studies, 32*(5), 1010-1028. https://doi.org/10.1080/09654313.2023.2246522

Secundo, G., Mele, G., Del Vecchio, P., & Degennaro, G. (2021). Knowledge spillover creation in university-based entrepreneurial ecosystem: the role of the Italian "Contamination Labs". *Knowledge Management Research & Practice, 19*(1), 137-151. https://doi.org/10.1080/14778238.2020.1785347

Scheidgen, K. (2021). Degrees of integration: how a fragmented entrepreneurial ecosystem promotes different types of entrepreneurs. In *The Dynamics of Entrepreneurial Ecosystems* (pp. 76-101). Routledge. https://doi.org/10.1080/08985626.2020.1734263

Sohns, F., & Wójcik, D. (2020). The impact of Brexit on London's entrepreneurial ecosystem: The case of the FinTech industry. *Environment and Planning A: Economy and Space, 52*(8), 1539-1559. https://doi.org/10.1177/0308518X20925820

Song, Y., Escobar, O., Arzubiaga, U., & De Massis, A. (2022). The digital transformation of a traditional market into an entrepreneurial ecosystem. *Review of Managerial Science*, *16*(1), 65-88. 1-24. https://doi.org/10.1007/s11846-020-00438-5

Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49-72. https://doi.org/10.1111/etap.12167

Spigel, B., & Harrison, R. (2017). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal, 12*(1), 151-168. https://doi.org/10.1002/sej.1268

Stam, E. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies, 23*(9), 1759-1769. https://doi.org/10.1080/09654313.2015.1061484

Stolz, L. (2023). Start-up competitions as anchor events in Entrepreneurial Ecosystems: first findings from two German regions. *Geografiska Annaler: Series B, Human Geography*, *105*(1), 38-57. https://doi.org/10.1080/04353684.2022.2052739

Teresa, S.P., Chia-Hsuan, W., & Meng-Chun, L. (2023). Developing entrepreneurial ecosystem: a case of unicorns in China and its innovation policy implications. *Asian Journal of Technology Innovation*, https://doi.org/10.1080/19761597.2022.2157849

Tiba, S., van Rijnsoever, F.J., & Hekkert, M.P. (2020). The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of entrepreneurial ecosystems. *Journal of Cleaner Production, 264*, 121616. https://doi.org/10.1016/j.jclepro.2020.121616

Torres, P., & Godinho, P. (2022). Levels of necessity of entrepreneurial ecosystems elements. *Small Business Economics, 59*(1), 29-45. https://doi.org/10.1007/s11187-021-00515-3

van Rijnsoever, F.J. (2022). Intermediaries for the greater good: How entrepreneurial support organizations can embed constrained sustainable development startups in entrepreneurial ecosystems. *Research Policy, 51*(2), 104438. https://doi.org/10.1016/j.respol.2021.104438

Vardhan, J., & Mahato, M. (2022). Business incubation centres in Universities and their role in developing entrepreneurial ecosystem. *Journal of Entrepreneurship and Innovation in Emerging Economies, 8*(1), 143-157. https://doi.org/10.1177/23939575211034056

Vega-Gómez, F.I., Miranda González, F.J., & Pérez-Mayo, J. (2020). Analysing the effects of institutional-and ecosystem-level variables on university spin-off performance. *SAGE Open, 10*(2), 2158244020931116. https://doi.org/10.1177/2158244020931116

Wang, Q., Li, Y., Yang, Y., Little, M.G., Basnight, E.B., & Fryberger, C.B. (2023). University-led entrepreneurship ecosystem building in underserved communities: from a network perspective. *Geographical Review*, *114*(3), 353-377.1-25. https://doi.org/10.1080/00167428.2023.2256000

Wairimu, W.W. (2015). Micro, small and medium-size enterprises (MSMEs) as suppliers to the extractive industry. United Nations Development Programme Report.

Xie, Z., Wang, X., Xie, L., & Duan, K. (2021). Entrepreneurial ecosystem and the quality and quantity of regional entrepreneurship: A configurational approach. *Journal of Business Research, 128*, 499-509. https://doi.org/10.1016/j.jbusres.2021.02.015

Yang, P., Liu, X., Hu, Y., & Gao, Y. (2022). Entrepreneurial ecosystem and urban economic growth-from the knowledge-based view. *Journal of Digital Economy, 1*(3), 239-251. https://doi.org/10.1016/j.jdec.2023.02.002

Yang, J., & Zhang, M. (2022). Coopetition within the entrepreneurial ecosystem: Startups' entrepreneurial learning processes and their implications for new venture performance. *Journal of Business & Industrial Marketing, 37*(9), 1867-1886. https://doi.org/10.1108/JBIM-02-2021-011210

Zhang, X. (2020). Chinese livestock farms struggle under COVID-19 restrictions. IFPRI book chapters, 84-85.

Zhang, Y., Diao, X., Chen, K.Z., Robinson, S., & Fan, S. (2020). Impact of COVID-19 on China's macroeconomy and agri-food system–an economy-wide multiplier model analysis. *China Agricultural Economic Review, 12*(3), 387-407. https://doi.org/10.1108/CAER-04-2020-0063

Authors

The contribution share of authors is equal and amounted to ⅓ for each of them.

Hanson Kufre
A research student at the Department of Entrepreneurship, Federal University of Technology, Minna (Nigeria). His research interests include entrepreneurial ecosystems, entrepreneurial universities, and digital entrepreneurship.
Correspondence to: Hanson Kufre, Department of Entrepreneurship, FUT Minna, Nigeria P.M.B 65, e-mail: kufreme@futminna.edu.ng
ORCID https://orcid.org/0009-0005-1916-0383

Zubairu Umar
Professor of Business at Arizona Western College in the United States of America, long-time educator and researcher. His research interests include leadership, entrepreneurial finance, and ethics.
Correspondence to: Professor Umaru Zubairu, Arizona Western College, Yuma, Arizona, United States of America. e-mail: umaru.zubairu@azwestern.edu
ORCID https://orcid.org/0000-0001-9498-233X

Abdulwaheed Dauda
A senior lecturer in the Department of Entrepreneurship, Federal University of Technology, Minna (Nigeria). His research interests include family business, entrepreneurial ecosystem, and economics.
Correspondence to: Abdulwaheed Dauda, Department of Entrepreneurship, FUT Minna, Nigeria P.M.B 65. e-mail: d.waheed@futminna.edu.com
ORCID https://orcid.org/0009-0008-1892-4793

Acknowledgements and Financial Disclosure

No funding was received for this study.

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.

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.03

Enhancing the relationship between firm's green innovation and external knowledge flows: A review and research agenda

Aleksandra Zygmunt

ABSTRACT

Objective: The objective of the article is to review the current literature on enhancing the relationship between the firm's green innovation and external knowledge flows.

Research Design & Methods: This study adopts a systematic literature review approach. The articles reviewed were abstracted from Scopus and Web of Science as the main significant scientific indexing platforms. The scope of the review was not limited in time.

Findings: The review suggests that despite the novelty of the topic, the research on enhancing external knowledge flows for the firm's green innovation raises a variety of issues. Among these, established cooperation, network cohesion, and resource flexibility are the most frequently studied areas in the field.

Implications & Recommendations: Despite previous studies on external knowledge flows for green innovation, the review indicates that there is still a need to further explore the issues related to enhancing the firm's interactions with external partners for green innovation. This article provides further guidance to scholars by identifying potential future research avenues. In this context, to explore potential interdependencies, relevant future research could consider more cross-country and cross-regional aspects. More in-depth research on a single sector and a single type of external knowledge provider would also be valuable. The study also proposes to further improve the conditions for firms to strengthen external knowledge flows for green innovation.

Contribution & Value Added: This article adds to the existing knowledge on the drivers of firm innovation by reviewing the relevant literature on the links between the firm's green innovation performance and external knowledge flows. Specifically, this review contributes to the field by providing insights into the enhancement of the relationship between external knowledge flows and the firm' green innovation.

Article type:	research article
Keywords:	the firm's green innovation; external knowledge flows; systematic literature review; Scopus; Web of Science
JEL codes:	O10, O30

Received: 12 February 2024 | Revised: 10 July 2024 | Accepted: 28 August 2024

Suggested citation:
Zygmunt, A. (2025). Enhancing the relationship between firm's green innovation and external knowledge flows: A review and research agenda. *International Entrepreneurship Review,* 11(1), 37-56. https://doi.org/10.15678/IER.2025.1101.03

INTRODUCTION

Innovation and its determinants have attracted the attention of many scholars over the years (Lawson & Samson, 2001; Zygmunt, 2018; Lehnert *et al.*, 2020; Audretsch & Belitski, 2020; Fitsch *et al.*, 2020; Gritlsch, 2021). In this context, the notion of external knowledge flows has gained increasing interest over the last decade as an essential driver of firms' innovation activities (Rudawska & Kowalik, 2019; Kocot & Kocot, 2020; Uchańska-Bieniusiewicz & Obłój, 2023; Audretsch & Belitski, 2024). This is because external knowledge providers are seen as crucial for the innovativeness of firms and, consequently, for the innovativeness of regions and countries (Urbaniec, 2020; Zygmunt, 2022). Regarding innovation, the concept of green innovation has recently gained attention as an ongoing concern for the firm's innovation performance and the sustainable development of regions and countries (Cooke,

2013; Wang *et al.*, 2023). This is because green innovation stimulates the competitive advantage of firms by incorporating the need to reduce energy consumption and pollutant emissions (Díaz-García *et al.*, 2015; He *et al.*, 2021). Following the premise that green innovation contributes significantly to the economic development of firms, regions, and countries, external knowledge flows in the firm's green innovation performance have gained more and more interest (Marzucchi & Montresor, 2017; Tu & Wu, 2021) becoming prominent research field. The rising call for studies in this area has stimulated systematic literature reviews, which have improved the understanding of this phenomenon. Such systematic literature reviews are provided, for example, by Díaz-García *et al.* (2015) or Melander and Arvidsson (2022), who identified external knowledge flows as a crucial driver of green innovation and suggested the need for further research that expands insights on external knowledge flows and the firms' green innovation. However, despite the number of systematic literature reviews in this area, there seems to be a lack of integrated understanding of how to enhance the firm's interactions with external partners for green innovation. This study aims to address this gap and develop the existing systematic literature reviews in this area. Therefore, the study aimed to review the current literature on enhancing the relationship between the firm's green innovation and external knowledge flows. In this regard, a systematic literature review was conducted to summarise the existing studies in this field. The articles for the study were extracted from Scopus and Web of Science as the main research databases. For the systematic literature review, the protocols for systematic literature review proposed by Tranfield *et al*. (2003) and Snyder (2019) were adopted.

A key contribution of this article is to systematically analyse the current state of the art in the area of enhancing of the relationship between the firm's green innovation performance and external knowledge flows and to suggest future research in this area. The study also provides an original contribution to the ongoing debate on external knowledge flows and the firms' green innovation.

This article is arranged as follows. The next section will provide a brief literature review in the field. The third section will outline the data sources and methodology adopted for the systematic review with emphasis on planning and sample selection stages. The fourth section will illustrate the descriptive analysis of the review in terms of time evolution, geography of the articles, journals, authors and the studies' profile. This section will also report the results of an in-depth review of articles on the links between the firm's green innovation and external partners with particular attention on enhancing the relationship between the firm's green innovation performance and external knowledge flows. This section will also present future lines of research. The last section will discuss the main implications and limitations.

LITERATURE REVIEW

Literature discussing innovation and its determinants has recently paid special interest to issues related to green innovation as crucial for the competitiveness of firms and the sustainable development of regions and countries (Wang *et al.*, 2023). Studies in this area have paid particular attention to the firm's links with external knowledge providers as essential for the firm's green processes (Tu & Wu, 2021). In this respect, the existing literature considers particularly the triple helix agents that provide knowledge for green innovation (Arfi *et al.*, 2018; Bai *et al.*, 2021): the research system, government and local authorities, and other firms. In this context, universities and research institutions are regarded as key actors in supporting green innovation (Arfi *et al.*, 2018) through access to expert knowledge related to green information and technology (Bai *et al.*, 2021) and highly skilled human capital, which is essential for accelerating green innovation (He *et al.*, 2021). The literature in the area has also highlighted the role of government and local authorities in providing relevant regulations related to the reduction of energy consumption and pollutant emissions, subsidies and other support instruments as pivotal to promoting and stimulating the firm's green innovation (Klewitz *et al.*, 2012; Ma *et al.*, 2019). Relevant literature has also highlighted the importance of networks between firms for green innovation (Janahi *et al.*, 2022). In this context, the studies devote special attention to suppliers, customers, and competitors (Arfi *et al.*, 2018). Here, suppliers are seen as providers of knowledge related to, among others, the value chain focused on the development of green innovation (Marzucchi & Montresor, 2017), while customers are regarded as providers of knowledge about

current changes in market trends and customers attitudes towards environmental issues (Ma *et al.*, 2022). On the other hand, competitors are seen as a source of knowledge about new green technologies or products (Arranz *et al.*, 2022).

The considerable research interest in the firm's green innovation and external knowledge flows is reflected in numerous systematic literature reviews on green innovation. In this regard, for example, Díaz-García *et al.* (2015), who analysed 384 articles on green innovation, have identified external knowledge flows as an important macro- and meso-level driver of green innovation, while Klewitz and Hansen's (2014) systematic literature review of 45 articles highlights knowledge diffusion as a key barrier for the sustainable development of small and medium-sized enterprises (SMEs). Regarding the importance of external knowledge flows for the firms' green innovation, Melander (2017) focuses specifically on this area in a systematic literature review. Reviewing 67 articles, Melander (2017) pays particular attention to the drivers of collaboration in relation to green product innovation. External knowledge flows in the context of green processes were also the subject of a systematic literature review of 35 articles provided by Pereira *et al.* (2020). Here, the importance of inter-organisational cooperation was of particular interest. Meanwhile, Sanni and Verdolini (2022) reviewed 288 articles and placed particular emphasis on the knowledge structure for green innovation, pointing to the role of external knowledge providers for open innovation in relation to green processes. Another systematic review, which also motivated this research comes from Melander and Arvidsson (2022). This review of 63 articles further deepens the consideration of the relevance of external knowledge providers for the firm's green innovation.

Thus, the ongoing importance of the links between green innovation performance and external knowledge flows has led to further exploration of this area and the extension of existing systematic reviews in this respect. In particular, this research is motivated by the need to further expand the understanding of external knowledge flows for the firm's green innovation. In this regard, this study extends the previous ones by including articles that are not confined to selected subject areas and journals. It also expands the previous systematic literature reviews by providing insights about enhancing the relationship between the firm's green innovation and external knowledge flows as the existing literature exploring this area lacks a comprehensive review of this emerging phenomenon. Therefore, through a systematic literature review of previous research studies, this study aims to explore the enhancement of the firm's interactions with external partners for green innovation. In doing so, it addresses the following research questions:

RQ1: What existing research covers the enhancement of the relationship between the firm's green innovation and external knowledge flows?

RQ2: What are the main research areas that address the enhancement of the firm's interactions with external partners for green innovation?

To answer these questions, a systematic literature review was conducted to summarise the existing studies in this field. The articles for the study were extracted from Scopus and Web of Science as the main research databases.

RESEARCH METHODOLOGY

Study Design

The systematic literature review was chosen as the appropriate research approach to address the research questions. The use of this research approach lies in providing a transparent and explicit in-depth study that contributes to a more comprehensive understanding of research trends and paths (Tranfield *et al.*, 2003; Snyder, 2019). This research follows the commonly used protocols for systematic literature reviews proposed by Tranfield *et al.* (2003) and Snyder (2019). Based on this, the following stages were applied (Silva *et al.*, 2020): planning, sample selection, descriptive analysis, and thematic analysis. The first stage involves locating studies, identifying keywords, and constructing a string based on keywords (Tranfield *et al.*, 2003). The second stage concerns the identification of inclusion/exclusion criteria, the selection of studies for review and the establishment of a protocol for coding and structuring the arti-

cles analysed (Snyder, 2019). The next stage refers to the literature categorisation (Silva *et al.*, 2020), while the final stage involves an in-depth review of the articles.

Planning

For the selection of articles, Scopus and Web of Science were used as the main significant scientific indexing platforms (Ding *et al.*, 2016). The keywords for the database search were determined on the basis on relevant works in the field of the firms' green innovation performance and external knowledge flows (Marzucchi & Montresor, 2017; Tu & Wu, 2021) to find articles dealing with the research topic. Thus, the search included the keywords: 'green innovat*,' 'eco-innovat*,' 'ecologic* innovat*,' 'environment* innovat*,' 'sustainab* innovat*,' 'firm* green innovat*' as related to the firm's green innovation performance. The search also contained the keywords: 'knowledge shar*,' 'knowledge diffusion,' 'knowledge flow*,' 'external knowledge* shar*,' 'external knowledge diffusion,' 'external knowledge flow*,' 'cooperat*,' 'collaborat*,' 'network*,' 'external linkage*,' 'external relation*,' 'research system,' 'science,' 'universit*,' 'research institut*,' 'research organi*,' 'research centre*,' 'local authorit*,' 'government*,' 'other firm*,' 'expert*,' 'supplier*,' 'customer*,' 'competitor*,' 'external partner*' as associated with external knowledge flow. The asterisk (*) was used to include as many studies as possible. The identification of keywords allows to construct the following search string:

> (('green innovat*' OR 'eco-innovat*' OR 'ecologic* innovat*' OR 'environment* innovat*' OR 'sustainab* innovat*' OR 'firm* green innovat*') AND ('knowledge shar*' OR 'knowledge diffusion' OR 'knowledge flow*' OR 'external knowledge* shar*' OR 'external knowledge diffusion' OR 'external knowledge flow OR 'network*' OR 'external linkage*' OR 'cooperat*' OR 'external relation*' OR 'collaborat*'OR 'research system' OR 'science' OR 'universit*' OR 'research institut*' OR 'research organi*' OR 'research centre*' OR 'local authorit*' OR 'government*' OR 'other firm*' OR 'expert*' OR 'supplier*' OR 'customer*' OR 'competitor*'OR 'external partner*'))

To identify relevant articles, the search string was applied within the titles, abstracts, and keywords. The scope of the research was not limited in time. The search was done between 13 May to 1 July 2024.

Sample Selection

The initial search allowed for retrieving 2726 articles including, in particular, 2293 articles from Scopus and 433 articles from Web of Science, which were exported to Excel. Articles for further review were selected to meet the following inclusion criteria: English language, peer-reviewed academic articles, full-text availability. The following exclusion criteria were also used to identify relevant articles: conference proceedings, book chapters, research notes, editorials, commentaries. Next, duplicates were excluded (337 articles). The titles, abstracts, and keywords of the articles were then reviewed to determine the relevance of the articles to the review questions. This was done by assigning values from 1 (least relevant) to 5 (most relevant). For further review, articles with a score of 4 and 5 were selected as potentially relevant. Consequently, 358 articles remained in the study (of which 253 articles could be fully accessed). The full-text articles were then screened to confirm that the main body of the article was relevant to the scope of the study (using a scoring system of 1 to 5). Thus, 212 articles were excluded from further analysis, because their main body appeared to focus on the relationship of green innovation performance and external knowledge flows rather than on enhancing this relationship. Finally, 41 articles were selected as the most relevant to this study. Such a number of articles in the final sample (in comparison to the initial search) is consistent with other systematic literature reviews on green innovation, provided, for example, by Sanni and Verdolini (2022). Figure 1 illustrates the sample selection process.

The articles from the final sample were then analysed to obtain information on a number of publications per year, geographical distribution, sector of analysis and methodology used. The remaining articles were also examined to indicate emerging main themes. On the basis of this information, descriptive and thematic analyses were conducted.

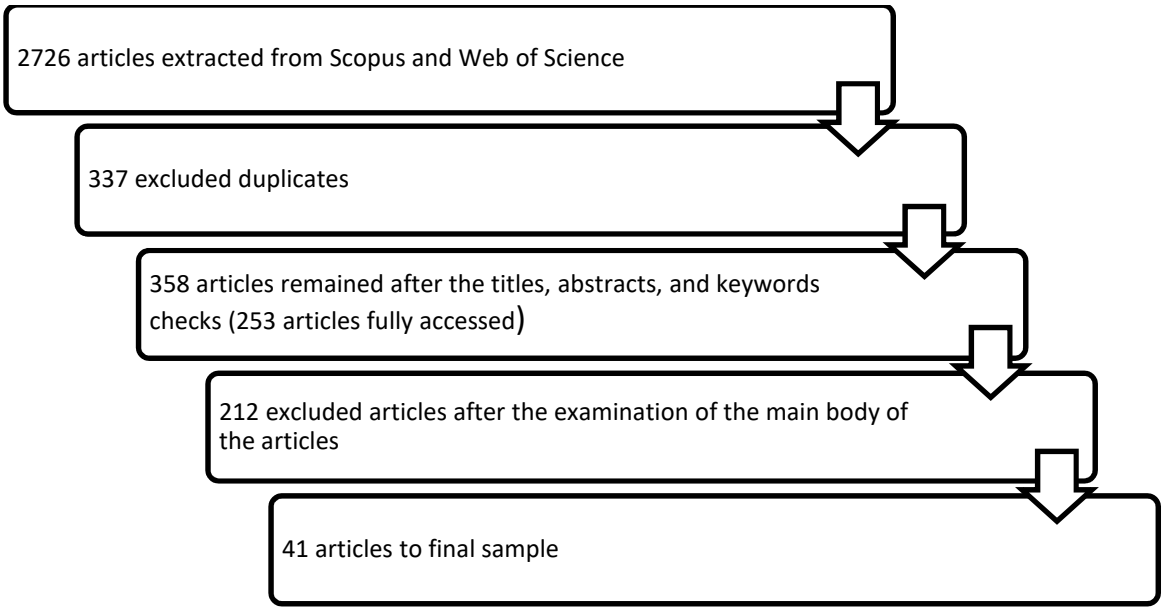


Figure 1. The sample selection process
Source: own elaboration.

RESULTS AND DISCUSSION

Descriptive Analysis

This section explores the reviewed articles by a number of publications per year and by geographical distribution. The reviewed articles have also been examined by sector of analysis and methodology used.

An analysis of the final sample indicates that enhancing the relationship between the firm' s green innovation performance and external knowledge flows is a relatively new research area. The research interest in this area has been growing slowly but continuously, as shown in Figure 2.

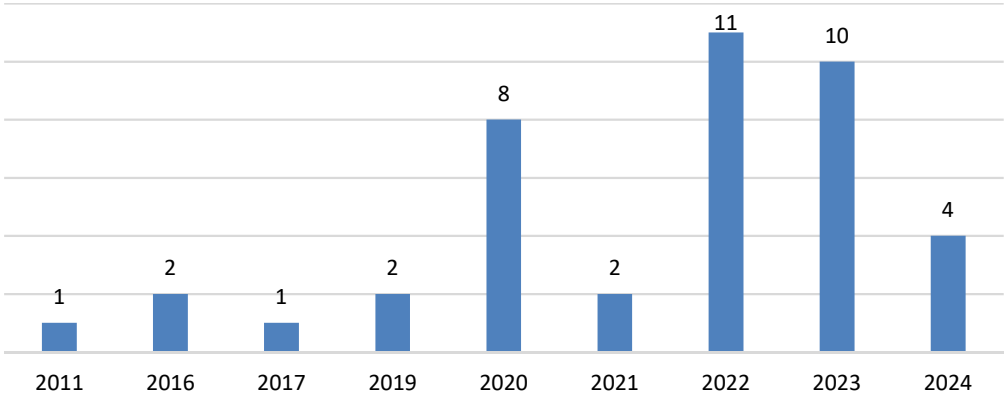


Figure 2. The number of publications per year
Note: *The analysis was conducted in the first half of 2024 and does not include articles that have been published since then.
Source: own elaboration.

As has been noted, the interest in exploring the topic began to emerge in 2011. In that year, Urbaniec and Gerstlberger (2011) published a highly cited article emphasising the role of external coordinators in enhancing external flows for the firm's green innovation. From 2016 to 2019, there were one or two articles per year, indicating that the interest in enhancing the relationship between firms' green innovation performance and external knowledge flows was growing slowly. The review indicated that the number of publications on the topic rose in the last five years (2020-2024), with 85% of the reviewed articles from the final sample. This shows a positive trend in research in this area over time

despite the relative scarcity of publications.The analysis of the final sample revealed that although the number of articles on enhancing the relationship between firms' green innovation performance and external knowledge flows is relatively scarce, research on the topic has attracted scholarly interest internationally. Research on this topic has been provided by scholars from 22 countries (Table 1).

Table 1. Countries of Authors

Country of Author	Bahrain	Belgium	China	Colombia	Denmark	finland	Germany	Greece	India	Irland	Italy	Jordan	Katar	The Netherlands	New Zeland	Norway	Oman	Pakistan	Poland	Qatar	South Korea	Spain	Sweden	Taiwan	Tanzania	Thailand	Turkey	United Kingdom
Number of Authors	3	1	40	1	2	1	3	4	1	1	4	1	1	1	1	1	2	4	5	2	5	15	3	3	1	3	1	17

Source: own study.

The review indicated that empirical studies on the topic were mainly provided by authors from China (31%) and the United Kingdom (13%). A significant number of authors were also from Spain (12%), Poland (4%), South Korea (4%), Italy (3%), Pakistan (3%), Greece (3%), Italy (3%), Bahrain (2%), Germany (2%), Denmark (2%), Bahrain (250, Oman (2%), Quatar (2%), Thailand (2%), Sweden (2%), and Taiwan (2%). Authors from Belgium, Colombia, Denmark, Finland, India, Irland, the Netherlands, New Zealand, Norway, Pakistan, Qatar, and Turkey also contributed to this field. This demonstrates that the topic is of global interest.

Considering the country focus of the research, there was a considerable geographical spread (Table 2).

Table 2. Country of analysis

Country of analysis	Authors
China	Hofman *et al.* (2020), Zhou *et al.* (2020), Gao *et al.* (2021), Sun & Sun (2021), Chen (2022), Ma *et al.* (2022), Zhang and Chen (2022), Zhang & Wang (2022), Chen *et al.* (2023), Sun *et al.* (2023), Wang *et al.* (2023), Cheng *et al.* (2024)
Germany	Urbaniec & Gerstlberger (2011), Kobarg *et al.* (2020)
Ghana	Adomako (2020)
Greece	Dimakopoulou *et al.* (2022)
Iran	Ahmadi *et al.* (2020)
Italy	Corazza *et al.* (2022)
Jordan	Awwad *et al.* (2022)
Kingdom of Bahrain	Janahi *et al.* (2022)
Oman	Abdelfattah *et al.* (2024)
Pakistan	Ullah *et al.* (2023)
Poland	Ryszko (2016), Ocicka *et al.* (2022)
South Korea	Yang & Park (2016)
Spain	Marzucchi & Montresor (2017), Arroyave *et al.* (2020), Arranz *et al.* (2022), Bolívar–Ramos (2023), Chistov *et al.* (2023), Diez-Martinez *et al.* (2023), Murillo-Luna *et al.* (2023), Ozdemir *et al.* (2023), Carchano *et al.* (2024)
Sweden	Abadzhiev *et al.* (2022)
Tanzania	Buzohera (2024)
Thailand	Srisathan *et al.* (2023)
Turkey and unspecified European continental countries	Burki *et al.* (2019)

Source: own study.

The analysis indicated that most studies focus on countries in Asia (51%) and Europe (37%), while countries in Africa represent a geographical area of 5% of the studies. The analysis also showed that 7% of the reviewed studies did not specify the country of analysis. This concerns studies by Chen *et al.* (2019), He *et al.* (2020), and Li *et al.* (2020), which refer to research based on the development of scenarios and game models. The descriptive analysis also revealed that the majority of the reviewed articles had a single country focus: China (N=12), Germany (N=2), Ghana (N=1), Greece (N=1), Iran (N=1), Italy (N=1), Jordan (N=1), the Kingdom of Bahrain (N=1), Oman (N=1), Pakistan (N=1), Poland (N=2), South Korea (N=1), Spain (N=9), Sweden (N=1), Tanzania (N=1), Thailand (N=1). Interestingly, only one of the studies analysed covers several countries (Turkey and unspecified continental European countries).

In terms of the sector of analysis, the analysis provides evidence that the majority of the studies reviewed report on specific sectors under investigation (Table 3).

Table 3. Sectors of analysis

Sector of analysis	Authors
manufacturing, service, agriculture	Corazza *et al.* (2022)
manufacturing, service	Urbaniec & Gerstlberger (2011), Yang & Park (2016), Diez-Martinez *et al.* (2023), Srisathan *et al.* (2023), Ullah *et al.* (2023)
manufacturing	Ryszko A. (2016), Burki *et al.* (2019), Ahmadi *et al.* (2020), Arroyave *et al.* (2020), He *et al.* (2020), Hofman *et al.* (2020), Kobarg *et al.* (2020), Zhou *et al.* (2020), Gao *et al.* (2021), Sun & Sun (2021), Abadzhiev *et al.* (2022), Awwad *et al.* (2022), Janahi *et al.* (2022), Ma *et al.* (2022), Zhang & Chen (2022), Zhang & Wang (2022), Murillo-Luna *et al.* (2023), Chen *et al.* (2023), Sun *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024), Cheng *et al.* (2024)
service	Arranz *et al.* (2022)

Source: own study.

A number of the articles reviewed report research in a single sector (56%), with a preponderance of research interest in manufacturing (54%). Two or more sectors were of interest of 14% of research in the fields: manufacturing, service (12%) and manufacturing, service, agriculture (2%). The review also indicates that 22% of the articles from the final sample lack a clearly stated sector of research. These are studies provided by Marzucchi and Montresor (2017), Chen *et al.* (2019), Li *et al.* (2020), Dimakopoulou *et al.* (2022), Chistov *et al.* (2023), Ozdemir *et al.* (2023), Wang *et al.* (2023) and Carchano *et al.* (2024). Single studies were also considered for: high-tech firms (Ocicka *et al.*, 2022), innovative firms (Bolívar–Ramos, 2023) and new ventures (Chen, 2022).

The analysis of the articles reviewed indicates that the most prominent method used to explore the enhancing of the relationship between the firm's green innovation performance and external knowledge flows was a quantitative study, corresponding to 97% of the articles (Table 4). In terms of qualitative studies, the review shows that only two articles applied such a method: Janahi *et al.* (2022) – a case study, and Abadzhiev *et al.* (2022) – interviews (only one study uses a combination of qualitative and quantitative methods – Urbaniec and Gerstlberger (2011)). This suggests that scholars use quantitative rather than qualitative methods to explore the topic.

Although enhancing the relationship between the firm's green innovation performance and external knowledge flows is a relatively new area of research, authors use a variety of research methods to explore this topic from different angles. The most frequently used research methods in this area were various regression methods, corresponding to 49% of the articles in the final sample (Table 5).

In particular, especially regression (*e.g.* Adomako, 2020; Ma *et al.*, 2022) and logistic regression (*e.g.* Chen, 2022; Chistov *et al.,* 2023) were applied for the studies. Similarly, scholars also frequently used structural equation modelling and partial least squares structural equation modelling for research on enhancing the relationship between the firm's green innovation performance and external knowledge flows (32% of the reviewed articles). Among the different methods used in this field, less frequently used methods can also be distinguished, such as the game method (He *et al.*, 2020; Li *et al.*, 2020), the best-worst method (Ahmadi *et al.*, 2020), and the bootstrap method (Cheng *et al.*, 2024).

Table 4. Applied methods

Applied method	Authors
Quantitative	Urbaniec & Gerstlberger (2011), Ryszko (2016), Yang & Park (2016), Marzucchi & Montresor (2017), Burki *et al.* (2019), Chen *et al.* (2019), Adomako (2020), Ahmadi *et al.* (2020), Arroyave *et al.* (2020), He *et al.* (2020), Hofman *et al.* (2020), Kobarg *et al.* (2020), Li *et al.* (2020), Zhou *et al.* (2020), Gao *et al.* (2021), Sun & Sun (2021), Abadzhiev *et al.* (2022), Arranz *et al.* (2022), Awwad *et al.* (2022), Chen (2022), Corazza *et al.* (2022), Dimakopoulou *et al.* (2022), Ma *et al.* (2022), Ocicka *et al.* (2022), Zhang & Chen (2022), Zhang & Wang (2022), Bolívar–Ramos (2023), Chen *et al.* (2023), Chistov *et al.* (2023), Diez-Martinez *et al.* (2023), Murillo-Luna *et al.* (2023), Ozdemir *et al.* (2023), Srisathan *et al.* (2023), Sun *et al.* (2023), Ullah *et al.* (2023), Wang *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024), Carchano *et al.* (2024), Cheng *et al.* (2024)
Qualitative	Urbaniec & Gerstlberger (2011), Abadzhiev *et al.* (2022), Janahi *et al.* (2022)

Source: own study.

Table 5. Main statistical methods used

Main statistical methods used in the study	Authors
Structural equation modeling	Burki *et al.* (2019), Chen *et al.* (2019), Hofman *et al.* (2020), Sun & Sun (2021), Awwad *et al.* (2022), Sun *et al.* (2023)
Partial least squares structural equation modelling	Ryszko (2016), Arroyave *et al.* (2020), Diez-Martinez *et al.* (2023), Ullah *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024), Carchano *et al.* (2024)
Regression	Adomako (2020), Zhou *et al.* (2020), Ma *et al.* (2022), Zhang & Chen (2022), Zhang & Wang (2022), Ozdemir *et al.* (2023), Wang *et al.* (2023)
Logistic regression	Yang & Park (2016), Marzucchi & Montresor (2017), Arranz *et al.* (2022), Chen (2022), Corazza *et al.* (2022), Murillo-Luna *et al.* (2023), Chistov *et al.* (2023)
Probit regression	Bolívar–Ramos (2023), Srisathan *et al.* (2023)
Zero-inflated Poisson regression	Kobarg *et al.* (2020), Gao *et al.* (2021)
Mixed process regression	Dimakopoulou *et al.* (2022)
Regression using a fixed-effect model	Chen *et al.* (2023)
Fuzzy ANOVA	Ocicka *et al.* (2022)
Fuzzy set qualitative comparative analysis	Abadzhiev *et al.* (2022)
Game method	He *et al.* (2020), Li *et al.* (2020)
Best worst method	Ahmadi *et al.* (2020)
Bootstrap method	Cheng *et al.* (2024)
Thematic analysis	Janahi *et al.* (2022)

Source: own study.

Regarding the study type, the review highlights that the majority of studies on the topic are cross-sectional (Table 6).

In the final sample, 78% of the articles consider a single point in time (*e.g.* Hofman *et al.*, 2020; Zhou *et al.*, 2020; Bolívar–Ramos, 2023), while 22% of the articles cover a period (*e.g.* He *et al.*, 2020; Dimakopoulou *et al.*, 2022). This indicates that longitudinal studies are still relatively limited and may suggest that research on enhancing the relationship between the firm's green innovation performance and external knowledge flows is still developing. This also points to the need for more longitudinal studies in this research area.

Table 6. Types of study

Type of studies	Authors
Longintual studies	Yang & Park (2016), Marzucchi & Montresor (2017), He *et al.* (2020), Gao *et al.* (2021), Arranz *et al.* (2022), Corazza *et al.* (2022), Dimakopoulou *et al.* (2022), Murillo-Luna *et al.* (2023), Wang *et al.* (2023)
Cross-sectional studies	Urbaniec & Gerstlberger (2011), Ryszko (2016), Burki *et al.* (2019), Chen *et al.* (2019), Adomako (2020), Ahmadi *et al.* (2020), Arroyave *et al.* (2020), Hofman *et al.* (2020), Kobarg *et al.* (2020), Li *et al.* (2020), Zhou *et al.* (2020), Sun & Sun (2021), Abadzhiev *et al.* (2022), Awwad *et al.* (2022), Chen (2022), Janahi *et al.* (2022), Ma *et al.* (2022), Ocicka *et al.* (2022), Zhang & Chen (2022), Zhang & Wang (2022), Chen *et al.* (2023), Diez-Martinez *et al.* (2023), Srisathan *et al.* (2023), Ullah *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024), Carchano *et al.* (2024), Cheng *et al.* (2024)

Source: own study.

Thematic Analysis

With regard to the research questions, three main themes emerged: external knowledge providers, the scope of external knowledge flows for the firm's green innovation, and the enhancement of external knowledge flows for the firm's green innovation performance. The first two themes develop the previous considerations on external partners for the firm's green innovation and the object of external knowledge flows, noting how these issues are presented in articles that address the theme of enhancing the relationship between the firm's green innovation and external knowledge providers. The third theme arose from the need to understand the enhancement of the firm's interactions with external partners for green innovation. As research focusing on enhancing the link between the firm's green innovation performance and external knowledge flows is a relatively new area of research in the literature, the in-depth analysis of the final sample followed Kraus *et al.*'s (2005) approach to reviewing the literature with insufficient diversity of studies to identify interesting sub-results.

The reviewed studies show a high interest in various external knowledge providers for green innovation performance (Table 7). This suggests that the debate in this area is still ongoing and is also considered in the studies on enhancing the relationship between the firm's green innovation and external knowledge providers. That is because external knowledge flows remain critical for green innovation (Wang *et al.*, 2023).

Table 7. External knowledge providers

External knowledge providers	Number of articles
supply chain members	8
government	6
partners	5
suppliers	3
suppliers, customers, universities, research organisations	3
government, other external partners	2
suppliers, customers, government, universities, competitors	2
suppliers, customers, government	2
suppliers, customers, government, universities, research organisations	2
universities, research organisations	2
customers	1
government, universities	1
other firms	1
suppliers, customers	1
suppliers, customers, universities, research organisations, competitors	1
value chain members	1

Source: own study.

The review indicates that many studies from the final sample pay special attention to network structures. Here, especially supply chain members have gained particular consideration as creating inter-organisational connections that support green processes (Ocicka *et al.*, 2022). An interest in supply chain members can be found in Chen *et al.* (2019), He *et al.* (2020), Zhou *et al.* (2020), Sun and Sun (2021), Ocicka *et al.* (2022), and Wang *et al.* (2023). This reveals that, unlike the traditional linear structure between suppliers and customers, the supply chain (consisting of firms, customers, suppliers and other partners) creates 'a network-based structure,' as Wang *et al.* (2023) emphasise. Similarly, He *et al.* (2020) note that such a structure can enable the optimisation of internal and external sources of green innovation and is becoming increasingly strategic for high-tech firms, as Ocicka *et al.* (2022) suggest. Among the studies that consider supply chain members as knowledge providers for green innovation, should be highlighted studies that focus specifically on green supply chain members (Chen *et al.*, 2019; Zhou *et al.*, 2020; Sun & Sun, 2021) as providing more knowledge on environmental issues (Zhou *et al.*, 2020). In this regard, Chen *et al.* (2019) suggest that the benefits of the relationship between the firm and green supply chain partners are associated with, among others, the exploratory and tactical knowledge needed for the success of green innovation. In this context, Sun and Sun (2021) also highlight that such collaboration can lead to the firm's competitive advantage. Moreover, value chain members are seen as critical knowledge providers for green innovation performance. This is observed in the study by Abadzhiev *et al.* (2022), who highlight the role of joint collaboration along the value chain for green processes and value creation.

In the reviewed articles, considerable interest in considering the research system can be noted as an important element of network structures for green innovation. This is especially seen in the studies by Ryszko (2016), Kobarg *et al.* (2020), Arranz *et al.* (2022) and Ozdemir *et al.* (2023). In this context, Kobarg *et al.* (2020) suggest that intensive cooperation between the firm and customers, suppliers, universities, and research organisations is desirable for the development of the firm's green innovation. Ryszko (2016) emphasises here the influence of these knowledge providers, especially on the development of the firm's technological green innovation. On the other hand, Arranz *et al.* (2022) highlight that network structures, including the research system, support the firm's green innovation through the use of prior knowledge. The involvement of the government in network structures for the firm's green innovation is also noticeable in the articles in the field. The origin of such incorporation lies in the view of the government as a knowledge provider of the legal framework for green innovation of firms (Janahi *et al.*, 2022; Chen *et al.*, 2023; Buzohera, 2024). Following this, Urbaniec and Gerstlberger (2011) and Yang and Park (2016) consider the government together with such external agents as suppliers, customers, universities, and competitors indicating the role of government in the creation conditions for external knowledge flows. On the other hand, Janahi *et al.* (2022) pay special attention to the network structure of external providers consisting of government, suppliers, customers, and universities as supportive of the firm's green innovation, while Hofman *et al.* (2020) and Chen (2022) emphasise the network structure combining the firm, government, suppliers, and customers.

The analysis of the final sample also allowed for indicating the studies focusing on a specific one or two external knowledge providers for the firm's green innovation. This is due to the need to understand in detail the relationship between the firm's green innovation and a specific external knowledge agent. The focus on a single knowledge provider for the firm's green innovation can be seen in the studies of Burki *et al.* (2019), Adomako (2020), Ahmadi *et al.* (2020), Li *et al.* (2020), Gao *et al.* (2021), Ma *et al.* (2022), and Zhang and Wang (2022). Among them, Adomako (2020), Ahmadi *et al.* (2020), and Li *et al.* (2020) focus on the role of firms' suppliers in green processes, while Gao *et al.* (2021), Zhang and Wang (2022), Srisathan *et al.* (2023), Ullah *et al.* (2023), Abdelfattah *et al.* (2024) and Carchano *et al.* (2024) pay special attention to the government indicating the involvement of government in creating conditions for external knowledge flows. On the other hand, Burki *et al.* (2019) and Ma *et al.* (2022) focus especially on customers as knowledge providers for firms' green innovation. Arroyave *et al.* (2020), Awwad *et al.* (2022), Bolívar-Ramos (2023), and Murillo-Luna *et al.* (2023) also pay attention to selected external knowledge providers for the firm's green innovation. In this context, Murillo-Luna *et al.* (2023) emphasise the firm's network with universities and government as 'key triple helix agents' that provide knowledge for green innovation. Arroyave

et al. (2020) and Bolívar-Ramos (2023) concentrate on the role of universities and research organisations in green innovation of the firm, pointing to their 'still underestimated role' in green processes (Arroyave *et al.*, 2020). On the other hand, Awwad *et al.* (2022) pay special attention to the integration of green suppliers and green customers for a green product of the firm and its flexibility. In addition, references to unspecified knowledge providers for the firms' green innovation performance can also be found in the final sample. Such references can be observed in the studies by Marzucchi and Montresor (2017), Corazza *et al.* (2022), Dimakopoulou *et al.* (2022), Zhang and Chen (2022), Chistov *et al.* (2023), Diez-Martinez *et al.* (2023), and Sun *et al.* (2023).

Regarding the scope of the scope of external knowledge flows for the firm's green innovation, the review shows that the vast majority of studies in the final sample refer to knowledge sharing in general terms, without specifying the extent of external knowledge flows for the firm's green innovation activities. This is observed in the articles by Yang and Park (2016), Marzucchi and Montresor (2017), Adomako (2020), Ahmadi *et al.* (2020), He *et al.* (2020), Kobarg *et al.* (2020), Li *et al.* (2020), Gao *et al.* (2021), Dimakopoulou *et al.* (2022), Zhang and Chen (2022), Zhang and Wang (2022), Chistov *et al.* (2023), Chen *et al.* (2023), Murillo-Luna *et al.* (2023), Wang *et al.* (2023), Srisathan *et al.* (2023), Sun *et al.* (2023), Ullah *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024), Carchano *et al.* (2024), and Cheng *et al.* (2024).

Among the studies that describe in more detail the scope of knowledge provided by external agents for the firm's green innovation, many refer to knowledge related to green product development as important for green innovation activities. In this regard, Ryszko (2016), Janahi *et al.* (2022), and Ocicka *et al.* (2022) highlight the external knowledge that serves the joint development of green products, while Sun and Sun (2021) pay particular attention to shared knowledge for planning and decision-making in green product innovation. On the other hand, the focus on external knowledge about technology, products, and markets as crucial for 'innovation creation and implementation' (Urbaniec & Gerstlberger, 2011) is placed in the studies of Urbaniec and Gerstlberger (2011), Burki *et al.* (2019), Hofman *et al.* (2020), Zhou *et al.* (2020), Awwad *et al.* (2022), Corazza *et al.* (2022), and Ma *et al.* (2022). In this area, Chen *et al.* (2019) also focus on research and development (R&D) collaboration as the scope of external knowledge flows for the firm's green innovation, while Bolívar-Ramos (2023) pays particular attention to basic knowledge, scientific research and research programmes. Furthermore, Arroyave *et al.* (2020) concentrate on external knowledge related to value creation, while Abadzhiev *et al.* (2022) also indicate external knowledge related to conflict resolution. The focus on green product and process innovation can be seen in the articles by Diez-Martinez *et al.* (2023) and Ozdemir *et al.* (2023). Overall, this varying interest in the scope of external knowledge flows for green innovation shows that the topic remains relevant and its complexity calls for further research.

The review shows that although studies on enhancing the relationship between external knowledge flows and the firm's green innovation performance are relatively new areas of research, the results obtained so far are very promising. A detailed analysis of the final sample reveals widely varied scopes of the articles, reflecting the growing interest in this area of research and different approaches to the issues in question. However, despite the novelty of the topic, most can be grouped into similar focus areas: established cooperation, network cohesion, and resource flexibility (Table 8).

Established cooperation, the first of the area mentioned, as crucial for the enhancement of the firm's interactions with external partners for green innovation, falls within the scope of the research by Adomako (2020), He *et al.* (2020), Kobarg *et al.* (2020), Zhou *et al.* (2020), Arranz *et al.* (2022), Corazza *et al.* (2022), Bolívar-Ramos (2023), Diez-Martinez *et al.* (2023), Sun *et al.* (2023), Carchano *et al.* (2024). In this area, Corazza *et al.* (2022) highlight the role of formalised network contracts, whereas Arranz *et al.* (2022), Diez-Martinez *et al.* (2023) Carchano *et al.* (2024), stress the role of prior cooperation that by generating synergies, increases firms' green orientation. Established cooperation with universities and research organisations to strengthen the firm's interactions with external partners for green innovation is considered by Kobarg *et al.* (2020) and Bolívar-Ramos (2023). Here, Bolívar-Ramos (2023) emphasises that such cooperation with universities improves the firm's research used to influence green processes, while established collaboration with research organisations does not support external knowledge flows for the firm's green innovation. As Bolívar-Ramos (2023) argues, such surprising evidence shows that firms benefit more from the basic research received from universities. In

contrast, Kobarg *et al.* (2020) provide evidence that established cooperation not only with universities but also with research organisations strengthens external knowledge flows for the firm's green process and product innovation. Kobarg *et al.* (2020) also emphasise established collaboration among supply chain members, which is also evident in Adomako's (2020) and Zhou *et al.*'s (2020) studies. In this context, Adomako (2020) provides evidence that established cooperation with suppliers strengthens the firm's green innovation through the development of routines that overcome the firm's environmental weaknesses, while Kobarg *et al.* (2020) suggest that the depth of the firm's knowledge collaboration with suppliers is beneficial for green process innovation but not for green product innovation. Surprisingly, Kobarg *et al.* (2020) find the opposite results for customers. Meanwhile, a research study by Zhou *et al.* (2020) reports that embeddedness in the green supply chain positively affects external knowledge flows for the firm's green innovation. In this regard, Zhou *et al.* (2020) also provide evidence that procedural fairness in the chain strengthens the aforementioned embeddedness. On the other hand, Zhou *et al.* (2020) find that distributive fairness in the green supply chain does not support external knowledge flows for green processes. In this vein, studies by Li *et al.* (2020) and Gao *et al.* (2021) also highlight fairness as an important driver for enhancing external knowledge provision for the firm's green innovation. In this context, Gao *et al.* (2021) provide evidence that fairness is essential for the firm's relationship with government to provide a basis for green innovation, while Li *et al.* (2020) highlight the role of trust as a necessary foundation for the firm's successful knowledge interactions with external partners for green innovation. A collaborative innovation atmosphere as well as a risk perception chain are also seen as crucial to strengthening the relationship between external knowledge providers and the firm's green innovation (Sun *et al.*, 2023). This is because they are seen as supportive of increasing the willingness to share knowledge for green processes (Sun *et al.*, 2023).

Table 8. Focus areas

Focus area	Authors
Established cooperation	Adomako (2020), He *et al.* (2020), Kobarg *et al.* (2020), Zhou *et al.* (2020), Arranz *et al.* (2022), Corazza *et al.* (2022), Bolívar-Ramos (2023), Diez-Martinez *et al.* (2023), Sun *et al.* (2023), Carchano *et al.* (2024)
Network cohesion	Awwad *et al.* (2022), Ocicka *et al.* (2022), Murillo-Luna *et al.* (2023), Wang *et al.* (2023)
Resource flexibility	Ryszko (2016), Marzucchi & Montresor (2017), Burki *et al.* (2019), Sun & Sun (2021), Chen (2022), Janahi *et al.* (2022), Ma *et al.* (2022), Ozdemir *et al.* (2023), Cheng *et al.* (2024)
Research and development (R&D) cooperation	Chen *et al.* (2019), Ahmadi *et al.* (2020), Dimakopoulou *et al.* (2022)
Community pressure	Hofman *et al.* (2020)
Regulatory pressure	Zhang & Wang (2022), Chen *et al.* (2023), Srisathan *et al.* (2023), Ullah *et al.* (2023), Abdelfattah *et al.* (2024), Buzohera (2024)
External coordinators	Urbaniec & Gerstlberger (2011)
Reduction of conflicts	Abadzhiev *et al.* (2022)
Level of the radicalness of green innovation	Chistov *et al.* (2023)

Source: own study.

Another focus area was network cohesion. It is essential for enhancing external knowledge flows for the firm's green processes, which is particularly evident in the research of Awwad *et al.* (2022), Ocicka *et al.* (2022), Murillo-Luna *et al.* (2023), and Wang *et al.* (2023). Network cohesion is crucial because it provides a 'joint effect' that stimulates the firm's green innovation (Ocicka *et al.*, 2022). According to Murillo-Luna *et al.* (2023), the positive impact of external knowledge flows on the firm's green innovation is directly proportional to the number of agents involved. In this respect, network cohesion within the supply chain is particularly important for the firm's green processes, as Wang *et al.* (2023) point out. Similarly, Awwad *et al.* (2022) report that the integration of customers and suppliers in the development of new green products strengthens the green innovation potential of firms

through the provision of external knowledge. On the other hand, Ocicka *et al.* (2022) provide evidence that firms that collaborate with both suppliers and customers are more likely to green their innovations than those that collaborate with only one set of partners because they benefit more from external knowledge. Furthermore, Ocicka *et al.* (2022) suggest that early-stage knowledge collaboration with suppliers has a greater impact on greening processes than cooperation with customers. This is because suppliers are seen as the most important actors in the supply chain working with the firm to achieve green innovation (Ocicka *et al.*, 2022).

The analysis of the final sample allowed to isolate another focus area – resource flexibility – as crucial for enhancing the relationship between external knowledge flows and the firm's green innovation. This area is considered in the studies of Ryszko (2016), Marzucchi and Montresor (2017), Burki *et al.* (2019), Sun and Sun (2021), Chen (2022), Janahi *et al.* (2022), Ma *et al.* (2022), Ozdemir *et al.* (2023) and Cheng *et al.* (2024). In this context, resource flexibility is seen as pivotal because it indicates the firm's ability to absorb and use external knowledge (Sun & Sun, 2021). In this regard, Ma *et al.* (2022) highlight the firm's ability to extend knowledge and relationships as essential for successful external knowledge flows from customers, while Chen (2022) provides evidence that high resource flexibility of a new venture allows for stronger green innovation relationships with the government than with other firms, as opposed to coordination flexibility. Another study, by Janahi *et al.* (2022), emphasises the firm's green development plans, strategic alignment and access to platforms and forums as 'critical factors' in enhancing the firm's interactions with external partners for green innovation. Attention to planning is also seen in the research of Zhang and Chen (2022), who identify strategic intellectual property planning as a 'moderator' of the relationship between external knowledge flows and green processes. Similarly, Sun and Sun (2021) report that a green innovation strategy and internal communication support external knowledge in the firm. The role of a proactive green strategy as a mediator between external knowledge flows and technological green innovation is also pointed out by Ryszko (2016). On the other hand, the commitment of the firm's management as an element of resource flexibility is raised by Marzucchi and Montresor (2017) and Burki *et al.* (2019) In this sense, Burki *et al.* (2019) suggest that the commitment of top management is key to enhancing knowledge collaboration with customers for green innovation, while Marzucchi and Montresor (2017) indicate the need for separate management of internal and external knowledge sources for green processes. According to Marzucchi and Montresor (2017), such separate management can strengthen green innovation processes. Meanwhile, the study by Cheng *et al.* (2024) shows the importance of the firm's digital capability as a support for the firm's knowledge collaboration in the green supply chain. Access to information is also seen as crucial for enhancing the relationship between external knowledge flows and the firm's green innovation. In this vein, Ozdemir *et al.* (2023) suggest that access to information related to green innovation and highly skilled human resources strengthens collaboration with suppliers and customers rather than with universities and research organisations.

The review of the research also points to a group of studies that focus on areas other than those mentioned above but are related to enhancing the firm's interactions with external partners for green innovation. In this respect, research and development R&D cooperation between members of the supply chain is of particular interest. This is evident in the studies by Chen *et al.* (2019), Ahmadi *et al.* (2020), and Dimakopoulou *et al.* (2022). In this context, Ahmadi *et al.* (2020) provide evidence that the firm's cooperation with suppliers with sufficient capital for R&D and human resource development strengthens external knowledge flows for green innovation.

Similarly, Chen *et al.* (2019) find a positive relationship of R&D cooperation between supply chain members in enhancing the firm's green processes. In contrast, Dimakopoulou *et al.* (2022) provide evidence that R&D cooperation does not affect enhancing external knowledge for the firm's green innovation. The reviewed studies also consider community and regulatory pressures. Here, Hofman *et al.* (2020) suggest a positive association of community pressure on enhancing knowledge cooperation with suppliers with firms' green process innovation. Hofman *et al.* (2020) also show that regulatory pressure has no effect on enhancing knowledge flows from both suppliers and customers. On the other hand, Abdelfattah *et al.* (2024), suggest that government involvement, through regulatory incentives for green processes, enhances public-private cooperation for the firm's green innovation. In this vein

also Chen *et al.* (2023), Srisathan *et al.* (2023), Ullah *et al.* (2023) and Buzohera (2024) emphasise the role of government in enhancing external knowledge flows. The emphasis on regulatory pressure is also notable in the work of Zhang and Wang (2022), who find that external knowledge flows between external agents for firms' green processes are stronger when environmental regulations are stricter. On the other hand, Yang and Park (2016) find a negative association between the firm's green innovation intentions and external knowledge collaboration, indicating a 'negative moderating effect of external partners' (Yang & Park, 2016) due to the difficulty of maintaining all relationships with external knowledge agents. External coordinators are also highlighted in the reviewed studies. As Urbaniec and Gerstlberger (2011) indicate, the expertise of external coordinators (*e.g.* coordinating agencies) and their organisational and facilitation skills can strengthen external flows for the firm's green innovation. Another study draws attention to the level of radicalness of green innovation as essential for the firms' cooperation with external partners (Chistov *et al.*, 2023). The area of interest in the reviewed studies was also the reduction of conflicts, which is present in Abadzhiev *et al.* (2022). In this respect, Abadzhiev *et al.* (2022) provide evidence that reducing conflicts between supply chain members is crucial for enhancing external knowledge of the firm's green innovation activities.

The above review provides insight into the understanding of external knowledge flows for the firm's green innovation. In this context, the results show a greater research interest in the field. The growing concern on how to strengthen the relationship between external knowledge flows for the firm's green innovation is particularly noticeable. The review indicates that although the number of studies relevant to this area of research is still relatively limited, many themes and research directions have emerged. Nevertheless, many of them remain fragmented and largely underexplored. This offers an opportunity to identify areas for future research. First of all, as there is a noticeable lack of cross-country and cross-regional research, future studies could address this field to explore potential interdependencies. Furthermore, it would be valuable to conduct more in-depth research on a single sector and a single type of external knowledge provider. Future studies could also focus more on a specific scope of external knowledge flows to deepen the understanding of their role in green processes.

Therefore, in light of the results of the review, the following potential future research questions were raised:

- How do countries/regions affect knowledge flows between external agents and, in particular, the firm's green processes?
- How does the enhancement of the relationship between external knowledge flows and the firm's green innovation differ between countries/regions? Are there any similarities/differences? Does the innovation of countries/regions matter?
- What is specific to a particular sector as regards facilitating the relationship between knowledge flows from external sources for the firm's green innovation? Is there a difference in this respect between different sectors? Do dependencies exist only for a particular sector?
- How can a particular external knowledge agent influence green innovation? Is there a difference between agents in their ability to collaborate on firms' green processes? Which factors determine this? Are any characteristics related to the type of agent? How can external agents/firms support knowledge flows?
- What is the role of specific external knowledge providers in enhancing external knowledge flows for the firm's green innovation? Which processes should the firm improve to make better use of external knowledge? How do firms encourage external agents to share knowledge?
- How can a particular scope of external knowledge flow influence the firm's green innovation? Is there a difference between particular scopes in terms of their impact on green processes? Is there a scope of external knowledge flows that can be considered the most important for the firm's green innovation performance?
- How does a particular agent/scope of knowledge flows affect the strength of the relationship between external knowledge flows and the firm's green innovation? What in particular hinders/enhances this relationship? Is this related to a particular sector or type of green innovation?

– What are the critical drivers that provoke enhancing external knowledge flows for the firm's green innovation? How does the type of green innovation affect these drivers? What are the appropriate measures for these drivers?

Future research could also focus more on qualitative research in this area. To better understand the enhancement of the relationship between external knowledge flows and the firm's green innovation, more longitudinal research may equally be needed. Future research could also include more studies on the drivers that support the provision of external knowledge for green processes.

CONCLUSIONS

This article has examined the relevant literature on the links between green innovation performance and external knowledge flows to further explore this area and extend the existing systematic reviews. Specifically, this research broadens previous studies by providing insights into the enhancement of the relationship between external knowledge flows and firms' green innovation as there is a severe lack of comprehensive reviews of hitherto published articles in this area. In this respect, this review contributes by integrating previous findings. The study contains an analysis of 41 articles extracted from Scopus and Web of Science. Geographical distribution, time evolution, methodology used and key findings of the research reviewed are provided. The review shows that the literature on the enhancement of the firm's interactions with external partners for green innovation is relatively scarce. The review also shows that there has been a noticeable increase in publications in this area. This indicates that the topic is of global interest. The review also suggests that research in this field raises a variety of issues.

This review offers contributions and implications for scholars and practitioners. In the theoretical sense, the review shows the ongoing concern about the issues related to external knowledge providers and the firm's green innovation.

The importance of enhancing the relationship between external knowledge providers and the firm's green processes is especially revealed indicating that despite the previous studies on external knowledge flows for green innovation, there is still a need to shed more light on issues related to enhancing firm's interactions with external partners for green innovation. The review finds that research in this area is based on a variety of methods, which may result from the complexity of the issues of external knowledge collaboration and the firm's green innovation. The review also reveals that the interest in the various external knowledge providers is still valid as external knowledge flows remain critical for green innovation. In this respect, the review shows that the results in this area are not heterogeneous. Furthermore, the results highlight a variety of research areas on enhancing the relationship between external knowledge providers and the green innovation of the firm. Specifically, established collaboration, network cohesion and resource flexibility were found to be of particular research interest. These open a space for future research in the field. The review poses some questions which can serve as proposals in this field. Relevant future research could consider more cross-country and cross-regional aspects to explore potential interdependencies. It would also be valuable to conduct more in-depth research on a single sector and a single type of external knowledge provider. In a practical sense, the review can be used by practitioners interested in the relationship between external knowledge flows for the firms' green innovation. Knowing the areas that can lead to the strengthening of such a relationship can enable the improvement of the firm's green processes. The study proposes to further improve the conditions for firms to strengthen external knowledge flows for green innovation.

Despite the implications that can be drawn from this study, there are some limitations. Firstly, the review criteria did not include conference articles or book chapters. Secondly, access to many full-text articles in English was limited. Next, the review used the main scientific indexing platforms. Studies not included in these platforms may also provide relevant evidence in the field. These limitations may pose a challenge for a future systematic review on understanding external knowledge flows for firms' green innovation. Nevertheless, this review provides some useful insights that can guide future empirical research.

REFERENCES

Abadzhiev, A., Sukhov, A., Sihvonen, A., & Johnson, M. (2022). Managing the complexity of green innovation. *European Journal of Innovation Management*, *25*(6), 850-866. https://doi.org/10.1108/EJIM-02-2022-0098

Abdelfattah, F., Salah, M., Dahleez, K., Darwazeh, R., & Al Halbusi, H. (2024). The future of competitive advantage in Oman: Integrating green product innovation, AI, and intellectual capital in business strategies. *International Journal of Innovation Studies*, *8*(2), 154-171. https://doi.org/10.1016/j.ijis.2024.02.001

Adomako, S. (2020). Environmental collaboration, sustainable innovation, and small and medium-sized enterprise growth in sub-Saharan Africa: Evidence from Ghana. *Sustainable Development*, *28*(6), 1-10. https://doi.org/10.1002/sd.2109

Ahmadi, H.B., Lo, H.-W., Gupta, H., Kusi-Sarpong, S., & Liou, J.J.H. (2020). An integrated model for selecting suppliers on the basis of sustainability innovation. *Journal of Cleaner Production, 277*, 123261. https://doi.org/10.1016/j.jclepro.2020.123261

Arfi, W.B., Hikkerova, L., & Sahut, J-M. (2018). External knowledge sources, green innovation and performance. *Technological Forecasting and Social Change*, *129*, 210-220. https://doi.org/10.1016/j.techfore.2017.09.017

Arranz, N., Arroyabe, M.F., Li, J., Arranz C.F.A., & de Arroyabe, J.C.F. (2022). An integrated view of eco-innovation in the service sector: Dynamic capability, cooperation and corporate environmentalism. *Business Strategy and the Environment*, *32*(3), 1-14. https://doi.org/10.1002/bse.3276

Arroyave, J.J., Sáez-Martínez, F.J., & González-Moreno, Á. (2020). Cooperation With Universities in the Development of Eco-Innovations and The firm's Performance. *Frontiers in Psychology, 11,* 612465. https://doi.org/10.3389/fpsyg.2020.612465

Audretsch, D.B., & Belitski, M. (2024). Knowledge collaboration, firm productivity and innovation: A critical assessment. *Journal of Business Research*, *172*, 114412. https://doi.org/10.1016/j.jbusres.2023.114412

Audretsch, D.B., & Belitski, M. (2020). The role of R&D and knowledge spillovers in innovation and productivity. *European Economic Review*, *123*, 103391. https://doi.org/10.1016/j.euroecorev.2020.103391

Awwad, A., Anouze, A.L.M., & Ndubisi, N.O. (2022). Green Customer and Supplier Integration for Competitive Advantage: The Mediation Effect of Sustainable Product Innovation. *Sustainability*, *14*, 10153. https://doi.org/10.3390/su141610153

Bai, Y., Wang, J-Y., & Jiao J-L. (2021). A framework for determining the impacts of a multiple relationship network on green innovation. *Sustainable Production and Consumption*, *27*, 47-484. https://doi.org/10.1016/j.spc.2021.01.014

Bolívar–Ramos, M.T. (2023). The impact of corporate science on environmental innovations: the role of universities and research institutions. *R & D Management*, *53*(3), 503-523. https://doi.org/10.1111/radm.12574

Buzohera, M.I. (2024). Analyzing the determinants factors for the implementation of eco-innovation in the developing economies, a case of Tanzania agri-food sector. *Cogent Business & Management, 11*(1), 2350801. https://doi.org/10.1080/23311975.2024.2350801

Burki, U., Ersoy, P., & Najam, U. (2019). Top Management, Green Innovations, and the Mediating Effect of Customer Cooperation in Green Supply Chains. *Sustainability, 11*(4), 1031. https://doi.org/10.3390/su11041031

Carchano, M., Carrasco, I., & Gonzalez, A. (2024). Eco-innovation and environmental performance: Insights from Spanish wine companies. *Annals of Public and Cooperative Economics*, *95,* 595-623. https://doi.org/10.1111/apce.12421

Cooke, P. (2013). Transition Regions: Green Innovation and Economic Development. In J. Ferreira, M. Raposo, R. Rutten, & A. Varga (Eds.), *Cooperation, Clusters, and Knowledge Transfer. Advances in Spatial Science* (The Regional Science Series*,* pp. 105-125). Berlin, Heidelberg, Germany: Springer.

Corazza, L., Cisi, M., & Falavigna, G. (2022). The enabling role of formalized corporate networks to drive small and medium-sized enterprises toward sustainability. *Business Strategy and the Environment*, *31*(1), 545-558. https://doi.org/10.1002/bse.2909

Chen, H. (2022). The fitting effects between strategic flexibility and managerial ties on green innovation in new ventures. *Frontiers in Environmental Science*, *10*, https://doi.org/10.3389/fenvs.2022.1024681

Chen, W., Li, Q., Wu, Q., Ye, F., & Jiang, Y. (2024). Digital capability and green innovation: The perspective of green supply chain collaboration and top management's environmental awareness. *Heliyon, 10*(11), e32290. https://doi.org/10.1016/j.heliyon.2024.e32290

Chen, S., Wang, J., & Zhang, Z. (2023). Enterprise Green Innovation Mechanism under the "Target-Resource-Network" System—An Empirical Study Based on Data of Listed Companies in China's Construction Industry. *Sustainability*, *15*(4), 3687. https://doi.org/10.3390/su15043687

Chen, X., Wang, X., & Zhou, M. (2019). The firm's green R&D cooperation behaviour in a supply chain: Technological spillover, power and coordination. *International Journal of Production Economics, 218,* 118-134. https://doi.org/10.1016/j.ijpe.2019.04.033

Chistov, V., Carrillo-Hermosilla, J., & Aramburu, N. (2023). Open eco-innovation. Aligning cooperation and external knowledge with the levels of eco-innovation radicalness. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(2), 100049. https://doi.org/10.1016/j.joitmc.2023.100049

Díaz-García, C., González-Moreno, Á., & Sáez-Martínez, F.J. (2015). Eco-innovation: insights from a literature review. *Innovation: Management, Policy & Practice*, *17*(1), 6-23. https://doi.org/10.1080/14479338.2015.1011060

Diez-Martinez, I., Peiro-Signes, A., & Segarra-Oña, M. (2023). The links between active cooperation and eco-innovation orientation of firms: A multi-analysis study. *Business Strategy and the Environment, 32*(1), 430-443. https://doi.org/10.1002/bse.3145

Dimakopoulou, A.G., Chatzistamoulou, N., Kounetas, K., & Tsekouras, K. (2022). Environmental innovation and R&D collaborations: Firm decisions in the innovation efficiency context. *The Journal of Technology Transfer.* https://doi.org/10.1007/s10961-022-09963-9

Ding, Y., Rousseau, R., & Wolfram, D. (2016). *Measuring scholarly impact. Methods and practice*. Springer International Publishing.

Fritsch, M., Titze, M., & Piontek, M. (2020). Identifying cooperation for innovation—a comparison of data sources. *Industry and Innovation*, *27*(6), 630-659. https://doi.org/10.1080/13662716.2019.1650253

Gao, Y., Teng, Z., Cai, Y., & Dong, X. (2021). The government-business relationship and eco-innovation: evidence from chinese automobile industry. *Ecological Chemistry and Engineering S*, *28*(4), 541-561. https://doi.org/10.2478/eces-2021-0036

Grillitsch, M., Martynovich, M., Fitjar, R.D., & Haus-Reve, S. (2021). The black box of regional growth. *Journal of Geographical Systems, 23*, 425-464. https://doi.org/10.1007/s10109-020-00341-3

He, K., Chen, W., & Zhang, L. (2021). Senior management's academic experience and corporate green innovation. *Technological Forecasting and Social Change*, *166*, 120664. https://doi.org/10.1016/j.techfore.2021.120664

He, J., Lei, Y., Fu, X., Lin, C.-H., & Chang, C.-H. (2020). How Can Manufacturers Promote Green Innovation in Food Supply Chain? Cost Sharing Strategy for Supplier Motivation. *Frontiers in Psychology, 11.* https://doi.org/10.3389/fpsyg.2020.574832

Hofman, P.S., Blome, C., Schleper, M.C., & Subramanian, N. (2020). Supply chain collaboration and eco-innovations: An institutional perspective from China. *Business Strategy and the Environment*, 1-21. https://doi.org/10.1002/bse.2532

Janahi, N.A., Durugbo, C.M., & Al-Jayyousi, O.R. (2022). Exploring network strategies for eco-innovation in manufacturing from a triple helix perspective. *Cleaner Logistics and Supply Chain*, *4*, 100035. https://doi.org/10.1016/j.clscn.2022.100035

Klewitz, J., & Hansen, E.G. (2014). Sustainability-oriented innovation of SMEs: a systematic review. *Journal of Cleaner Production*, *65*, 57-75. https://doi.org/10.1016/j.jclepro.2013.07.017

Klewitz, J., Zeyen, A., & Hansen, E.G. (2012). Intermediaries driving eco-innovation in SMEs: a qualitative investigation. *European Journal of Innovation Management*, *15*(4), 442-467. https://doi.org/10.1108/14601061211272376

Kocot, M., & Kocot, D. (2020). IT outsourcing as a factor for innovation development in small and medium-sized enterprises. *International Entrepreneurship Review* (previously published as *International Entrepreneurship | Przedsiębiorczość Międzynarodowa*), *6*(3), 91-101. https://doi.org/10.15678/IER.2020.0603.07

Kobarg, S., Stumpf-Wollersheim, J., Schlägel, C., & Welpe, I.M. (2020). Green together? The effects of companies' innovation collaboration with different partner types on ecological process and product innovation. *Industry and Innovation, 27*(9), 1-38. https://doi.org/10.1080/13662716.2020.1713733

Kraus, S., Reiche, B., & Reschke, C. (2005). The role of strategic planning in SMEs: literature review and implications. In *Proceedings of the Conference Annual Meeting of the British Academy of Management* (pp. 13-15). Oxford, UK.

Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: a dynamic capabilities approach. *International Journal of Innovation Management*, *5*(3). https://doi.org/10.1142/S1363919601000427

Lehnert, P., Pfister, C., & Backes-Gellner, U. (2020). Employment of R&D personnel after an educational supply shock: Effects of the introduction of Universities of Applied Sciences in Switzerland. *Labour Economics*, *66*, 101883. https://doi.org/10.1016/j.labeco.2020.101883

Li, Q., Kang, Y., Tan, L., & Chen, B. (2020). Modeling Formation and Operation of Collaborative Green Innovation between Manufacturer and Supplier: A Game Theory Approach. *Sustainability*, *12*(6), 2209. https://doi.org/10.3390/su12062209

Ma, W., Zhang, R., & Chai, S. (2019). What Drives Green Innovation? A Game Theoretic Analysis of Government Subsidy and Cooperation Contract. *Sustainability*, *11*, 5584. https://doi.org/10.3390/su11205584

Ma, X., Qing, L., Ock, Y.-S., Wu, J., & Zhou, Y. (2022). The Effect of Customer Involvement on Green Innovation and the Intermediary Role of Boundary Spanning Capability. *Sustainability*, *14*, 8016. https://doi.org/10.3390/su14138016

Melander, L. (2017). Achieving Sustainable Development by Collaborating in Green Product Innovation. *Business Strategy and the Environment*, *26*(8), 1095-1109. https://doi.org/10.1002/bse.1970

Melander, L., & Arvidsson, A. (2022). Green innovation networks: A research agenda. *Journal of Cleaner Production*, *357*, 131926. https://doi.org/10.1016/j.jclepro.2022.131926

Marzucchi, A., & Montresor, S. (2017). Forms of knowledge and eco-innovation modes: Evidence from Spanish manufacturing firms. *Ecological Economics*, *131*, 208-221. https://doi.org/10.1016/j.ecolecon.2016.08.032

Murillo-Luna, J.L., & Hernández-Trasobare, A. (2023). Cooperation with the Triple Helix and corporate environmental innovation. *Journal of Cleaner Production*, *384*, 135479. https://doi.org/10.1016/j.jclepro.2022.135479

Ocicka, B., Baraniecka, A., & Jefmański, B. (2022). Exploring Supply Chain Collaboration for Green Innovations: Evidence from the High-Tech Industry in Poland. *Energies*, *15*, 1750. https://doi.org/10.3390/en15051750

Ozdemir, S., de Arroyabe, J.C.F., Sena, V., & Gupta, S. (2023). Stakeholder diversity and collaborative innovation: Integrating the resource-based view with stakeholder theory. *Journal of Business Research, 164*, 113955, https://doi.org/10.1016/j.jbusres.2023.113955

Pereira, R.M., MacLennan, M.L.F., & Tiago, E.F. (2020). Interorganizational cooperation and eco-innovation: a literature review. *International Journal of Innovation Science*, *12*(5), 477-493. https://doi.org/10.1108/IJIS-01-2020-0008

Rudawska, I., & Kowalik, J. (2019). Towards university-business cooperation: Key drivers, barriers and modes. *International Entrepreneurship Review* (previously published as *International Entrepreneurship | Przedsiębiorczość Międzynarodowa*)*, 5*(2), 91-105. https://doi.org/10.15678/IER.2019.0502.06

Ryszko, A. (2016). Interorganizational Cooperation, Knowledge Sharing, and Technological Eco-Innovation: the Role of Proactive Environmental Strategy – Empirical Evidence from Poland. *Polish Journal of Environmental Studies*, *25*(2), 753-764. https://doi.org/10.15244/pjoes/61533

Sanni, M., & Verdolini, E. (2022). Eco-innovation and openness: Mapping the growth trajectories and the knowledge structure of open eco-innovation. *Sustainable Futures*, *4*, 100067. https://doi.org/10.1016/j.sftr.2022.100067

Silva, D.S., Ghezzi, A., Aguiar, R.B.D., Cortimiglia, M.N., & ten Caten, C.S. (2020). Lean Startup, Agile Methodologies and Customer Development for business model innovation: A systematic review and research agenda. *International Journal of Entrepreneurial Behavior & Research*, *26*(4), 595-628. https://doi.org/10.1108/IJEBR-07-2019-0425

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333-339. https://doi.org/10.1016/j.jbusres.2019.07.039

Srisathan, W.A., Ketkaew, C., Phonthanukitithaworn, C., & Naruetharadhol, P. (2023). Driving policy support for open eco-innovation enterprises in Thailand: A probit regression model. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(3), 100084. https://doi.org/10.1016/j.joitmc.2023.100084

Sun, Y., & Sun, H. (2021). Green Innovation Strategy and Ambidextrous Green Innovation: The Mediating Effects of Green Supply Chain Integration. *Sustainability, 13*(9), 4876. https://doi.org/10.3390/su13094876

Sun, J., Xie, X., Zhou, M., & Yan, L. (2023). How to drive green innovation of manufacturing SMEs under open innovation networks – the role of innovation platforms' relational governance. *Management Decision*, (ahead-of-print). https://doi.org/10.1108/MD-10-2022-1452

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence informed management knowledge by means of systematic review. *British Journal of Management, 14,* 207-222. https://doi.org/10.1111/1467-8551.00375

Tu, Y., & Wu, W. (2021). How does green innovation improve enterprises' competitive advantage? The role of organizational learning. *Sustainable Production and Consumption*, *26*, 504-516. https://doi.org/10.1016/j.spc.2020.12.031

Uchańska-Bieniusiewicz, A., & Obłoj, K. (2023). Disrupting fast fashion: A case study of Shein's innovative business model. *International Entrepreneurship Review, 9*(3), 47-59. https://doi.org/10.15678/IER.2023.0903.03

Ullah, R., Ahmad, H., Rehman, F.U., & Fawad, A. (2023). Green innovation and Sustainable Development Goals in SMEs: the moderating role of government incentives. *Journal of Economic and Administrative Sciences, 39*(4), 830-846. https://doi.org/10.1108/JEAS-07-2021-0122

Urbaniec, M. (2019). Competitiveness of innovation-driven economies: Insights from selected European countries. *International Entrepreneurship Review* (previously published as *International Entrepreneurship | Przedsiębiorczość Międzynarodowa*)*, 5*(3), 113-127. https://doi.org/10.15678/IER.2019.0503.08

Urbaniec, M., & Gerstlberger, W. (2011). Innovation in environment-oriented networks. *Management of Environmental Quality: An International Journal, 22*(6), 686-704. https://doi.org/10.1108/14777831111170812

Wang, L., Li, M., Wang, W., Gong, Y., & Xiong, Y. (2023). Green innovation output in the supply chain network with environmental information disclosure: An empirical analysis of Chinese listed firms. *International Journal of Production Economics*, *256*, 108745. https://doi.org/10.1016/j.ijpe.2022.108745

Yang, D., & Park, S. (2016). Too Much Is as Bad as Too Little? Sources of the Intention-Achievement Gap in Sustainable Innovation. *Sustainability, 8*(8), 712. https://doi.org/10.3390/su8080712

Zhang, H., & Chen, X. (2022). Open Innovation and Sustainable Innovation Performance: The Moderating Role of IP Strategic Planning and IP Operation. *Sustainability*, *14*, 8693. https://doi.org/10.3390/su14148693

Zhang, Y., & Wang, Y. (2022). Do Managerial Ties Help or Hinder Corporate Green Innovation? The Moderating Roles of Contextual Factors. *International Journal of Environmental Research and Public Health*, *19*, 4019. https://doi.org/10.3390/ijerph19074019

Zhou, M., Govindan, K., & Xie, X. (2020). How fairness perceptions, embeddedness, and knowledge sharing drive green innovation in sustainable supply chains: an equity theory and network perspective to achieve sustainable development goals. *Journal of Cleaner Production,* 120950. https://doi.org/10.1016/j.jclepro.2020.120950

Zygmunt, A. (2022). The effect of research and development personnel on innovation activities of firms: Evidence from small and medium-sized enterprises from the Visegrad Group countries. *Entrepreneurial Business and Economics Review, 10*(3), 105-121. https://doi.org/10.15678/EBER.2022.100307

Zygmunt, J. (2018). Does level of economic growth matter in spatial diversity in entrepreneurial activity in a transition economy? A case of Poland. In *Proceedings of the 32nd International Business Information Management Association Conference (IBIMA)* (pp. 6999-7006). Seville, Spain, 15-16 November 2018.

Author

Aleksandra Zygmunt
PhD in Economics; Assistant Professor at Opole University of Technology. Her research interests include firms' innovation activities, knowledge transfer, and regional development.
Correspondence to: Aleksandra Zygmunt, PhD, Opole University of Technology, Department of Economics, Finance, Regional and International Studies ul. Luboszycka 7, 45-036 Opole, Poland, e-mail: a.zygmunt@po.edu.pl
ORCID https://orcid.org/0000-0001-5879-5684

Acknowledgements and Financial Disclosure

This work was financially supported by Opole University of Technology under GAMMA project no. 161/22.

Conflict of Interest

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

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.04

Standardisation versus adaptation in international marketing of Polish companies operating in foreign markets: The case of Maspex

Paweł Milka, Jakub Garncarz

ABSTRACT

Objective: The article examines the application of standardisation, adaptation, and glocalisation strategies in international marketing, with Maspex Group serving as a case study. It analyses how Polish firms, exemplified by Maspex, navigate the challenges of foreign market expansion through these strategic approaches and evaluates their implications for organisational performance and brand perception.

Research Design & Methods: We employed a case study methodology combined with a literature review. Data sources included corporate reports, promotional materials, and academic publications. We critically analysed key dimensions of international marketing, *i.e.,* product, promotion, distribution, and pricing, and to assess strategic choices.

Findings: Maspex Group effectively combines standardisation (e.g., brand messaging) with adaptation (e.g., localized promotional campaigns), implementing a glocalised approach. This strategy enhances brand recognition while meeting local consumer needs.

Implications & Recommendations: Polish firms aiming for internationalisation should adopt a flexible glocalisation strategy, balancing efficiency through standardisation and responsiveness through adaptation. Investments in digital tools and cultural insights are critical for success.

Contribution & Value Added: This article contributes to the field of international marketing by presenting a practical case of how a Polish company has successfully navigated the balance between standardisation and adaptation, offering actionable insights for firms in similar contexts.

Article type: research article

Keywords: standardisation; adaptation; glocalisation; international marketing strategies; Maspex

JEL codes: O01, O30, P47

Received: 17 July 2024 Revised: 24 November 2024 Accepted: 16 December 2024

Suggested citation:

Milka, P., & Garncarz, J. (2025). Standardisation versus adaptation in international marketing of Polish companies operating in foreign markets: The case of Maspex. *International Entrepreneurship Review,* 11(1), 57-67. https://doi.org/10.15678/IER.2025.1101.04

INTRODUCTION

Internationalized businesses (international firms, multinational companies, transnational corporations, global companies), to grow their businesses, aim to increase the profitability or sales of their products in foreign markets. The usual problem they face is the saturated markets where they are already located. Overcoming the problems of saturation of existing markets involves expanding their operations into foreign markets. In the literature, we distinguished push and pull factors in global marketing in relation to the processes of enterprises' internationalisation.

Generally, scholars consider push factors to be negative (Evans *et al*., 2008). For instance, a company may discover that it has already covered its domestic market, so it will have to enter a new market. However, push factors are not necessarily negative. For instance, a domestic government may promote the domestic industry to export globally and provide tax benefits or assistance in doing

so. We may attribute push forces to resources, management knowledge, the company's culture, and environmental factors.

Typically, scholars consider pull factors to be positive or accidental drivers of internationalisation. For instance, a new international market may have a growing middle class that possesses a significant amount of spending power. A company can exploit this potential opportunity. Pull factors include the market's size, economic and social conditions, and the foreign market's traits.

In the international marketing literature, when a business decides to start marketing products abroad, the fundamental strategic decision is the use of appropriate marketing tools. Businesses must decide whether they are pursuing a single (unified) marketing strategy in each market or trying to adapt strategies to the unique specifics of local or regional markets. Finding this relationship between standardisation and adaptation is the biggest challenge for business managers (Hollensen, 2011).

In the age of globalisation, many businesses find global markets to be remarkably similar. Given this aspect, various marketers and researchers recommend the use of a universal, standardized strategy. On the other hand, others argue that precisely because of globalisation, businesses should become more flexible. They should try to adapt to the customer and be a consumer-oriented companies. We cannot forget that there are differences in consumer behaviour both between and within individual markets. These differences result from specific combinations of collective and individual parameters in individual markets (such as emotionality/restraint, social status, type of persuasive/direct communication, rationality or lack thereof in advertising, *etc*.).

This article investigates the strategic approaches of Polish companies in foreign markets, with a specific emphasis on the interplay between standardisation, glocalisation, and adaptation in international marketing. By investigating Maspex, one of the fastest-growing Polish brands, we sought to enhance our understanding of the strategies adopted by Polish firms to address these challenges and evaluate the significance of glocalisation as a factor contributing to their success in global markets. The novelty of this research lies in its focus on Maspex, a brand that has not been extensively studied in the context of international marketing strategies. By analysing how Maspex addresses the tensions between standardisation, glocalisation and adaptation, we provide new insights into the strategic decision-making processes of Polish firms operating in global markets.

Due to the exploratory nature of this research, we formulated the following research questions:

RQ1: What are the key elements of the Maspex Group's international marketing strategy, with particular emphasis on the roles of standardisation, adaptation, and glocalisation?

RQ2: How does the Maspex Group reconcile the need for global consistency with the demands for local adaptation in its marketing strategies across diverse regional markets?

The article is structured as follows. Following a brief introduction, we will elaborate on the theoretical background and prior research related to international marketing strategies. Next, we will present the research methodology employed in this study. The findings section will discuss the analysis of Maspex's marketing strategies. The article concludes with a summary of the main findings and their implications.

LITERATURE REVIEW

In the recent history of world trade, we have observed the rapid development of globalisation processes and the increasing liberalisation of trade policies, the increasing stability of monetary transactions, the emergence of regional production centres, the increase in flow due to the relatively peaceful conditions in the world, ending with the development of transport, the development of technologies and communication channels (Keegan, 1999; Czinkota & Ronkainen, 2001; Lee & Kusumah, 2019). All these factors have led to increased competition, with the participation of many companies of different sizes and national origins (Craig & Douglas, 1996). The result of these issues was the constant question of how to compete effectively and efficiently in new business environments. A particular aspect of the research was how to enter a foreign market, which involved implementing marketing strategies, *i.e.*, whether to standardize or adapt to new markets (Theodosiou & Leonidou, 2003).

The literature offers two opposite approaches, namely standardisation (globalisation) and adaptation (localisation) (Wach, 2014). Of course, there is also a mixed approach called glocalisation (Głodowska *et al.,* 2023). Researchers who support the importance of the standardisation approach see the development of globalisation in the world as an opportunity to increase market similarity, greater technological uniformity and greater convergence of consumer needs, tastes, and preferences (Levitt, 1983; Ohmae, 1985). Standardisation is facilitated by the development of international communication channels, the emergence of global market segments (Levitt, 1983; Douglas, 1986; Yip *et al.*, 1988; Theodosiou & Leonidou, 2003), or significant development of internet and e-commerce platforms. According to them, the perception of a marketing strategy as a standardisation strategy should bring benefits in creating a uniform brand image or reducing difficulties related to the control of international operations (Coskun Samli & Jacobs, 1994).

Researchers in favour of the adaptation approach say that despite current globalisation trends, gaps between nations persist in aspects such as consumer needs, usage opportunities, purchasing power, commercial infrastructure, culture, traditions, laws and regulations, and technological development, which require adapting a company's marketing strategies to the context of each foreign market (Terpstra & Sarathy, 2000; Szromnik, 2019). Moreover, these researchers argue that the standardisation strategy is a new form of short-sighted marketing strategy and is an oversimplification of reality for marketing orientation (Boddewyn *et al.,* 1986; Wind, 1986; Douglas & Wind, 1987). Most importantly, they emphasize that the overriding goal of companies is not to minimise costs through standardisation, but to achieve long-term profitability by increasing sales by better exploiting the diverse needs of consumers in different countries (Onkvisit & Shaw, 1990; Rosen, 1990; Whitelock & Pimblett, 1997).

There is another group of researchers who propose a third type of strategy: glocalisation (Wach, 2014; Głodowska *et al.,* 2023). According to them, we cannot consider standardisation or adaptation in isolation. The choice between standardisation and adaptation of a marketing strategy is specific to a given situation and should result from a systematic consideration of the uncontrolled and independent variables prevailing in a given market at a given time and the appropriateness of the chosen marketing strategy.

The standardisation/adaptation value of an international marketing strategy must depend on its impact on the company's performance in international markets. Therefore, the challenge for an international corporation is to determine which elements of a strategy can or should be standardized or adapted, under what circumstances and to what extent (Quelch & Hoff, 1986; Onkvisit & Shaw, 1987; Jain, 1989; Cavusgil & Zou, 1994; Theodosiou & Leonidou, 2003).

We may draw interesting conclusions from the analysis of Obadia and Vida (2024), who undertook the analysis of prior research on adaptation and standardisation approaches (Table 1).

An analysis of the table shows that promotion studies are fraught with many problems. The most important include the emphasis on standardisation and adaptation. Furthermore, the scales used to measure promotion adaptation/standardisation are not consistent between studies, and the majority of them are misspecified.

The lack of distinction between delegated and integrated export methods is particularly detrimental to studies. Indeed, the 'size' of a company's mode of entry into the foreign market (low or high commitment) has a significant impact on the development of its marketing strategy.

However, scholars dedicated to marketing exports typically disregard SMEs as being smaller than MNCs, and they fail to evaluate their marketing strategies based on their size and common export methods. A demonstration of this issue is located in the scales employed to evaluate SMEs' marketing strategies regarding exports, which are identical to those employed by larger corporations (*e.g.,* Lages & Montgomery, 2004). However, qualitative research findings indicate that the nature of the international marketing mix depends on the exporter size (Jiménez-Asenjo & Filipescu, 2019). As a result, we can deduce that previous studies have not considered the international strategy of marketing properly.

Table 1. Research on adaptation and standardisation approaches

Study	Sample	Marketing strategy	Results
Albaum & Tse (2001)	183 Hong Kong exporters	Adaptation	Competitive advantage (NS)
Cavusgil & Zou (1994)	79 US exporters	Adaptation	Export performance (-)
Fuchs & Köstner (2016)	115 Austrian exporters	Adaptation	Sales growth (NS); profitability (NS); achievement of strategic goals (NS); overall success (NS)
Hultman *et al*. (2011)	336 Swedish exporters	Adaptation	Export performance (NS)
Lages & Montgomery (2004)	413 Portuguese exporters	Adaptation	Export performance (NS)
Shoham (1999)	98 Israeli exporters	Standardisation	Export performance (-)
Shoham (2021)	Meta-analysis: 17 articles published between 1970 and 2000	Standardisation	Export performance (NS)
Schilke *et al*. (2009)	489 business units of US MNCs	Standardisation	Standardisation → performance (+)
Sousa & Lengler (2009)	201 Brazilian exporters	Adaptation	Export performance (+)
Westjohn & Magnusson (2017)	203 US exporters	Adaptation	Export performance (+)
Zou *et al.* (1997)	51 Colombian exporters	Standardisation	Export intensity (NS)

Notes: (NS) – no significant dependence; (+) – confirmed dependence; (-) – rejected dependence.
Source: own study based on Obadia and Vida (2024).

RESEARCH METHODOLOGY

We based the methodological framework on a combination of a critical literature review and a case study approach, focusing on the international marketing strategy of Maspex, a leading Central and Eastern European food and beverage company. We aimed to examine how the company balances standardisation, adaptation, and glocalisation in its marketing strategy across diverse markets. The critical literature review involves analysing existing theoretical and empirical studies on international marketing strategies, particularly the dimensions of product, promotion, distribution, pricing, and branding. We selected sources from peer-reviewed journals, books, and industry reports, emphasizing frameworks and models relevant to multinational corporations operating in culturally diverse regions. This review provides the theoretical foundation for understanding how firms can effectively navigate the global-local dichotomy in marketing.

We chose the case study method to provide an in-depth examination of Maspex's strategic practices. This approach allows for a detailed exploration of the company's operations in different markets, drawing on publicly available data, including corporate reports, marketing materials, and secondary analyses from industry experts. The choice of Maspex as a case study is justified by its significant presence in over 80 countries and its unique approach to marketing in culturally similar yet economically diverse markets, particularly in Central and Eastern Europe. Data collection involved compiling information from Maspex's official website, press releases, advertising campaigns, and academic publications that analyse the company's strategy. We focused on identifying patterns of standardisation, adaptation, and glocalisation across Maspex's marketing mix dimensions (product, promotion, place, price) and other strategic aspects such as production and branding.

We synthesised findings from the literature review and case study to develop a comprehensive understanding of the interplay between global and local strategies in Maspex's international marketing efforts. This mixed-method approach ensures both theoretical rigour and practical relevance, offering insights into best practices for companies navigating similar challenges in international markets.

RESEARCH METHODOLOGY

Grupa Maspex sp. z o.o. (afterwards Maspex) was founded in 1990 on the wave of economic enthusiasm that occurred after 1989 in Poland. In the first years of operation, it engaged in the manufacturing and distribution of instant coffee and cocoa products. After three years, it started its own production under the Ekland, Puchatek and Filutki brands. In 1995, it took over the ownership of the Kubuś brand. They started exporting their products to Central and Eastern European markets. By 1999, it opened its foreign branches in the Czech Republic, Romania, Slovakia, and Hungary. In 1999, it took over the Tymbark and Cremona brands, and after 2000, it entered the Bulgarian, Ukrainian, and Russian markets. By 2008, it had acquired numerous foreign companies: Hungarian Plusssz Vitamin, Olympos, Apenta, Czech Walmark, Bulgarian Queen's, Romanian Arnos and Russian Mark IV (sold in 2021) and continued to make acquisitions in Poland (*e.g.,* Lubella). After the crisis in 2009, Maspex bought the Tiger brand, Romanian Salatini and Capollini and the Polish pasta producer Malma. In 2015, Agros Nova (owner of the Łowicz, Kotlin, Włocławek, Krakus, Tarczyn, and DrWitt brands) joined the Maspex's portfolio. After 2016, Maspex bought Rio Bucovina (Romanian producer of mineral water), Aquarex AD (Bulgarian producer of mineral water), and since 2019, it has had a license for tea drinks Nestea. In 2022 and 2023, it acquired CEDC and Jan Becher, which own well-known high-percentage alcohols throughout Europe (Maspex, 2024).

Analysing Maspex's marketing strategy, we can clearly state that its strategy is to build brands with strong consumer awareness in local markets and conduct acquisitions that increase the range of branded products.

Maspex is one of the most innovative companies on the market in this part of Europe. The Maspex Group has launched the 'Hummingbird Effect' strategy until 2030. This strategy is that innovation in one field causes change in other fields together, leading to breakthroughs, and positive changes for people and the planet. Such behaviours are very important in terms of eco-innovation, corporate social responsibility (CSR) and environmental protection. The development of companies in this area is extremely beneficial for potential consumers (Hajdukiewicz & Pera, 2024; Proszowska *et al.,* 2024). Maspex Group pays special attention to people – employees, co-workers and, above all, customers and consumers (Maspex, 2024). It is the human aspect in their politics and functioning – also in the aspect of marketing – that can lead to fulfilling the conditions of the marketing mix and emphasizing the importance of 'People.'

Another goal of the marketing mix is to emphasize the importance of price and products. When analysing the reports and information to investors of Maspex Group, it is easy to see the importance of a common policy of manufacturers and retailers in improving the quality and volume of sales. A milestone of Maspex Group was the introduction of innovation regarding the analysis of sales data or data from stores and the exchange of this data through the cooperation of manufacturers and retailers. It is worth highlighting here that until recently, retail was not ready for such a transparent approach to the analysis of sales data. However, Maspex's ready-made solutions and their transmission to retailers improve the communication with Maspex Group. With this analysis, there is room to implement the pricing policy and adapt it to the optimal price management in such a way that it is possible to assess the appropriate final price level acceptable to the customer (Maspex, 2024).

We should also mention that Maspex uses artificial intelligence (AI) capabilities to create Smart Kitchen Planner (SKP), whose task is to collect all user data and, thanks to machine learning technology, SKP recommends personalized recipes for users. Maspex's AI systems are constantly learning and, based on user interactions, lead to greater accuracy and relevance of the collected data.

Another solution using AI is an intelligent tool that automates the process of creating planograms, which recommends the optimal arrangement of products on the store shelf for the category (the appropriate place; advanced merchandising) based on various data sources – qualitative (market, consumer, shopper) and quantitative.

Regarding the promotion approach (another example of 7Ps), Maspex emphasizes the importance of three factors: knowledge about customers and products offered, research and analysis of shopper trends, and process and analysis of the effectiveness of the entire group.

Regarding the first factor, Maspex Group plans and creates trade marketing actions using knowledge about customers, including the possibilities, requirements, and retailers' abilities to implement marketing activities. Once this data is collected, the Maspex group has specialists among its employees in individual brands, and each of them specialises in a specific (brand-specific) target group. An important factor contributing to the success of the company is the ability to meet customer requirements and respond quickly to actions taken by competitors and business partners (Kolasińska-Morawska *et al.,* 2019). Given the above, Maspex Group's marketing campaigns are tailored to the needs of the market.

The second factor, important for the Maspex Group, is the analysis of shopper trends. Maspex has its own research panel, M-Lab, which uses the services of external research institutes (*e.g.,* Nielsen, trade press, or GFK, an international public opinion research company) and, as mentioned above, its own databases using AI. Thanks to these treatments, Maspex can optimize the efficiency of the entire group.

When preparing promotional campaigns, Maspex considers many factors, including those that depend on the specifics of the industry and the particular customer. Production planning, co-packing planning and subsequent planning with the store and sales structures are essential for the entire process. In this way, Maspex joins the group of global brands that benefit from the concept of glocalisation of the marketing mix, which draws attention to the importance of globalisation processes in valuing location – thus tailoring advertising to local, specific markets (Hollensen, 2020).

In the product domain, Maspex implements a strategy that combines standardisation and adaptation, depending on the characteristics of the target market. Maspex does not uniformly offer its entire product portfolio across all markets. For instance, instant cocoa products are absent from the Czech and Slovak markets, and DrWitt beverages are not available in Hungary. Similarly, Bucovina water is exclusively sold in Romania, while alcoholic beverages such as Bacherovka are present in the Czech Republic, and Figo is available only in Romania and the Czech Republic. Even when a brand is present in multiple markets, its product variations may differ. A notable example is the Kubu juice line in Hungary, where the flavour selection is narrower compared to Poland. Packaging formats also vary significantly by region. In the Czech Republic, many Kubik products are offered in cans, while Puchatek cocoa in Poland is sold in a distinctive 600-gram package or PET bottles, the latter also available exclusively in Poland and Romania. Products marketed under the same brand and packaging may exhibit different ingredient compositions across countries. For example, the lemon-flavoured DrWitt isotonic drink has 16 kcal and 3.9g of carbohydrates per 100g in Poland, while the same product in the Czech Republic and Slovakia contains 21 kcal and 5g of carbohydrates. Even greater differences are evident in products tailored to local preferences, such as Kubuś in Poland, Kubu in Hungary, and Kubik in the Czech Republic, where caloric content and sugar levels can vary by as much as 50%. Despite these adaptations, Maspex maintains standardisation for certain products, such as Żubrówka vodka, marketed in identical form and under the same brand name across various markets. However, even such standardized offerings are not universally available, as evidenced by the absence of Żubrówka in Hungary (Maspex, 2024).

Maspex demonstrates standardisation in its consistent brand messaging, focusing on values such as quality and product trust, which hold particular significance in culturally similar Central and Eastern European markets. Adaptive elements include tailoring advertising language and product names. However, campaign characters and mascots, such as Kubuś, remain consistent throughout the region. An example of combining these approaches is the Tymbark Junior Cup, a national school youth football tournament held in Poland and Romania. These events promote the Tymbark brand in a manner that is similar yet adjusted to the local market's specifics. Such initiatives highlight Maspex's ability to build a unified brand image while addressing local preferences and needs. However, not all brands maintain dedicated websites in every market. For instance, DrWitt lacks a standalone website in Romania, and the Brumi brand does not have one in Hungary. This reflects a tailored approach to digital marketing and brand promotion based on regional priorities.

In distribution, the company pursues standardisation through centralized logistics and partnerships with international retail chains. However, adaptation is evident in cases such as products that are produced and distributed locally, such as Rio Bukovina water, bottled and sold exclusively in Romania. This approach reduces logistics costs and enhances the product offering's relevance to specific markets.

Maspex's pricing policy relies on the analysis of sales data and the adjustment of prices to local market conditions. By leveraging modern data analysis technologies, the company optimises pricing strategies, considering consumers' purchasing power and the competitive landscape in different markets. This approach ensures a balance between product affordability and profitability (Maspex, 2024).

Table 2. International marketing strategy of Maspex

Dimension of a strategy	Standardisation	Adaptation	Glocalisation
Marketing mix of 4Ps			
Product	Żubrówka vodka, Tiger energy drink	Diverse product portfolios: (*e.g.*, Puchatek (Brumi) cocoa: available in Romania, Hungary, Lithuania, Latvia, Ukraine, not offered in Czech Republic, Slovakia and Bulgaria), regional product availability (*e.g.,* Bucovina water in Romania, Figo beverages in Romania and Czechia, Bacherovka only in Czechia).	Different product compositions (e.g., DrWitt isotonic drinks, varied packaging (*e.g.*, Kubík in cans in Czechia, Puchatek cocoa in PET bottles only in Poland/Romania, different ingredients in the products under the same brand (*e.g.,* lemon-flavored DrWitt isotonic drink).
Promotion	Consistent brand messaging focusing on quality and trust	Language adaptations and localized ad campaigns, localized websites or lack thereof (*e.g*., DrWitt in Romania, Brumi in Hungary).	Unified campaigns with local adaptations (*e.g.*, Tymbark Junior Cup in Poland and Romania).
Place and distribution channels	Centralized logistics, collaboration with international retail chains	Localized production and distribution (*e.g.*, Rio Bukovina in Romania).	Local adaptations in retail collaborations, targeting specific regional retail chains where necessary.
Price	General pricing principles based on data analysis	Price adjustments based on local market conditions.	Adjusted balance between affordability and profitability while maintaining brand equity.
Other aspects of marketing strategy			
Production	Centralized for most products	Local production (*e.g.*, Rio Bukovina water in Romania)	–
Branding	Unified branding for global products	Localized product names and branding elements (e.g., Kubuś in Poland, Kubu in Hungary, Kubík in Czechia).	Consistent use of mascots and brand visuals with tailored messaging for specific cultural preferences.

Source: own study.

In reference to the principles of merchandising, Maspex emphasizes the importance of applying standardisation to the packaging graphics and adaptation to the brand name. Maspex does not rely solely on its own beliefs in the packaging design process but on knowledge from the research mentioned above (Maspex, 2024).

CONCLUSIONS

Maspex serves as a compelling example of how combining traditional flavours with innovative, customized solutions can address the diverse preferences of consumers across various markets. The company's strategy demonstrates that success in international marketing depends on leveraging a dynamic marketing mix rather than adhering strictly to either standardisation or adaptation. By continuously investing in creative and unconventional visual elements, Maspex not only distinguishes its products but also aligns them with rapidly evolving consumer expectations. This flexibility in responding to market needs highlights the importance of balancing global consistency with local relevance in achieving business excellence.

From a theoretical perspective, this analysis contributes to the ongoing debate on standardisation versus adaptation by emphasizing the situational nature of the decision-making process. It supports the

notion that no single strategy guarantees success; instead, the effectiveness of a marketing approach depends on contextual factors such as market conditions, cultural differences, and consumer behaviour.

On a practical level, Maspex's case underscores the importance of innovation in product development, packaging, and promotion as key drivers of competitive advantage. The company's focus on combining visual appeal with meaningful storytelling through its product labels offers actionable insights for practitioners aiming to enhance brand differentiation.

This study has several limitations. Firstly, it focuses primarily on a single company's marketing strategy, which may limit the findings' generalizability to other industries or markets. Secondly, the analysis does not quantitatively measure the effectiveness of Maspex's strategies in terms of specific performance metrics, such as sales growth or market share. Lastly, the dynamic nature of consumer preferences and market trends means that the strategies highlighted here may require constant re-evaluation.

Future research could explore comparative studies across industries to identify common patterns and differences in the use of standardisation and adaptation. Moreover, scholars could employ quantitative approaches to measure the direct impact of various elements of the marketing mix on consumer perception and business outcomes. Longitudinal studies examining how companies adapt their strategies over time in response to shifting market conditions could also provide deeper insights into the interplay between global and local marketing practices.

REFERENCES

Albaum, G., & Tse, D.K. (2001). Adaptation of international marketing strategy components, competitive advantage, and firm performance: A study of Hong Kong exporters. *Journal of International Marketing, 9*(4), 59-81. https://doi.org/10.1509/jimk.9.4.59.19943

Boddewyn, J.J., Soehl, R., & Picard, J. (1986). Standardization in international marketing: is Ted Levitt in fact right?. *Business Horizons, 29*, 69-72. https://doi.org/10.1016/0007-6813(86)90040-6

Cavusgil, T.S., & Zou, S. (1994). Marketing strategy-performance relationship: an investigation of the empirical link in export market ventures. *Journal of Marketing, 58*, 1-21. https://doi.org/10.2307/1252247

Coskun, Samli, A., & Jacobs, L. (1994). Pricing Practices of American Multinational Firms. *Journal of Global Marketing, 8*(2)*,* 51-74. https://doi.org/10.1300/J042v08n02_04

Czinkota, M.R., & Ronkainen, I.A. (2001). *International marketing*. USA: The Dryden Press.

Douglas, S.P. (1986). Global marketing Myopia. *Journal of Marketing Management, 2*(2), 155-169. https://doi.org/10.1080/0267257X.1986.9964008

Douglas, S.P., & Wind, Y. (1987). The myth of globalization. *Columbia Journal of World Business, 22*(4), 19-29. Retrieved from https://www.econbiz.de/Record/the-myth-of-globalization-douglas-susan/10001054686 on November 2, 2024.

Evans, J., Bridson, K., Byrom, J., & Medway, D. (2008). Revisiting Retail Internationalisation: Drivers, Impediments and Business Strategy. *International Journal of Retail & Distribution Management, 36*(4), 260-280. https://doi.org/ 10.1108/09590550810862679

Filipe Lages, L., & Montgomery, D.B. (2004), Export performance as an antecedent of export commitment and marketing strategy adaptation: Evidence from small and medium-sized exporters. *European Journal of Marketing, 38*(9/10), 1186-1214. https://doi.org/10.1108/03090560410548933

Fuchs, M., & Köstner, M. (2016). Antecedents and consequences of firm's export marketing strategy: An empirical study of Austrian SMEs (contingency perspective). *Management Research Review, 39*(3), 329-355. https://doi.org/10.1108/MRR-07-2014-0158

Głodowska, A., Wach, K., & Maciejewski, M. (2023). Does high-tech industry matter for marketing strategy selection? Adaptation vs. standardization on the international market. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego, 37*(1), 70-82. https://doi.org/10.24917/20801653.371.4

Hajdukiewicz, A., & Pera, B. (2024). Eco-innovation performance in the European Union economies: Perspective on outcomes. *International Entrepreneurship Review, 10*(3), 21-36. https://doi.org/10.15678/IER.2024.1003.02

Hollensen, S. (2011). *Global Marketing. A Decision-Oriented Approach*. FT Prentice Hall*,* Harlow.

Hollensen, S. (2020). Glocalization: Companies' search for the right balance between globalization and localization'. *Handbook on Cross-Cultural Marketing*, 20-36. https://doi.org/10.4337/9781788978545.00009

Hultman, M., Katsikeas, C.S., & Robson, M.J. (2011). Export promotion strategy and performance: The role of international experience. *Journal of International Marketing, 19*(4), 17-39. http://doi.org/10.2307/41304409

Jain, S.C. (1989). Standardization of international marketing strategy: some research hypotheses. *Journal of Marketing, 53*, 70-79. https://doi.org/10.1177/002224298905300106

Jiménez-Asenjo, N., & Filipescu, D.A. (2019). Cheers in China! International marketing strategies of Spanish wine exporters. *International Business Review, 28*(4), 647-659. https://doi.org/10.1016/j.ibusrev.2019.01.001

Keegan, W.J. (1999). *Global Marketing Management*. USA: *Prentice Hall*.

Kolasińska-Morawska, K., Sułkowski, Ł., & Brzozowska, M. (2019). Leadership and the role of women in the success of logistics companies. *International Entrepreneurship Review, 5*(4), 93-106. https://doi.org/10.15678/IER.2019.0504.06

Lages, L.F., & Montgomery, D.B. (2004). Export performance as an antecedent of export commitment and marketing strategy adaptation: Evidence from small & medium- sized exporters. *European Journal of Marketing, 38*(9/10), 1186-1214. https://doi.org/10.1108/03090560410548933

Lee, C.W., & Kusumah, A. (2019). Soft kills influencing motivation and their impact on the employee performance: An Indonesian company case. *International Entrepreneurship Review, 5*(4), 123-140. https://doi.org/10.15678/IER.2019.0504.08

Levitt, T. (1983). The globalization of markets. *Harvard Business Review.*

Maspex Group. (2024). Retrieved from https://www.maspex.com on November 4-17, 2024.

Obadia, C., & Vida, I. (2024), Export marketing strategy and performance: A focus on SMEs promotion. *International Business Review, 33*(2)*,* 1-45. https://doi.org/10.1016/j.ibusrev.2023.102229

Ohmae, K. (1985). *Triad power: the coming shape of global competition*. New York: The Free Press*.*

Onkvisit, S., & Shaw, J.J. (1987). Standardized international advertising: a review and critical evaluation of the theoretical and empirical evidence. *Columbia Journal of World Business, 22*(3), 43-55. Retrieved from https://www.researchgate.net/profile/David-Griffith-9/publication/235312790_Standardizationadaptation_of_international_marketing_strategy_Necessary_conditions_for_the_advancement_of_knowledge/links/5f3bd055a6fdcccc43d12055/Standardization-adaptation-of-international-marketing-strategy-Necessary-conditions-for-the-advancement-of-knowledge.pdf on November 4-17, 2024.

Onkvisit, S., & Shaw, J.J. (1990). Global advertising: revolution or myopia?. *Journal of International Consumer Marketing, 2*(3), 97-112, https://doi.org/10.1300/J046v02n03_06

Proszowska, A., Mamcarczyk, M., & Lisowski, R. (2024). Factors shaping environmental awareness of young adults and its importance in market decision-making processes. *International Entrepreneurship Review, 10*(3), 79-94, https://doi.org/10.15678/IER.2024.1003.06

Quelch, J.A., & Hoff, E.J. (1986). Customizing global marketing. *Harvard Business Review, 64*(3), 59-68. Retrieved from https://hbr.org/1986/05/customizing-global-marketing on November 17, 2024.

Rosen, B.N. (1990). Global products: when do they make strategic sense*?. Advances in International Marketing, 4*, 37-48. Retrieved from https://sid.ir/paper/586707/en on November 17, 2024.

Schilke, O., Reimann, M., & Thomas, J.S. (2009). When does international marketing standardization matter to firm performance?. *Journal of International Marketing, 17(*4), 24-46. http:// doi.org/10.1509/jimk.17.4.24

Shoham, A. (1999). Bounded rationality, planning, standardization of international strategy, and export performance: A structural model examination. *Journal of International Marketing, 7*(2), 24-50. https://doi.org/10.1177/1069031X9900700203

Shoham, A. (2021). Standardization of international strategy and export performance: a meta-analysis. *Strategic Global Marketing: Issues and Trends,* 97-120. Routledge, http://doi.org/10.1300/J042v16n01_05

Sousa, C.M.P., & Lengler, J. (2009). Psychic distance, marketing strategy and performance in export ventures of Brazilian firms. *Journal of Marketing Management, 25*(5-6), 591-610. http://doi.org/10.1362/026725709X461876

Szromnik, A. (2019). Market and marketing within the concept of functioning and development of cultural heritage sites. *International Entrepreneurship Review, 5*(3), 79-94. https://doi.org/10.15678/IER.2019.0503.06

Terpstra, V., & Sarathy, R. (2000). *International marketing*. The Dryden Press.

Theodosiou, M., & Leonidou, L.C. (2003). Standardization versus adaptation of international marketing strategy: an integrative assessment of the empirical research. *IBR 12*, 141-171. http://doi.org/10.1016/S0969-5931(02)00094-X

Wach, K. (2014). International Strategies of Businesses: Some Evidence from Internationalised Polish Firms. In A.S. Gubik & K. Wach (Eds.), *International Entrepreneurship and Corporate Growth in Visegrad Countries. Miskolc: University of Miskolc* (pp. 41-56).

Westjohn, S.A., & Magnusson, P. (2017). Export performance: A focus on discretionary adaptation. *Journal of International Marketing, 25*(4), 70-88. https://doi.org/10.1509/jim.16.0114

Whitelock, J.M., & Pimblett, C. (1997). The standardization debate in international marketing. *Journal of Global Marketing, 10*(3), 45-66. https://doi.org/10.1300/J042v10n03_04

Wind, Y. (1986). The myth of globalization. *Journal of Consumer Marketing, 3*(2), 23-26. https://doi.org/10.1108/eb008184

Yip, G.S., Loewe, P.M., & Yoshino, M.Y. (1988). How to take your company to the global market. *Columbia Journal of World Business, 23*(4), 99-116. Retrieved from https://www.scribd.com/doc/69266850/Yip on November 17, 2024.

Zou, S., Andrus, D.M., & Wayne Norvell, D. (1997). Standardization of international marketing strategy by firms from a developing country. *International Marketing Review, 14*(2), 107-123. https://doi.org/10.1108/02651339710170139

Authors

The contribution share of authors is equal and amounted to 50% for each of them.

Paweł Milka
Research and Teaching Assistant at Krakow University of Economics, College of Economics and Finance, Department of International Trade. His research interests include international financial markets, investments, hedging instruments, international transport, and international e-business.
Correspondence to: Mgr Paweł Milka, Department of International Trade, Krakow University of Economics, ul. Rakowicka 27, 31-510 Kraków, Poland. e-mail: milkap@uek.krakow.pl
ORCID https://orcid.org/0000-0002-6276-7587

Jakub Garncarz
Research and Teaching Assistant at Krakow University of Economics, College of Economics and Finance, Department of International Trade. His research interests include international entrepreneurship and Artificial Intelligence.
Correspondence to: Mgr Jakub Garncarz, Department of International Trade, Krakow University of Economics, ul. Rakowicka 27, 31-510 Kraków, Poland. e-mail: garncarj@uek.krakow.pl
ORCID https://orcid.org/0000-0003-0166-9403

Acknowledgements and Financial Disclosure

The article presents the results of Project no 079/EEZ/2024/POT financed from the subsidy granted to the Krakow University of Economics. The authors would like to thank the anonymous referees for their useful comments, which allowed to increase the value of this article.

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.

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.05

Impact of the COVID-19 pandemic on foreign direct investment worldwide

Wojciech Zysk

ABSTRACT

Objective: The objective of this article is to identify and describe selected trends and phenomena occurring in the global economy in conjunction with the description of changes taking place globally, in the EU countries, in the Visegrad Group (V4) countries and in Poland, which are related to the impact of the COVID-19 pandemic on capital flows in the form of foreign direct investment.

Research Design & Methods: We used own calculations made based on available UNCTAD statistics provided in the WIR Reports 2010-2023 and the UNCTADstat database. We also used literature studies, source text analysis, logical inference method, deductive reasoning, documentary and critical analysis methods, descriptive analysis, comparative analysis, and simple quantitative methods such as time series analysis.

Findings: We verified eight main research questions, each with four specific research questions (32 analyses in total). In the vast majority of cases, the main questions were verified positively in full, meaning that we confirmed the assumption that foreign direct investment (FDI) outflows, the number of net cross-border M&As (by seller region), the value of announced greenfield FDI projects (by source of investment), the value of announced greenfield FDI projects (by destination of investment) and the number of announced greenfield FDI projects (by source of investment) decreased after the outbreak of the COVID-19 pandemic in all the proposed four geographic aspects. For main research questions RQ1, RQ3, and RQ8, i.e. FDI inflows, net cross-border M&As (by seller region) and the number of announced greenfield FDI projects (by destination of investment), we observed positive verification only partially. For specific research questions RQ1d, RQ3b, and RQ8d, the verification of assumptions was negative.

Implications & Recommendations: The presented research findings have not only a descriptive but also an explicative value. They may also have an implication value when we consider the level of investment attractiveness of our country and the possible location and relocation of foreign capital in our part of Europe related to the destabilisation of global value chains and the search for safe location havens for foreign direct investment. It is becoming important to look for attempts to reduce business dependence on production processes far abroad, for example outside the EU. Paradoxically, the effect of the COVID-19 pandemic may be the emergence of a development opportunity for Poland and the countries of our region.

Contribution & Value Added: Proposal to broaden the nomenclature of negative phenomena – my proposal of 'new swan colours' (a reference to N.N. Taleb's 'black swans'). A literature search was also conducted in relation to various types of crises (sudden events) – including the COVID-19 pandemic – and foreign direct investment. The conclusions from research findings (especially regarding Poland) can serve as recommendations for specific actions at the government level.

Article type: research article

Keywords: COVID-19 pandemic; foreign direct investment; FDI; Visegrad countries; economic activity

JEL codes: F21, F23

Received: 12 April 2024 Revised: 4 September 2024 Accepted: 14 September 2024

Suggested citation:

Zysk, W. (2025). Impact of the COVID-19 pandemic on foreign direct investment worldwide. *International Entrepreneurship Review,* 11(1), 69-92. https://doi.org/10.15678/IER.2025.1101.05

INTRODUCTION

The explosion of the coronavirus pandemic (COVID-19) in the last months of 2019 (first reported in Wuhan, China) suddenly and unexpectedly led the global economy to a clear slowdown in the first quarter of 2020. Individual countries – in an attempt to try and control the outbreak – imposed travel bans, quarantines, lockdowns, orders to maintain social distance and isolation and a range of other restrictions, resulting in rapid changes in the functioning of the global economy. In addition to huge losses in humanitarian and social terms, many disruptions could be observed in the context of business and international trade, the management of international supply chains, global business networks and business ecosystems. All over the world, companies recorded a slowdown in turnover in their business activity, decreases in profits, reduced employees of employees, decreases in the financial liquidity of companies (cash flow), and investments (including foreign ones) were reduced or completely inhibited. Therefore, it seems interesting to examine how the COVID-19 coronavirus pandemic has influenced capital flows in the form of foreign direct investment in the world and various regions.

The objective of this article is to identify and describe selected trends and phenomena occurring in the global economy and to describe the changes taking place globally, in the European Union countries, in the Visegrad Group (V4) countries and in Poland, which are related to the impact of the COVID-19 pandemic on capital flows in the form of foreign direct investment.

There are not many studies in the literature on the object related to the relationship between the COVID-19 pandemic and direct foreign investment, especially in an extensive approach proposed in this study (world, the EU, the Visegrad Group, Poland – inflows, outflows, the net value of cross-border M&As, number of net cross-border M&As, value of announced greenfield FDI projects analysed by source of investment, value of announced greenfield FDI projects analysed by destination of investment, number of announced greenfield FDI projects analysed by source of investment, and number of announced greenfield FDI projects analysed by destination of investment).

This article consists of a review of the subject literature and presents the results of our own calculations in accordance with the topic. Lastly, we will draw conclusions and some recommendations.

LITERATURE REVIEW

Capital flows in the form of foreign direct investment are highly susceptible to economic shocks. Many of the available analytical results on FDI flows have been synthesised by Paul and Feliciano-Cestero (2021) by conducting an in-depth search covering 50 years of the effects of FDI flows, different theories, determinants, and links of FDI to economic development, productivity or international trade. The links between sudden economic events, financial crises, disasters, COVID-19 and aspects of international business, including capital flows in the form of FDI are also available in the world literature. Table 1 presents selected examples of a synthetic summary of selected research findings on these issues.

Very interestingly: a country's policy towards the challenges of coping with the impact of the COVID-19 pandemic is emerging as an element of the investment attractiveness of the FDI host country. In addition to traditional factors such as purchasing power and size of the domestic market, level of technological development, economic stability, labour productivity, employee loyalty, transparency and reliability of business partners, availability of materials and components, cooperation with local administration, availability of skilled human resources, quality of investment land, state of infrastructure, ability to obtain funding for investment projects, liquidity of the financial market, labour costs, real property acquisition process, protection of investors' rights, state aid system for investors, process of obtaining concessions/permits, cooperation with central administration, political stability, burden of inspections and controls, level of fiscal burden, tax formalities, clarity and consistency of legislation, efficiency of business judiciary, constancy and predictability of law, level of R&D investments, energy costs, approach to climate policy and sustainability, level of quality of life and cultural development – in the EY Europe Attractiveness Survey report, when surveyed on the most important factors relevant to choosing a country to invest in, 16% of the respondents indicated the level of success in dealing with the COVID-19 crisis (EY, 2023).

Table 1. Summary of selected research findings on the correlation between sudden events and aspects of international business, including FDI

Publication	Topics	Country/countries researched; research period	Conclusions
Alfaro & Chen, 2010	relationship between economic growth, local financial markets and FDI	selected 53 countries of the world, 2007-2009	financial crises have an impact on FDI flows and labour productivity in companies
Dornean *et al*., 2012	analysis of the relationship between financial crisis and FDI	10 Central and Eastern European countries, 1994-2011	fluctuations in economic growth affect the level of FDI, and changes in the regulatory environment in crisis-affected countries are important
Fabeil *et al.*, 2020	business continuity strategy and implementation of the post-pandemic recovery plan for companies cooperating abroad	Malaysia, May 2020	the need for rapid, ad hoc business action and implementation of recovery strategies
Kuckertz *et al.*, 2020	international start-ups in times of pandemic	Germany, March 2020	the need to implement protective measures to save micro-enterprises from the consequences of pandemic blockages
Horobet *et al*., 2020	level of population mortality in the EU countries	EU-28, 2020	the need for a targeted health policy at the EU level to reduce workforce mortality
Khan *et al*., 2020	relationship between COVID-19 and the environment and society	selected countries of the world, 2020	the pandemic is an opportunity for transformation towards a green economy, renewable energy sources and sustainable practices in companies
Ajide & Osinubi, 2020	examination of the relationship between COVID-19 and FDI outflows	selected 43 countries of the world	the pandemic causes an outflow of FDI and an increase in the level of risk on international markets
Czech *et al*., 2020	COVID-19 and financial markets	V4 countries, 2020	the pandemic had an impact on the collapse of financial markets and the exchange rates in the V4 countries
Antonietti *et al.*, 2020	COVID-19 and global production networks	EU-28, 2020	countries heavily involved in global production networks and countries hosting large FDI projects are the most vulnerable to pandemic effects
Saurav *et al*., 2020	COVID-19 and the impact on companies with foreign participation (subsidiaries – FDI locations)	305 companies with foreign participation, 2020	97% of companies surveyed experienced reduced demand, disrupted supply chains, reduced profits, reduced staff and investment levels
Seric & Hauge, 2020	COVID-19 and FDI in developing and least developed countries	developing countries and LDCs, 2020	COVID-19 in terms of FDI outflows has particularly affected the least developed and developing countries
Seric e*t al*., 2020	COVID-19 and global supply chains	countries of the world, 2020	COVID-19 has disrupted global supply chains
World Association of Investment Promotion Agencies (2020)	COVID-19 and global FDI flows and operations of investment promotion agencies	174 investment promotion agencies worldwide, 2020	COVID-19 disrupted the operations of agencies and affected fluctuations in global FDI flows; possible development of reshoring and nearshoring phenomena
Gujrati & Uygun, 2020	impact of COVID-19 on the global economy	countries of the world, 2020	increase in global investment risk has been observed, countries should protect their economies

Publication	Topics	Country/countries researched; research period	Conclusions
Walsh, 2020	COVID-19 and the deglobalisation phenomenon	countries of the world, 2020	the pandemic has caused global social and economic disruption, this will affect international business processes causing deglobalisation
Kalotay & Sass, 2021	impact of COVID-19 on the V4 countries	V4 countries, 2020	COVID-19 had an impact on the collapse of FDI flows in the V4 countries, but developments in digitalisation and the ICT sector were observed
Hayakawa e*t al*., 2022	impact of COVID-19 was measured by 3 indicators – number of confirmed cases, number of deaths and indicator of stringency of government policies; differentiation of FDI flows (greenfield and cross-border M&As)	FDI flows from 173 home countries to 192 host countries; 2019-2021	heterogeneous impact of COVID-19 on FDI by sector and mode of capital entry; impact of COVID-19 in host countries adversely affected FDI in the manufacturing sector, regardless of mode of entry; impact of COVID-19 in FDI home countries was insignificant; in the services sector, negative impact of COVID-19 was observed in both host and home countries (more so in terms of greenfield)
Gorynia e*t al*., 2022	impact of the COVID-19 pandemic on globalisation processes	countries of the world, 2022	3 possible scenarios: disrupted globalisation, deglobalisation and rebalanced globalisation
Hysa e*t al*., 2022	the role of FDI determinants in national development, analysis of COVID-19 impact on FDI flows	22 EU countries; Q1, Q2 and Q3 2020	COVID-19 pandemic fuels FDI outflows

Source: own study.

The following main research questions (together with specific research questions marked ‘a’ to ‘d’) were defined to achieve the intended objective:

RQ1: Have capital inflows in the form of foreign direct investment decreased after the pandemic outbreak globally (RQ1a), in the EU countries (RQ1b), the V4 countries (RQ1c) and Poland (RQ1d)?

RQ2: Have capital outflows in the form of foreign direct investment decreased after the pandemic outbreak globally (RQ2a), in the EU countries (RQ2b), the V4 countries (RQ2c) and Poland (RQ2d)?

RQ3: Has the net value of cross-border M&As (analysed by seller region) decreased after the pandemic outbreak globally (RQ3a), in the EU countries (RQ3b), the V4 countries (RQ3c) and Poland (RQ3d)?

RQ4: Has the number of net cross-border M&As (analysed by seller region) decreased after the pandemic outbreak globally (RQ4a), in the EU countries (RQ4b), the V4 countries (RQ4c) and Poland (RQ4d)?

RQ5: Has the value of announced greenfield FDI projects (analysed by source of investment) decreased after the pandemic outbreak globally (RQ5a), in the EU countries (RQ5b), the V4 countries (RQ5c) and Poland (RQ5d)?

RQ6: Has the value of announced greenfield FDI projects (analysed by destination of investment) decreased after the pandemic outbreak globally (RQ6a), in the EU countries (RQ6b), the V4 countries (RQ6c) and Poland (RQ6d)?

RQ7: Has the number of announced greenfield FDI projects (analysed by source of investment) decreased after the pandemic outbreak globally (RQ7a), in the EU countries (RQ7b), the V4 countries (RQ7c) and Poland (RQ7d)?

RQ8: Has the number of announced greenfield FDI projects (analysed by destination of investment) decreased after the pandemic outbreak globally (RQ8a), in the EU countries (RQ8b), the V4 countries (RQ8c) and Poland (RQ8d)?

RESEARCH METHODOLOGY

In this article, we used our own calculations based on the available UNCTAD statistics from the World Investment Reports (WIR) 2010-2023 and the UNCTADstat database. It also uses various research methods, including literature studies, analysis of source texts (content analysis and synthesis method), logical inference method, deductive reasoning, documentary and critical analysis methods, descriptive analysis, comparative analysis as well as simple quantitative methods, *e.g.* time series analysis enriched with aspects of free evaluation of observed trends and tendencies. In my narrative, analyses thematically related to the COVID-19 pandemic and foreign capital flows in the form of foreign direct investment (various aspects – included in the research questions) were used with reference to the countries of the world, the European Union area, the V4 Visegrad Group countries and our country. A literature search was also carried out in relation to various types of crises (sudden events) – including the COVID-19 pandemic – and foreign direct investment.

RESULTS AND DISCUSSION

International trade should be understood as trade in goods, international trade in services, exchange of intangible goods and capital flows, including foreign direct investment (FDI) and portfolio investment flows (Rymarczyk, 2010). According to the International Monetary Fund, global real GDP contracted by 3.1% in 2020 compared to 2019 (IMF, 2021). According to UNCTAD, global exports contracted by 7% in 2020 and global imports by 8% compared to 2019 (UNCTAD, 2023). The COVID-19 pandemic caused more pronounced declines in global flows for foreign direct investment (Figure 1).

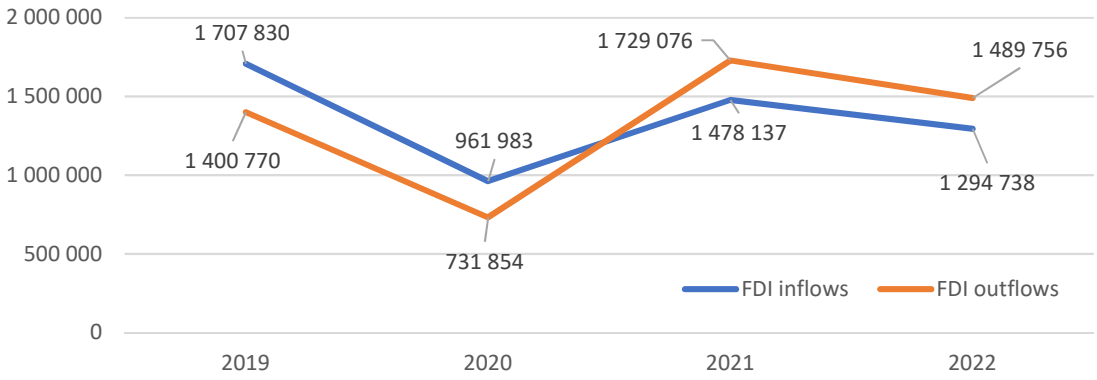


Figure 1. Global foreign direct investment, inflows and outflows, 2019-2022, USD million
Source: UNCTAD (2023).

As we can observe above, global FDI inflows declined from over USD 1.7 trillion in 2019 to just over USD 961 billion in 2020 – almost 44%. In contrast, global FDI outflows declined from over USD 1.4 trillion in 2019 to just over USD 731 billion in 2020 – almost 48%. As we can therefore observe, global capital flows in the form of FDI fell more sharply in 2020 compared to 2019 than real global GDP and global exports and imports. Thus, it seems reasonable to conclude that foreign capital flows in the form of FDI are less resilient to crises, shocks or instability. At this point, it is worth attempting to classify the various sudden events that can affect the global economy. Pandemics and other phenomena of this type – *e.g.* different types of crises – that have a negative (but not only) impact on economies have been named by Taleb as 'black swans' (Taleb, 2020). These are events that are unexpected, unusual, unpredictable, and very unlikely, with nothing in the past to indicate that they might occur. When they do occur, they have a huge impact on economies and social life and after their occurrence, some argue that they could

have been predicted after all... They can also have a positive impact on the environment when they are, for example, innovations, inventions, beneficial investments or scientific discoveries. Pandemics, on the other hand, are an example where the effects are negative. I believe that other colours of so-called 'swans' can be identified. Thus, 'green swans' can refer to climate change – there are even international 'Green Swan' conferences (BIS, 2023). Another 'swan' could be a 'red swan', linked to wars, and armed conflicts on a global or regional scale. My next proposal is a 'yellow swan' associated with major population movements and economic migrations. And the last proposal – a 'blue swan' linked to unexpected events generated by digital technologies, artificial intelligence or changes in so-called cyber-mentality. Interestingly, the development of the COVID-19 pandemic resulted in rapid changes in the development of information and communication technology (ICT). One can speak of a real digital transformation and its development in very many aspects of business activity and international trade (moving away from the so-called analogue economy to a digital, digitised economy – including the development of remote contracting, modern business services and the broadly understood area of Industry 4.0).

This section will present research results with my comments and the effects of verification of the research questions proposed above.

Capital Inflows in the Form of Foreign Direct Investment Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ1

To comprehensively verify the first research question, four figures will be presented to show capital inflows in the form of FDI in four aspects: global flows, in the European Union countries, in the V4 Visegrad Group countries and our country. Figure 2 presents global FDI inflows in USD million in 2010-2022.

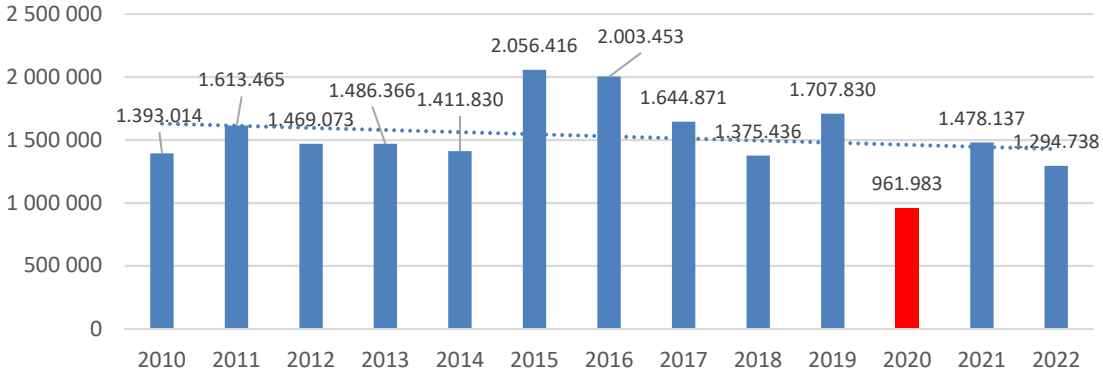


Figure 2. FDI inflows globally in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, global FDI inflows in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 44% (from over USD 1.7 trillion to over USD 0.96 trillion) compared to 2019. This is a very clear change. Indeed, higher inflows were already recorded in 2021 and 2022, but the trend has been downward since 2020 (trend line in Figure 2). Therefore, we can conclude that within the framework of the first research question RQ1, the specific question RQ1a proposed in this article has been positively verified. Figure 3 presents FDI inflows in the European Union countries in USD million in 2010-2022.

As we can observe above, FDI inflows to the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 81% (from USD 0.6 trillion to around USD 0.11 trillion) compared to 2019. This is a very clear and even dramatic change, even greater than the global inflow. Indeed, in 2021 higher inflows were already recorded, but in 2022 an outflow of FDI was recorded and the trend has been downward since 2020 (trend line in Figure 3). Therefore, we can conclude that within the framework of the first research question RQ1, the specific question RQ1b proposed in this article has been positively verified. Figure 4 presents FDI inflows in the Visegrad Group (V4) countries in USD million in 2010-2022.

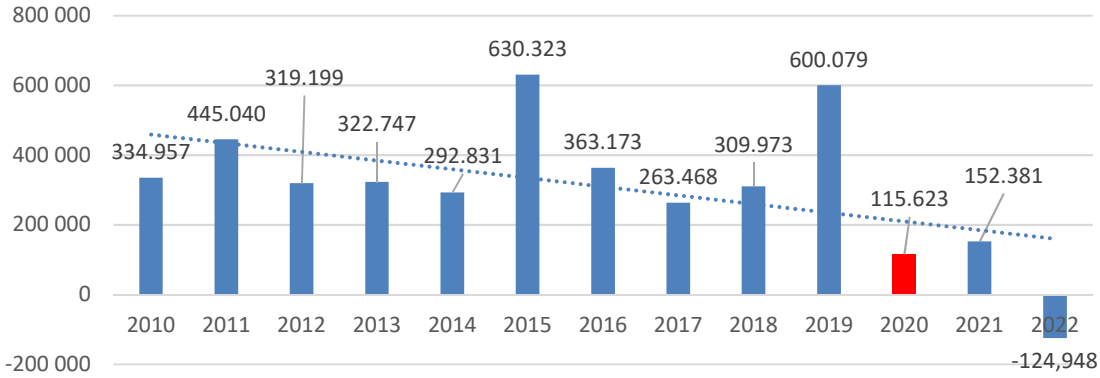


Figure 3. FDI inflows in the EU in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

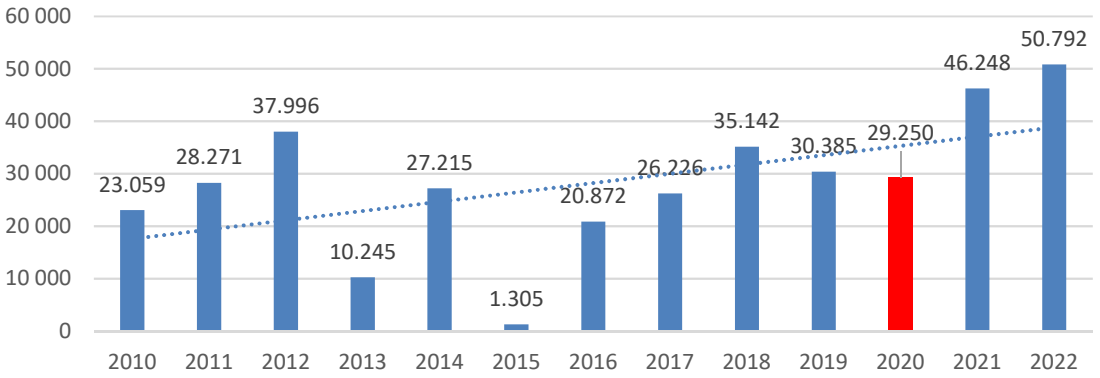


Figure 4. FDI inflows in the V4 countries in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, FDI inflows to the Visegrad Group countries in 2020 (the first year of the COVID-19 pandemic) decreased compared to 2019 by only 4% (from about USD 30 billion to about USD 29 billion). This is a small change compared to the global situation and the situation in the European Union. Furthermore: in 2021 and 2022, higher inflows were already recorded and the trend has been upward since 2020 (trend line in Figure 4). Therefore, we can conclude that within the framework of the first research question RQ1, the specific question RQ1c proposed in this article has been positively verified. Figure 5 presents FDI inflows to Poland in USD million in 2010-2022.

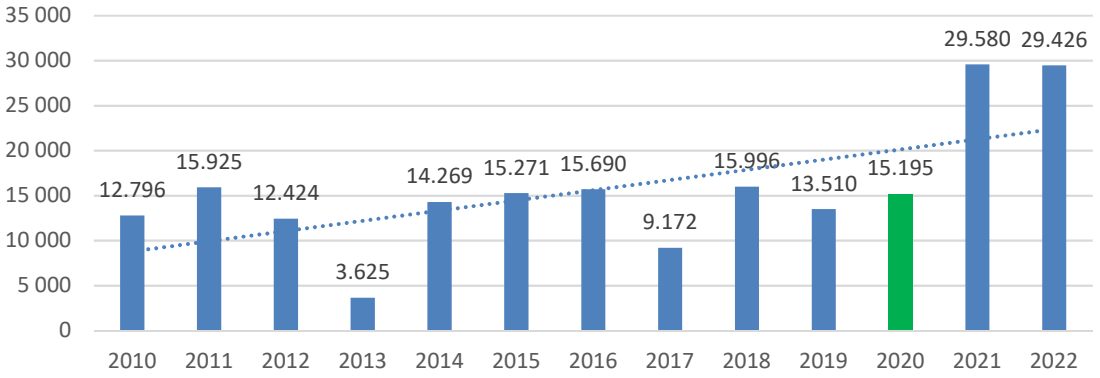


Figure 5. FDI inflows to Poland in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, FDI inflows to Poland in 2020 (the first year of the COVID-19 pandemic) not only did not decrease but increased by 12% (from about USD 13 billion to over USD 15 billion) compared to 2019. This is an interesting and different situation with global trends, in the European Union and the Visegrad Group countries. Moreover, the values of inflows almost doubled in 2021 compared to the previous year and FDI inflows comparable to 2021 were recorded in 2022. The trend has been upward since 2020 (trend line in Figure 5). Therefore, we can conclude that within the framework of the first research question RQ1, the specific question RQ1d proposed in this article has been negatively verified.

Capital Outflows in the Form of Foreign Direct Investment Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ2

To comprehensively verify the second research question, four figures will be presented to show capital outflows in the form of FDI in four aspects: globally, in the European Union countries, in the V4 Visegrad Group countries and in our country. Figure 6 presents FDI outflows globally in USD million in 2010-2022.

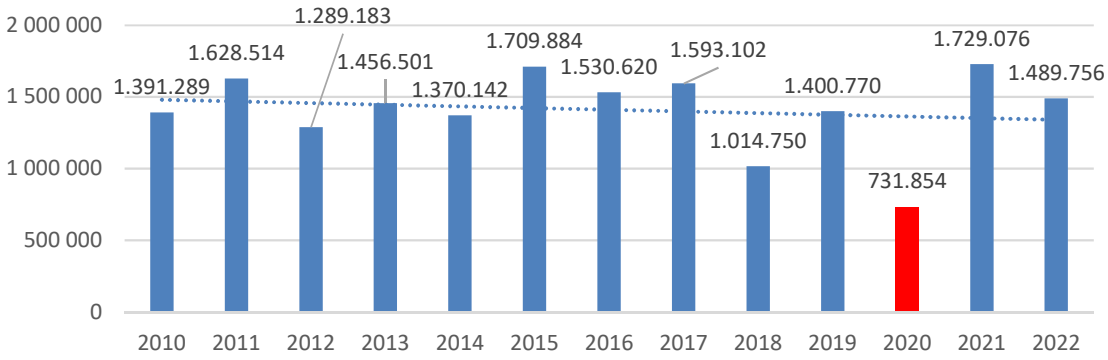


Figure 6. FDI outflows globally in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, global FDI outflows in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 48% (from USD 1.4 trillion to approximately USD 0.73 trillion) compared to 2019. This is a very clear change. Indeed, higher outflows were already recorded in 2021 (a record high in the research period, more than USD 1.7 trillion) and 2022, but the trend has been downward since 2020 (trend line in Figure 6). Therefore, we can conclude that within the framework of the second research question RQ2, the specific question RQ2a proposed in this article has been positively verified. Figure 7 presents FDI outflows in the European Union countries in USD million in 2010-2022.

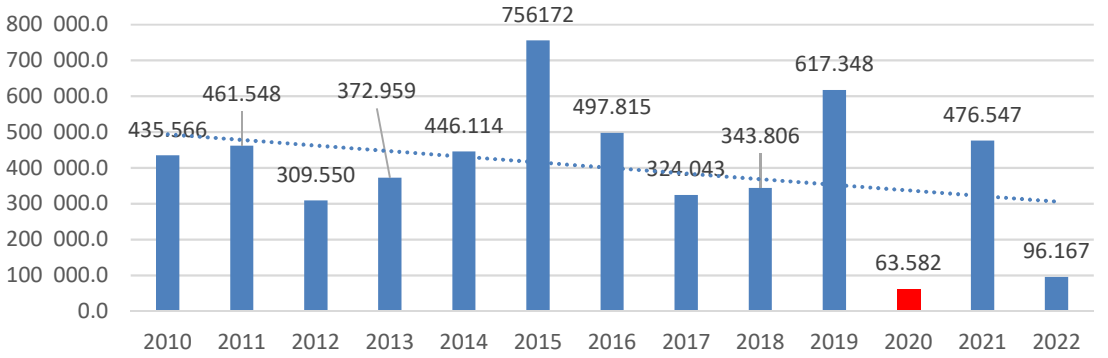


Figure 7. FDI outflows from the EU in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, FDI outflows from the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 90% (from USD 0.6 trillion to approximately USD 63 billion) compared to 2019. This is a very clear and even dramatic change, even greater than in the

case of global outflow. Indeed, higher outflows were already recorded in 2021 (approximately USD 476 billion), but low FDI outflows were recorded again in 2022 (approximately USD 96 billion). This trend has been downward since 2020 (trend line in Figure 7). Therefore, we can conclude that within the framework of the second research question RQ2, the specific question RQ2b proposed in this article has been positively verified. Figure 8 presents FDI outflows in the Visegrad Group (V4) countries in USD million in 2010-2022.

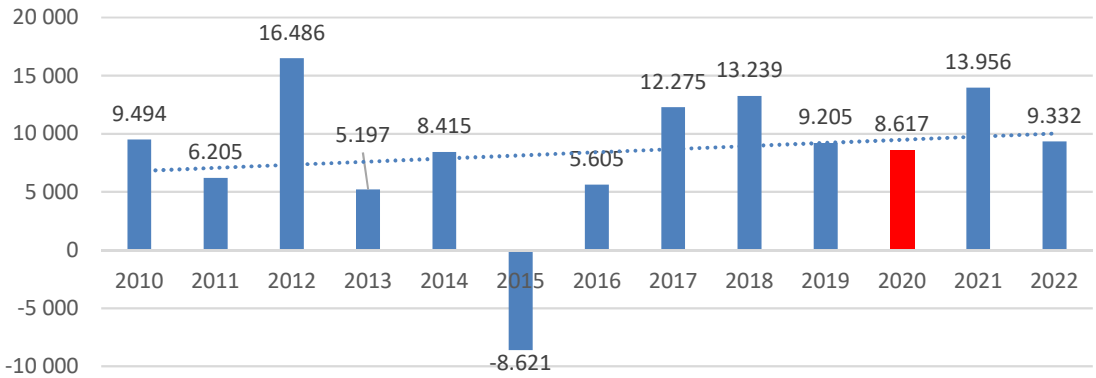


Figure 8. FDI outflows from the V4 countries in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, FDI outflows from the Visegrad Group countries in 2020 (the first year of the COVID-19 pandemic) decreased by only 6% (from approximately USD 9.2 billion to approximately USD 8.6 billion) compared to 2019. This is a small change compared to the global situation and in the European Union. Furthermore: in 2021 and 2022, larger outflows were already recorded (approximately USD 13.9 billion and approximately USD 9.3 billion respectively) and the trend has been upward since 2020 (trend line in Figure 8). Therefore, we can conclude that within the framework of the second research question RQ2, the specific question RQ2c proposed in this article has been positively verified. Figure 9 presents FDI outflows from Poland in USD million in 2010-2022.

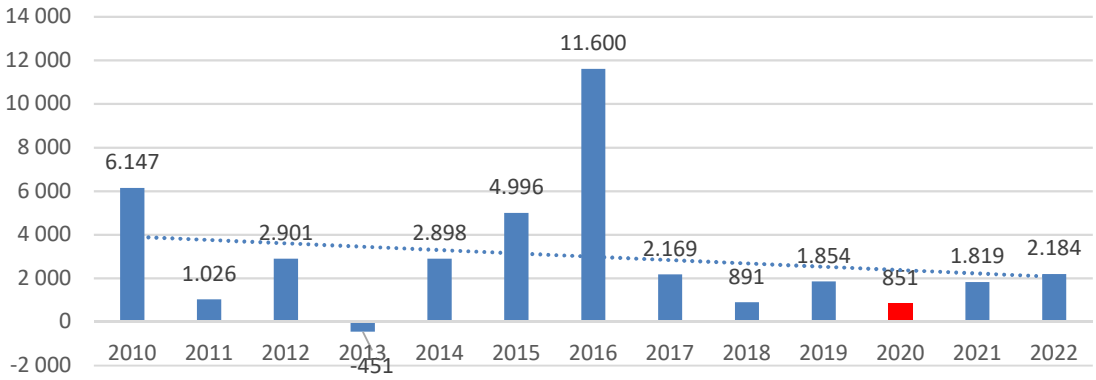


Figure 9. FDI outflows from Poland in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, FDI outflows from Poland in 2020 (the first year of the COVID-19 pandemic) decreased by 54% (from approximately USD 1.8 billion to over USD 0.8 billion) compared to 2019. This is comparable to global trends, but different to the European Union (lower level of change in our country) and the Visegrad Group countries (higher level of change in our country). Indeed, outflows almost doubled in 2021 (to over USD 1.8 billion) compared to the previous year and FDI outflows comparable to 2021 were recorded in 2022 (over USD 2.1 billion). This trend has been downward since 2020 (trend line in Figure 9). Therefore, we can conclude that within the framework of the second research question RQ2, the specific question RQ2d proposed in this article has been positively verified.

Net Value of Cross-border M&As (Analysed by Seller Region) Globally, in the EU Countries, the V4 Countries and Poland – Verification of Research Question RQ3

In order to comprehensively verify the third research question, four figures will be presented to show the net value of cross-border M&As – analysed by seller region in four aspects: globally, in the EU countries, the V4 Visegrad Group countries and our country. Figure 10 presents the net value of cross-border M&As globally in USD million in 2010-2022.

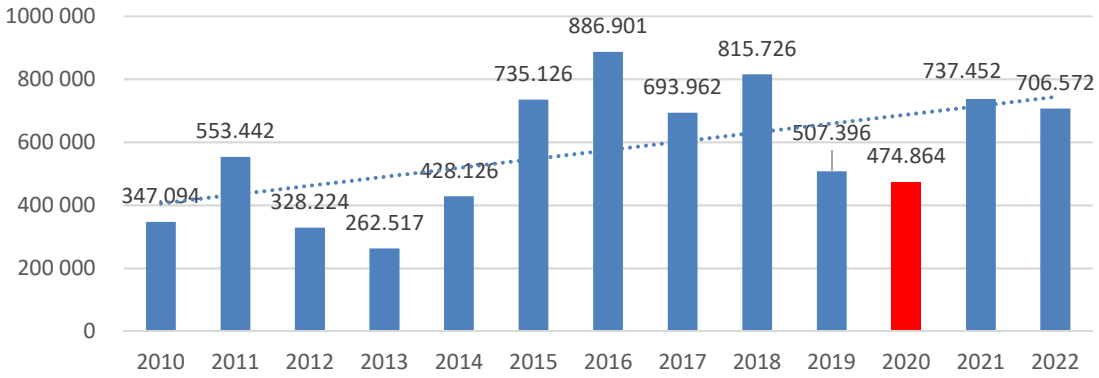


Figure 10. Net value of cross-border M&As globally – by seller region in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the net value of cross-border M&As by seller region globally in 2020 (the first year of the COVID-19 pandemic) decreased by 6% (from approximately USD 0.5 trillion to approximately USD 0.47 trillion) compared to 2019. This is a relatively small change. In 2021 (more than USD 0.73 trillion) and 2022 (more than USD 0.7 trillion), higher M&A values were already recorded and this trend is upward (trend line in Figure 10). Therefore, we can conclude that within the framework of the third research question RQ3, the specific question RQ3a proposed in this article has been positively verified. Figure 11 presents the net value of cross-border M&As by seller region in the European Union countries in USD million in 2010-2022.

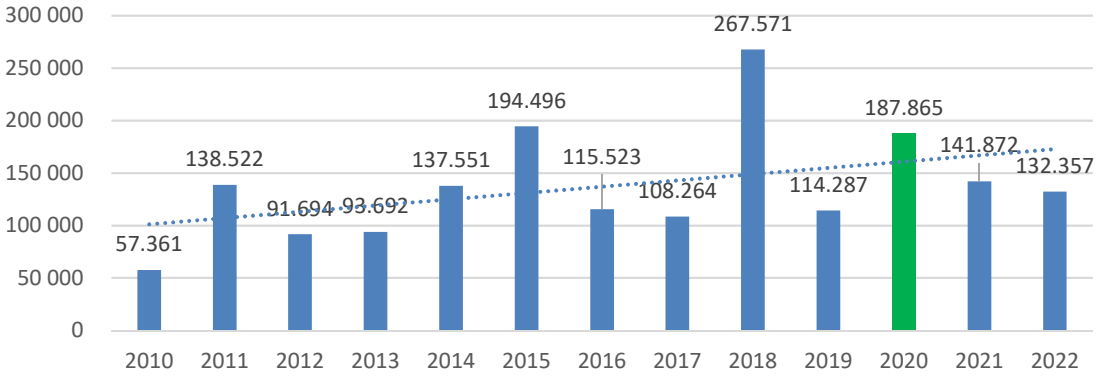


Figure 11. Net value of cross-border M&As in the EU: By seller region in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the net value of cross-border M&As by seller region in the EU countries in 2020 (the first year of the COVID-19 pandemic) increased by 64% (from approximately USD 114 billion to approximately USD 187 billion) compared to 2019. This is a surprising change, as it is different from the global situation (-6%). In 2021 (more than USD 141 billion) and 2022 (more than USD 132 billion), declines in the value of M&As were already recorded, but the trend is upward (trend line in Figure 11). Therefore, we can conclude that within the framework of the third research question RQ3, the specific question

RQ3b proposed in this article has been negatively verified. Figure 12 presents the net value of cross-border M&As by seller region in the Visegrad Group countries in USD million in 2010-2022.

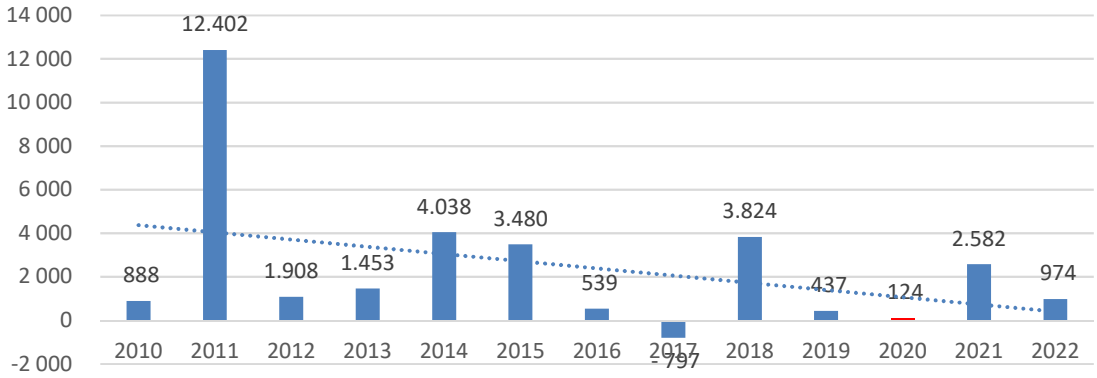


Figure 12. Net value of cross-border M&As in the V4 countries: By seller region in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the net value of cross-border M&As by seller region in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 72% (from approximately USD 437 million to USD 124 million) compared to 2019. This is a very clear change, different from the global situation (-6%) and very different from the EU countries (+64%). In 2021 (more than USD 2.5 billion) and 2022 (more than USD 0.9 billion), higher M&A values were already recorded, but the trend is downward (trend line in Figure 12). Therefore, we can conclude that within the framework of the third research question RQ3, the specific question RQ3c proposed in this article has been positively verified. Figure 13 presents the net value of cross-border M&As by seller region in Poland in USD million in 2010-2022.

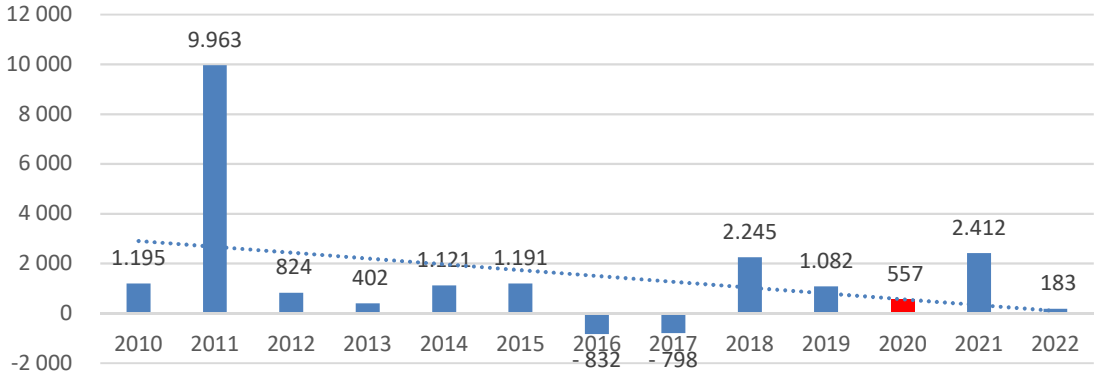


Figure 13. Net value of cross-border M&As in Poland: By seller region in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the net value of cross-border M&As by seller region in Poland in 2020 (the first year of the COVID-19 pandemic) decreased by 49% (from approximately USD 1.08 billion to USD 557 million) compared to 2019. This is a very clear change, different from the global situation (-6%), very different from the EU countries (+64%) and different from the V4 countries (-72%). In 2021 (over USD 2.4 billion), a higher value of this phenomenon was recorded, but already in 2022 (approximately USD 183 million), a lower value of M&As was recorded. The overall trend is downward (trend line in Figure 13). Therefore, we can conclude that within the framework of the third research question RQ3, the specific question RQ3d proposed in this article has been positively verified.

Number of Net Cross-border M&As (Analysed by Seller Region) Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ4

To comprehensively verify the fourth research question, we will present four figures to show the number of net cross-border M&As – analysed by seller region in four aspects: globally, in the EU

countries, the V4 Visegrad Group countries and our country. Figure 14 presents the net number of cross-border M&As globally in 2010-2022.

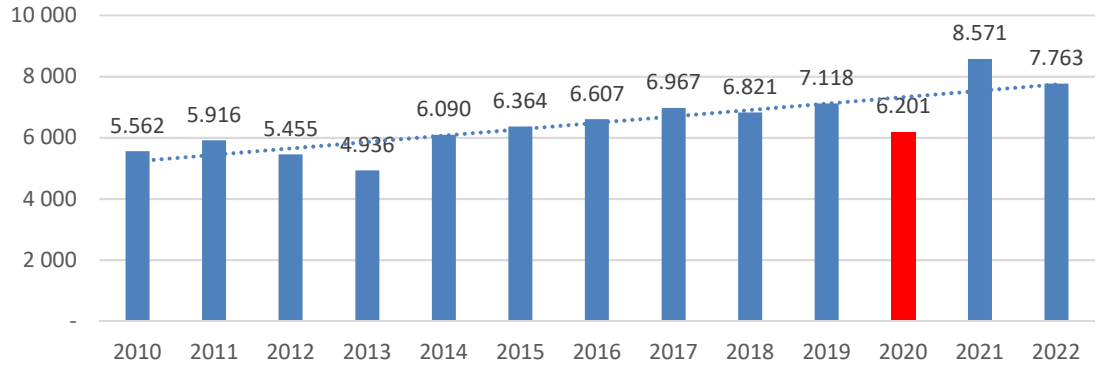


Figure 14. Number of net cross-border M&As globally: By seller region in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of net cross-border M&As by seller region globally in 2020 (the first year of the COVID-19 pandemic) decreased by 13% (from 7.118 to 6.201) compared to 2019. This is a relatively small change. In 2021 (8.571) and 2022 (7.763), a higher number of M&As was already recorded and the trend is upward (trend line in Figure 14). Therefore, we can conclude that within the framework of the fourth research question RQ4, the specific question RQ4a proposed in this article has been positively verified. Figure 15 presents the number of net cross-border M&As by seller region in the EU countries in 2010-2022.

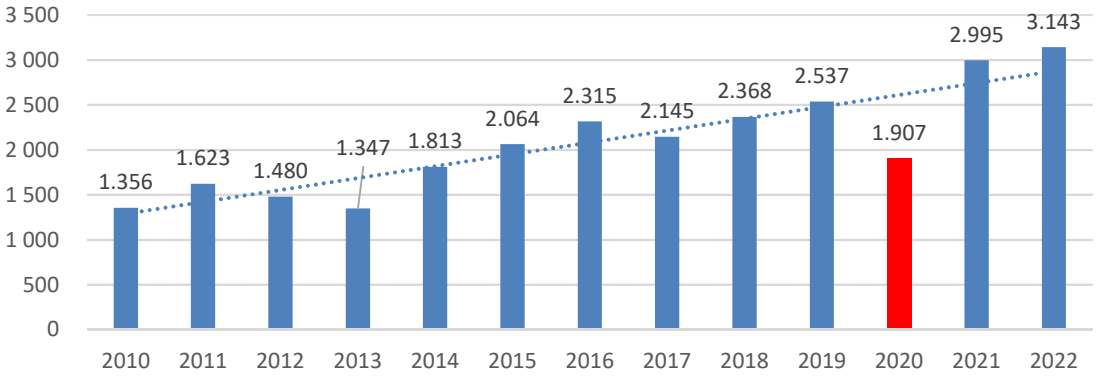


Figure 15. Number of net cross-border M&As in the EU: By seller region in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of net cross-border M&As by seller region in the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by 25% (from 2.537 to 1.907) compared to 2019. This is a fairly significant change. In 2021 (2.995) and 2022 (a record high of 3.143), a higher number of M&As was already recorded and the trend is upward (trend line in Figure 15). Therefore, we can conclude that within the framework of the fourth research question RQ4, the specific question RQ4b proposed in this article has been positively verified. Figure 16 presents the number of net cross-border M&As by seller region in the Visegrad Group countries in 2010-2022.

As we can observe above, the number of net cross-border M&As by seller region in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 55% (from 169 to 76) compared to 2019. This is a significant change. In 2021 (177) and 2022 (a record high of 193), a higher number of M&As was already recorded and the trend is upward (trend line in Figure 16). Therefore, we can conclude that within the framework of the fourth research question RQ4, the specific question RQ4c proposed in this article has been positively verified. Figure 17 presents the number of net cross-border M&As by seller region in Poland in 2010-2022.

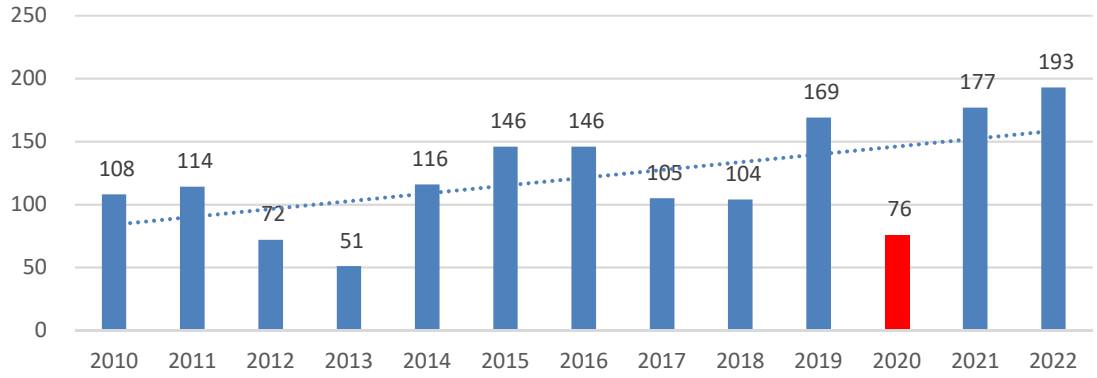


Figure 16. Number of net cross-border M&As in the V4 countries – by seller region in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

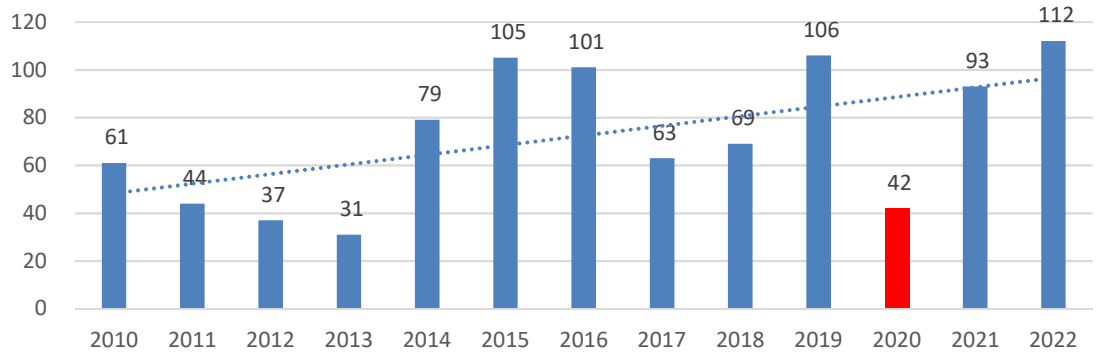


Figure 17. Number of net cross-border M&As in Poland – by seller region in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of net cross-border M&As by seller region in Poland in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 60% (from 106 to 42) compared to 2019. This is a significant change, the largest one in this part of the analysis. In 2021 (93) and 2022 (a record high of 112), a higher number of M&Aswas already recorded and the trend is upward (trend line in Figure 17). Therefore, we can conclude that within the framework of the fourth research question RQ4, the specific question RQ4d proposed in this article has been positively verified.

Value of Announced Greenfield FDI Projects (Analysed by Source of Investment) Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ5

To comprehensively verify the fifth research question, we will present four figures to show the value of announced greenfield FDI projects – analysed by source of investment in four aspects: globally, in the European Union countries, in the V4 Visegrad Group countries and in our country. Figure 18 presents the value of announced FDI projects in question globally in 2010-2022.

As we can observe above, the value of the greenfield FDI projects in question by source of investment globally in 2020 (the first year of the COVID-19 pandemic) decreased by 34% (from USD 0.9 trillion to approximately USD 0.6 trillion) compared to 2019. This is a fairly significant change. In 2021 (approximately USD 0.7 trillion) and 2022 (a record high of more than USD 1.2 trillion), higher values of the projects in question were already recorded and the trend is upward (trend line in Figure 18). Therefore, we can conclude that within the framework of the fifth research question RQ5, the specific question RQ5a proposed in this article has been positively verified. Figure 19 presents the value of announced FDI projects in question in the EU countries in 2010-2022.

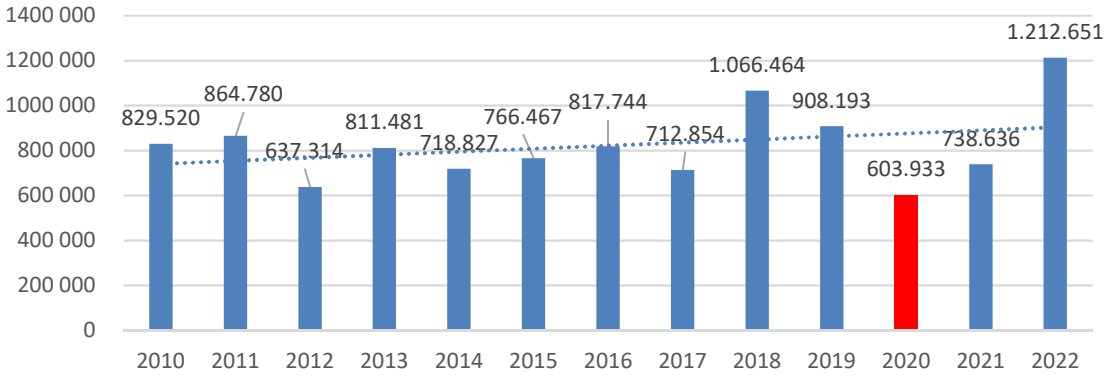


Figure 18. Value of announced greenfield FDI projects globally: By source of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

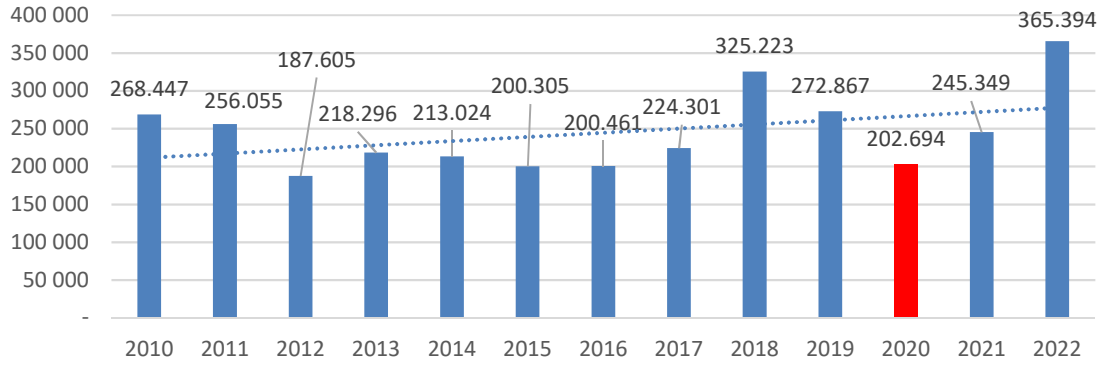


Figure 19. Value of announced greenfield FDI projects in the EU countries: By source of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by the source of investment in the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by 26% (from approximately USD 272 billion to just over USD 202 billion) compared to 2019. This is a fairly significant change. In 2021 (approximately USD 245 billion) and 2022 (a record high of more than USD 365 billion), higher values of the projects in question were already recorded and the trend is upward (trend line in Figure 19). Therefore, we can conclude that within the framework of the fifth research question RQ5, the specific question RQ5b proposed in this article has been positively verified. Figure 20 presents the value of announced FDI projects in question in the Visegrad Group countries in 2010-2022.

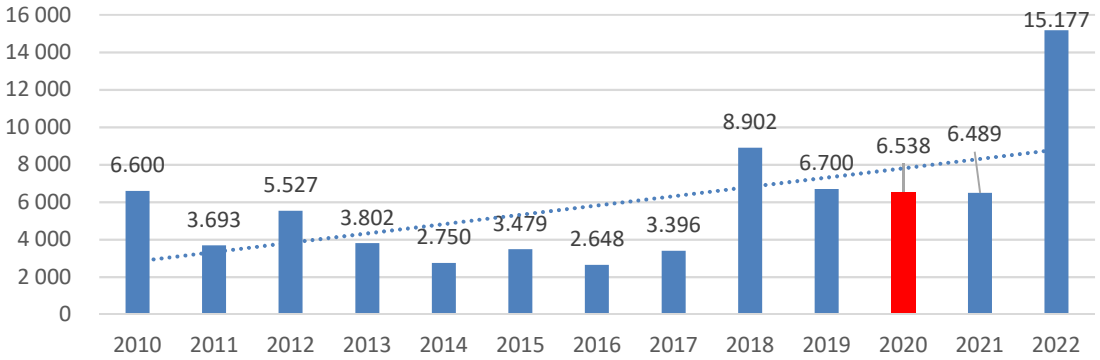


Figure 20. Value of announced greenfield FDI projects in the V4 countries: By source of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by source of investment in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by only 2% (from approximately USD 6.7 billion to just over USD 6.5 billion) compared to 2019. This is a very small change. In 2021, this value still decreased to approximately USD 6.4 billion, but already in 2022, a record high of more than USD 15.1 billion could be observed. The trend is upward (trend line in Figure 20). Therefore, we can conclude that within the framework of the fifth research question RQ5, the specific question RQ5c proposed in this article has been positively verified. Figure 21 presents the value of announced FDI projects in question in Poland in 2010-2022.

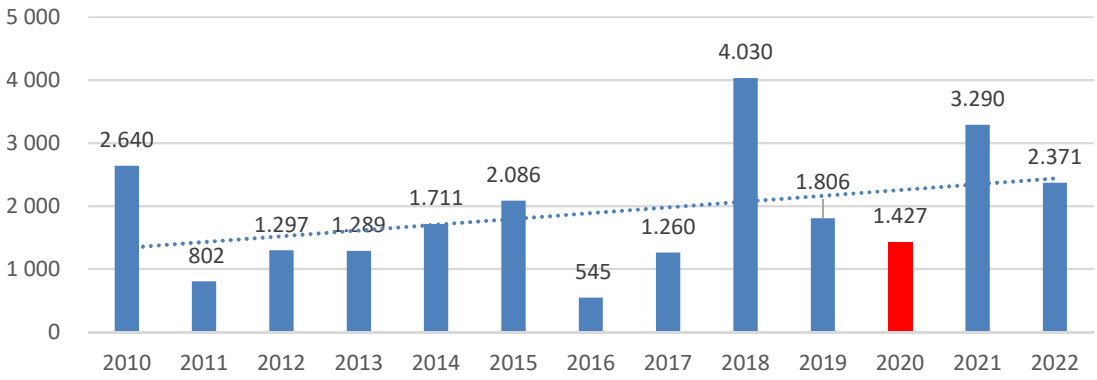


Figure 21. Value of announced greenfield FDI projects in Poland: By source of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by source of investment in Poland in 2020 (the first year of the COVID-19 pandemic) decreased by 21% (from approximately USD 1.8 billion to just over USD 1.4 billion) compared to 2019. This is quite a large change, greater than in all V4 countries combined (-2%). In 2021, this value rose to approximately USD 3.2 billion but then fell again in the following year 2022 to approximately USD 2.3 billion. Nevertheless, the trend is upward (trend line in Figure 21). Therefore, we can conclude that within the framework of the fifth research question RQ5, the specific question RQ5d proposed in this article has been positively verified.

Value of Announced Greenfield FDI Projects (Analysed by Destination of Investment) Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ6

To comprehensively verify the sixth research question, we will present four figures to show the value of announced greenfield FDI projects – analysed by destination of investment in four aspects: globally, in the European Union countries, in the V4 Visegrad Group countries and in our country. Figure 22 presents the value of announced FDI projects in question globally in 2010-2022.

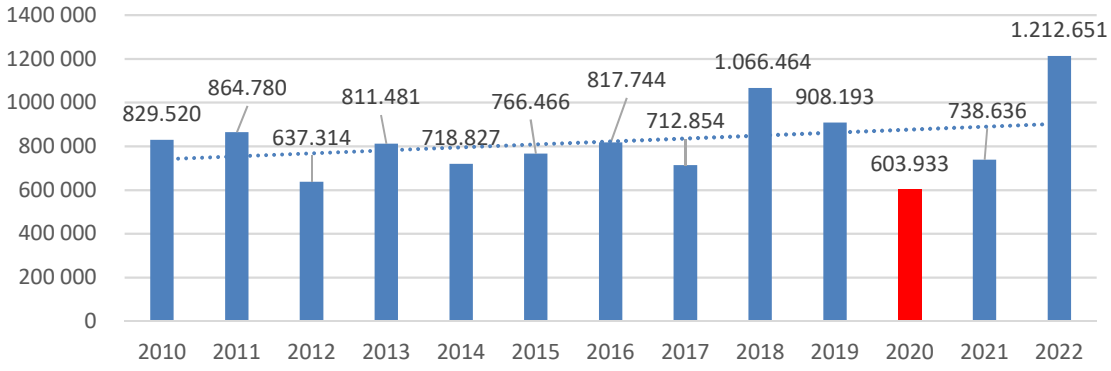


Figure 22. Value of announced greenfield FDI projects globally: By destination of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by destination of investment globally in 2020 (the first year of the COVID-19 pandemic) decreased by 34% (from USD 0.9 trillion to approximately USD 0.6 trillion) compared to 2019. This is a fairly significant change. In 2021 (approximately USD 0.7 trillion) and 2022 (a record high of more than USD 1.2 trillion), higher values of the projects in question were already recorded and the trend is upward (trend line in Figure 22). Therefore, we can conclude that within the framework of the sixth research question RQ6, the specific question RQ6a proposed in this article has been positively verified. It should be noted at this point that the values of the analysed investments by destination of investment are equal to the values of investments calculated by the source of these investments, which is, after all, a logical consequence of these phenomena. Figure 23 presents the value of announced FDI projects in question in the EU countries in 2010-2022.

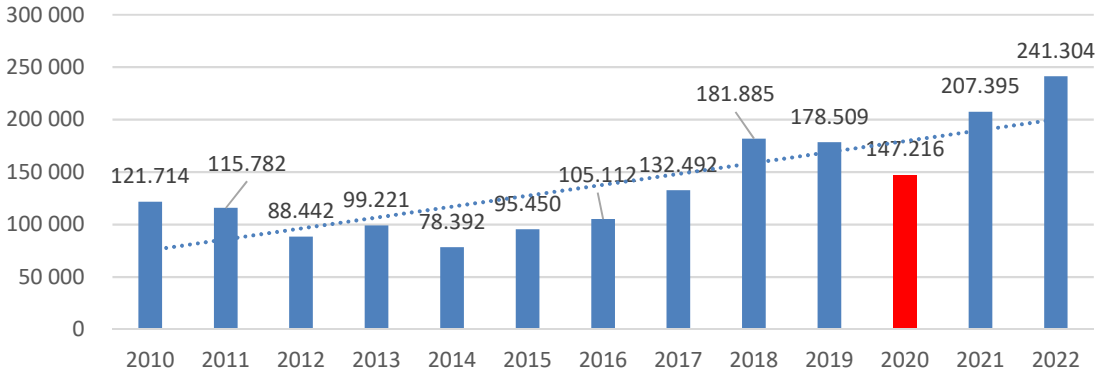


Figure 23. Value of announced greenfield FDI projects in the EU countries: By destination of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by destination of investment in the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by 18% (from approximately USD 178 billion to approximately USD 147 billion) compared to 2019. This is a fairly significant change. In 2021 (approximately USD 207 billion) and 2022 (a record high of more than USD 241 billion), higher values of the projects in question were already recorded and the trend is upward (trend line in Figure 23). Therefore, we can conclude that within the framework of the sixth research question RQ6, the specific question RQ6b proposed in this article has been positively verified. Figure 24 presents the value of announced FDI projects in question in the Visegrad Group countries in 2010-2022.

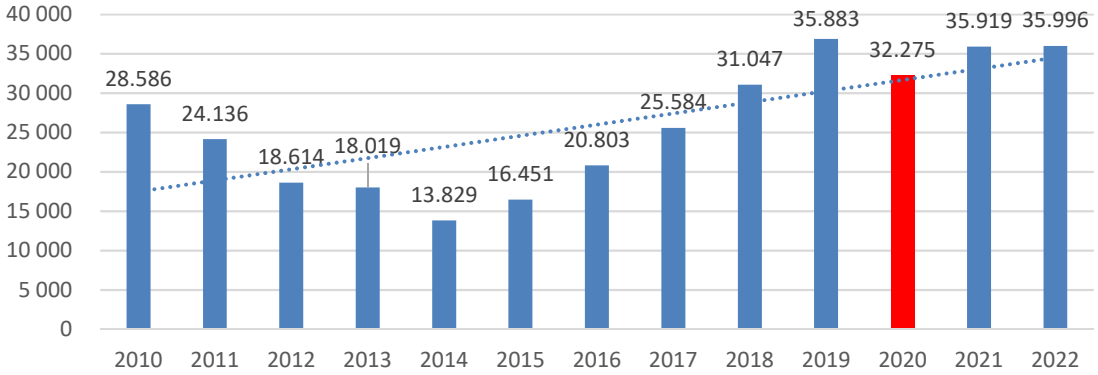


Figure 24. Value of announced greenfield FDI projects in the V4 countries: By destination of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by destination of investment in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by 12%

(from approximately USD 36 billion to approximately USD 32 billion) compared to 2019. This is a relatively small change. In 2021 (approximately USD 35 billion) and 2022 (a post-pandemic record high of almost USD 40 billion), higher values of the projects in question were already recorded and the trend is upward (trend line in Figure 24). Therefore, we can conclude that within the framework of the sixth research question RQ6, the specific question RQ6c proposed in this article has been positively verified. Figure 25 presents the value of announced FDI projects in question in Poland in 2010-2022.

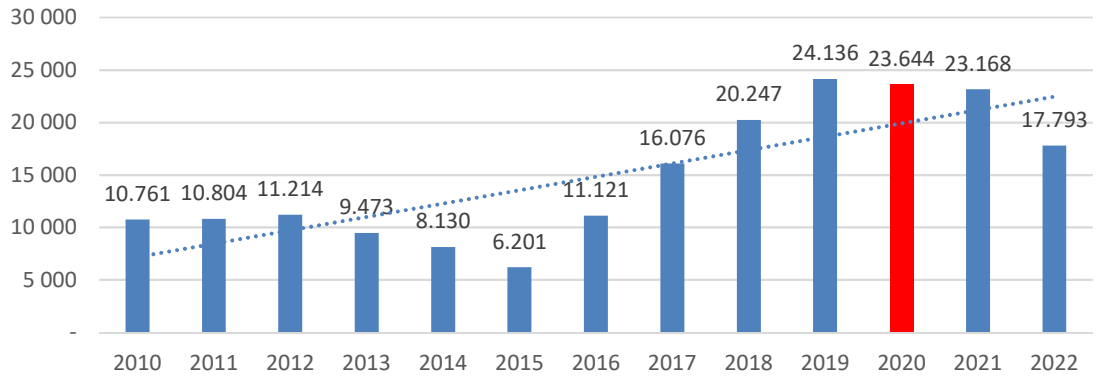


Figure 25. Value of announced greenfield FDI projects in Poland: By destination of investment in 2010-2022, USD million
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the value of the greenfield FDI projects in question by destination of investment in Poland in 2020 (the first year of the COVID-19 pandemic) decreased by 2% (from approximately USD 24.1 billion to approximately USD 23.6 billion) compared to 2019. This is a very small change. In 2021 (approximately USD 23 billion) and 2022 (the least after the pandemic – just over USD 17.7 billion), smaller values of the projects in question were recorded but the trend is upward (trend line in Figure 25). Therefore, we can conclude that within the framework of the sixth research question RQ6, the specific question RQ6d proposed in this article has been positively verified.

Number of Announced Greenfield FDI Projects (Analysed by the Source of Investment) Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ7

To comprehensively verify the seventh research question, we will present four figures to show the number of announced greenfield FDI projects – analysed by the source of investment in four aspects: globally, in the European Union countries, in the V4 Visegrad Group countries and in our country. Figure 26 presents the number of the FDI projects in question globally in 2010-2022.

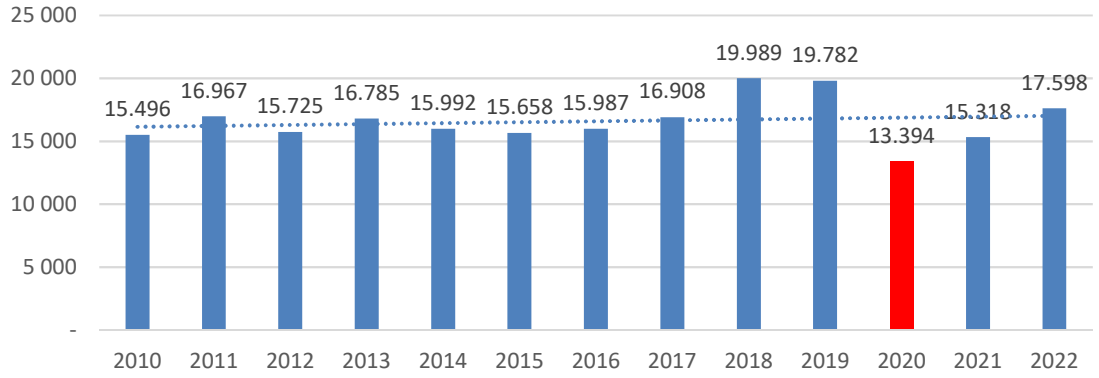


Figure 26. Number of announced greenfield FDI projects globally: By source of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by source of investment globally in 2020 (the first year of the COVID-19 pandemic) decreased by 32% (from 19.782 to 13.394) compared to 2019. This is a fairly significant change. In 2021 (15.318) and 2022 (17.598), a higher number was already recorded but the trend is constant (trend line in Figure 26). Therefore, we can conclude that within the framework of the seventh research question RQ7, the specific question RQ7a proposed in this article has been positively verified. Figure 27 presents the number of FDI projects analysed in the European Union countries in 2010-2022.

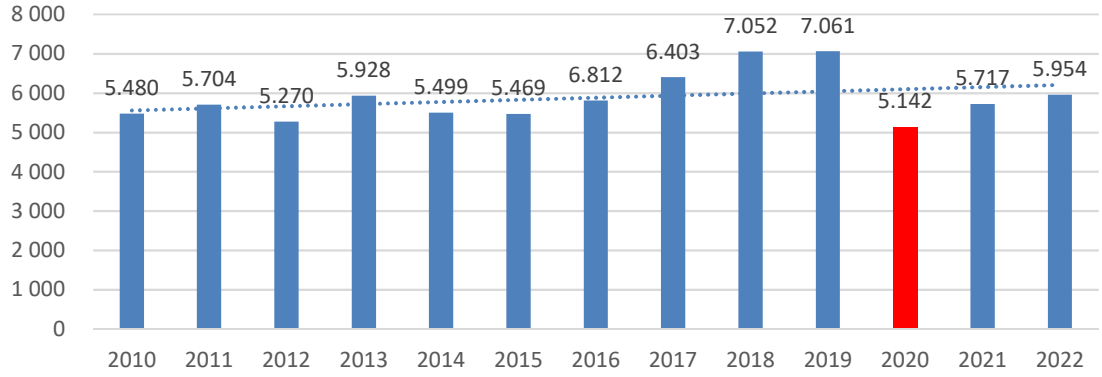


Figure 27. Number of announced greenfield FDI projects in the EU countries: By source of investment in 2010-2022

Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by source of investment in the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by 27% (from 7.061 to 5.142) compared to 2019. This is a fairly significant change. In 2021 (5.717) and 2022 (5.954), a higher number of such investments was already recorded but it has not returned to the pre-pandemic number. The trend is constant (trend line in Figure 27). Therefore, we can conclude that within the framework of the seventh research question RQ7, the specific question RQ7b proposed in this article has been positively verified. Figure 28 presents the number of analysed FDI projects in the Visegrad Group countries in 2010-2022.

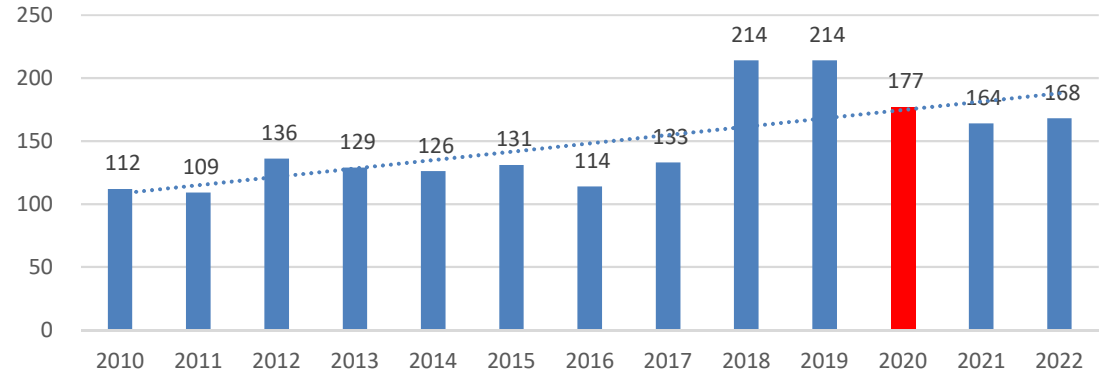


Figure 28. Number of announced greenfield FDI projects in the V4 countries: By source of investment in 2010-2022

Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by source of investment in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by 17% (from 214 to 177) compared to 2019. This is a fairly significant change. Even fewer were recorded in 2021 (164) and 2022 (168). Nevertheless, the trend is upward (trend line in Figure 28). Therefore, we can conclude that within the framework of the seventh research question RQ7, the specific question

RQ7c proposed in this article has been positively verified. Figure 29 presents the number of analysed FDI projects in Poland in 2010-2022.

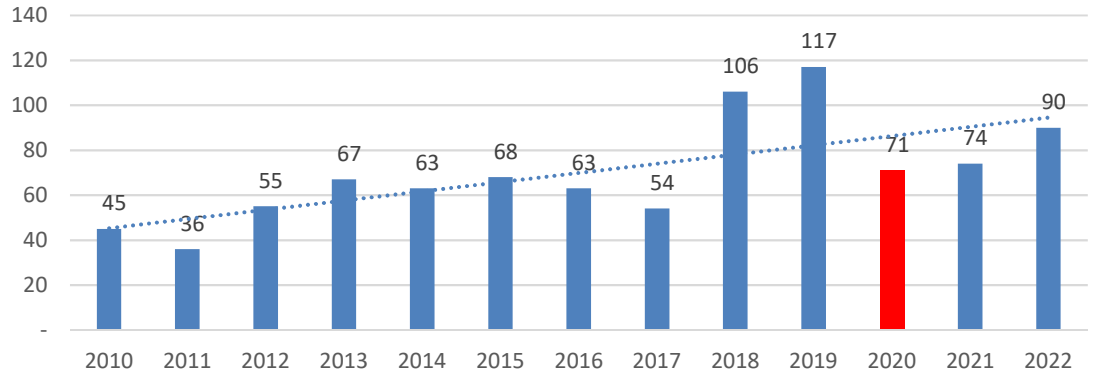


Figure 29. Number of announced greenfield FDI projects in Poland: By source of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by source of investment in Poland in 2020 (the first year of the COVID-19 pandemic) decreased by as much as 39% (from 117 to 71) compared to 2019. This is a very large change, larger than globally (-32%), larger than in the EU countries (-27%) and larger than in the V4 countries (-17%). In 2021 (74) and 2022 (90), higher foreign investor activity was recorded in the area in question, but it did not return to pre-pandemic levels. Nevertheless, the trend is upward (trend line in Figure 29). Therefore, we can conclude that within the framework of the seventh research question RQ7, the specific question RQ7d proposed in this article has been positively verified.

Number of Announced Greenfield FDI Projects (Analysed by Destination of Investment) Globally, in the EU Countries, the V4 Countries and Poland: Verification of Research Question RQ8

To comprehensively verify the last, eighth research question, we will present four figures to show the number of announced greenfield FDI projects – analysed by destination of investment in four aspects: globally, in the European Union countries, in the V4 Visegrad Group countries and in our country. Figure 30 presents the number of analysed FDI projects globally in 2010-2022.

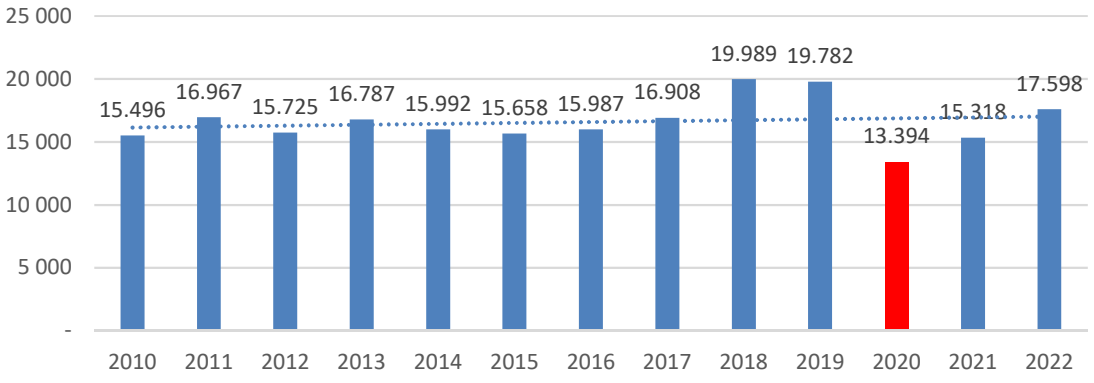


Figure 30. Number of announced greenfield FDI projects globally: by destination of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by destination of investment globally in 2020 (the first year of the COVID-19 pandemic) decreased by 32% (from 19.782 to 13.394) compared to 2019. This is a fairly significant change. In 2021 (15.318) and 2022 (17.598), a higher number was already recorded, but the trend is constant (trend line in Figure 30). Therefore, we can conclude that within the framework of the eighth research question RQ8, the specific question

RQ8a proposed in this article has been positively verified. It should be noted at this point that the values of the investments analysed by destination of investment are equal to the values of the investments calculated by the source of these investments, which is, after all, a logical consequence of these phenomena (analogous situation as in the case of research on values). Figure 31 presents the number of analysed FDI projects in the EU countries in 2010-2022.

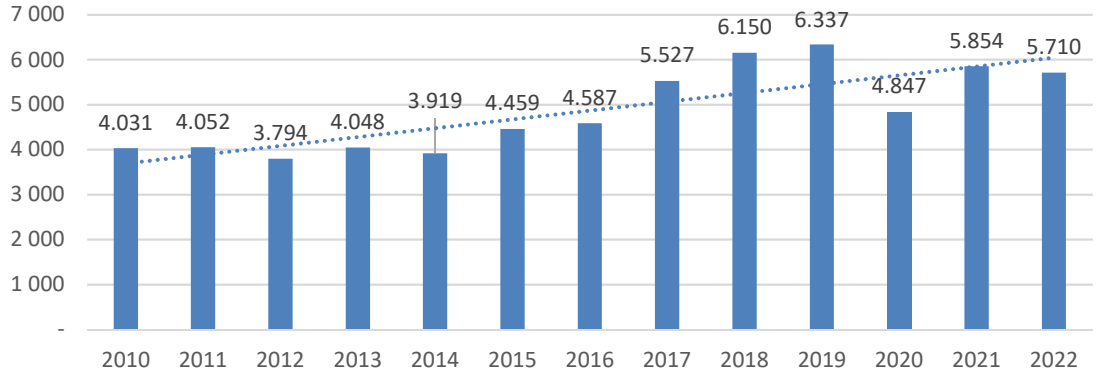


Figure 31. Number of announced greenfield FDI projects in the EU countries: By destination of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by destination of investment in the EU countries in 2020 (the first year of the COVID-19 pandemic) decreased by 24% (from 6.337 to 4.847) compared to 2019. This is a fairly significant change. In 2021 (5.854) and 2022 (5.710), a higher number of such investments was already recorded, but it did not return to pre-pandemic levels. Nevertheless, the trend is upward (trend line in Figure 31). Therefore, we can conclude that within the framework of the eighth research question RQ8, the specific question RQ8b proposed in this article has been positively verified. Figure 32 presents the number of analysed FDI projects in the Visegrad Group countries in 2010-2022.

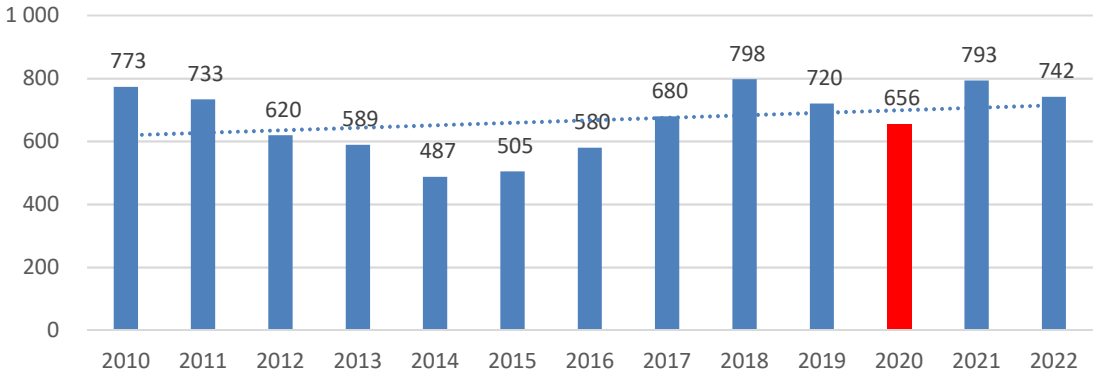


Figure 32. Number of announced greenfield FDI projects in the EU countries: By destination of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by destination of investment in the V4 countries in 2020 (the first year of the COVID-19 pandemic) decreased by 9% (from 720 to 656) compared to 2019. This is a relatively small change. In 2021 (793) and 2022 (742), a higher number of such investments was already recorded and exceeded the number of such investments before the pandemic. The trend is slightly upward (trend line in Figure 32). Therefore, we can conclude that within the framework of the eighth research question RQ8, the specific question RQ8c proposed in this article has been positively verified. Figure 33 presents the number of analysed FDI projects in Poland in 2010-2022.

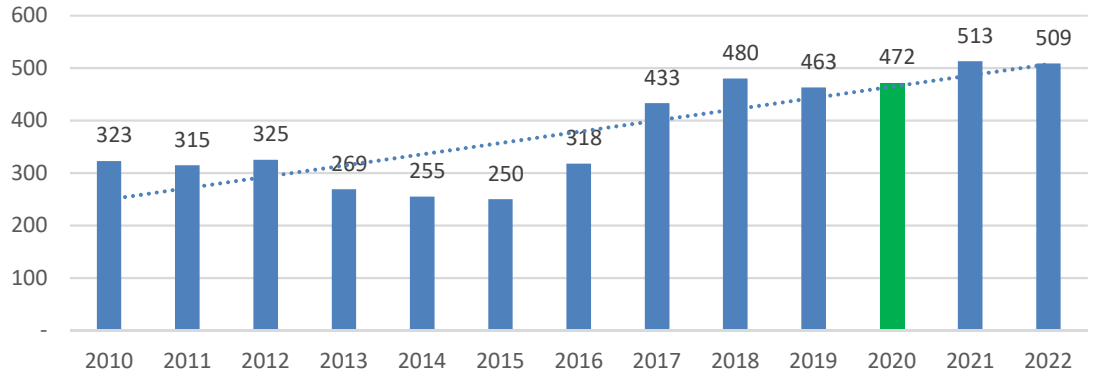


Figure 33. Number of announced greenfield FDI projects in Poland: By destination of investment in 2010-2022
Source: own elaboration based on UNCTADstat (2023).

As we can observe above, the number of announced greenfield FDI projects by destination of investment in Poland in 2020 (the first year of the COVID-19 pandemic) not only – in contrast to global trends, in the EU and V4 countries – did not decrease, but increased by 2% (from 463 to 472) compared to 2019. This is a relatively small change, but there is no decrease in the number of such projects. Moreover: in 2021 (513) and 2022 (a record high of 509), even more such investments were recorded. The trend is definitely upward (trend line in Figure 33). Therefore, we can conclude that within the framework of the eighth research question RQ8, the specific question RQ8d proposed in this article has been positively verified.

Summarising the above analyses, we can state that we verified eight main research questions, each with four specific questions – which means a total of 32 studies. It turned out that in the vast majority of cases, the main questions were completely verified positively (RQ2, RQ4, RQ5, RQ6, RQ7) – which means confirmation of the assumption that capital outflows in the form of FDI, the number of net cross-border M&As (by seller region), the value of announced greenfield FDI projects (by source of investment), the value of announced greenfield FDI projects (by destination of investment) and the number of announced greenfield FDI projects (by source of investment) decreased after the outbreak of the COVID-19 pandemic in all four aspects: globally, in the EU countries, in the Visegrad Group countries and Poland. On the other hand, in the case of main questions RQ1, RQ3 and RQ8, *i.e.* capital inflows in the form of FDI, the net value of cross-border M&As (by seller region) and the number of announced greenfield FDI projects (by destination of investment), it turned out that positive verification of the questions could be observed only partially. In the case of specific questions RQ1d, RQ3b, and RQ8d, it turned out that the verification of the assumptions was negative. This means that capital inflows in the form of FDI in the first year (2020) of the COVID-19 pandemic not only did not decrease in Poland (this is RQ1d), but increased – as can be seen in Figure 5 (globally, in the EU countries and in the V4 countries they decreased). In the case of the net value of cross-border M&As (by seller region), it turned out that in the EU countries (this is RQ3d) these values not only did not decrease (in other analyses they decreased), but increased – as can be seen in Figure 11. In the case of the number of announced greenfield FDI projects (by destination of investment), it also turned out that in Poland (this is RQ8d), this number not only did not decrease but increased (in other analyses they decreased) – as Figure 33 shows. The reasons for this require further, extensive research and analysis, but it seems that the large internal market, presence in the EU, investment attractiveness understood as the investment climate (economic, political, legal, social and other factors) and location attractiveness and, additionally, processes of change in global value chains (shortening, transfer of processes, relocation of investments) may be an opportunity for countries such as Poland. These positive trends may be disrupted by Russia's actions in connection with the war in Ukraine or by economic and political turmoil in the world.

As mentioned at the beginning, there are no scientific studies on foreign direct investment in the approach proposed in this article (those that exist are mentioned in the literature review). However, it would be necessary to further examine selected sectors or industries of economies affected by the COVID-19 crisis.

CONCLUSIONS

The economic crisis triggered by the worldwide spread of the COVID-19 pandemic caused several perturbations globally. The foundations of the market economy collapsed, regulatory restrictions and lockdowns were introduced and we observed a negative impact on international trade, including capital flows in the form of foreign direct investment. In this article, we aimed to identify and analyse selected trends and phenomena occurring in the global economy in conjunction with a description of the changes taking place at the global level, in the European Union countries, the Visegrad Group countries and Poland, which are related to the impact of the COVID-19 pandemic on capital flows in the form of foreign direct investment. Out of eight main research questions, five were fully positively verified (positive verification of all specific questions for each main question) and three main research questions were partially positively verified, because in the case of specific questions RQ1d, RQ3b, and RQ8d, it turned out that the verification of assumptions was negative – once in the case of the European Union countries and twice in the case of Poland. One may be tempted to conclude that the slowdown in the global economy and the deceleration in globalisation processes (deglobalisation or even slowbalisation processes) in terms of FDI flows did not affect Poland as drastically as other countries.

In my opinion, the presented research findings have not only descriptive but also explicative (explanatory) value. They may also have an implication value when we take into account the current level of investment attractiveness of our country and the possible location and relocation of foreign capital in our part of Europe related to the destabilisation of global value chains and the search for safe location havens for foreign direct investment. It is becoming increasingly important for businesses to try to reduce their dependence on projects involving the concentration of production processes far abroad, for example outside the European Union (which in practice means Asia and especially China). Companies will look for ways to increase the so-called resilience of their supply chains, *i.e.* diversification of their supplier base to protect themselves against possible production disruptions by seeking new suppliers in locations they have not used so far (Javorcik, 2020/2021). Thus, paradoxically, the effect of the COVID-19 pandemic may be the emergence of a development opportunity for Poland and other countries in our region – which will mean intensified participation in global value chains. This may be helped by public instruments to support investors but may be hindered by the continuing war between Russia and Ukraine.

REFERENCES

Ajide, F.M., & Osinubi, T.T. (2020). Covid-19 pandemic and outward foreign direct investment: A preliminary note. *Economics*, *8*(2), 79-88. https://doi.org/10.2478/eoik-2020-0019

Alfaro, L., & Chen, M.X. (2010). Surviving the global financial crisis: foreign direct investment and establishment performance. *Harvard Business School BGIE Unit Working Paper*, 10-110. https://doi.org/10.2139/ssrn.1623831

Antonietti, R., De Masi, G., & Ricchiuti, G. (2020). Linking FDI topology with COVID-19 Pandemic. *Papers in Evolutionary Economic Geography (PEEG), 20*, 54. https://doi.org/10.2139/ssrn.3736648

BIS. (2023). *The Bank for International Settlements, Green Swan 2023: Climate transition in the real economy: what should central banks know about it?* Retrieved from www.bis.org on January 15, 2024.

Czech, K., Wielechowski, M., Kotyza, P., Benešová, I., & Laputková, A. (2020). Shaking stability: COVID-19 impact on the Visegrad Group countries' financial markets. *Sustainability*, *12*(15), 6282. https://doi.org/10.3390/su12156282

Dornean, A., Işan, V., & Oanea, D.C. (2012). The impact of the recent global crisis on foreign direct investment. Evidence from central and eastern European countries. *Procedia Economics and Finance*, *3*, 1012-1017. https://doi.org/10.1016/S2212-5671(12)00266-3

EY. (2023). *EY Europe Attractiveness Survey. EY – Global*. Retrieved from https://www.ey.com/en_gl/attractiveness/ey-europe-attractiveness-survey on January 10, 2024.

Fabeil, N.F., Pazim, K.H., & Langgat, J. (2020). The impact of Covid-19 pandemic crisis on micro-enterprises: Entrepreneurs' perspective on business continuity and recovery strategy. *Journal of Economics and Business*, *3*(2). https://doi.org/10.31014/aior.1992.03.02.241

Gorynia, M., Nowak, J., Trąpczyński, P., & Wolniak, R. (2022). Globalization in a COVID-19 afflicted world. *International Business in Times of Crisis: Tribute Volume to Geoffrey Jones*, *16*, 379-395. http://doi.org/10.1108/S1745-886220220000016019

Gujrati, R., & Uygun, H.A.Y.R.İ. (2020). Covid-19: impact on global economics. *Amity Journal of Computational Sciences (AJCS)*, *4*(1), 24-29. Retrieved from https://avesis.erdogan.edu.tr/yayin/0081aad6-e6fb-4991-a98d-dc12b0408045/covid-19-impact-on-global-economics on January 15, 2024.

Hayakawa, K., Lee, H.H., & Park, C.Y. (2022). The effect of COVID-19 on foreign direct investment. *Asian Development Bank Economics Working Paper Series*, 653. https://doi.org/10.22617/WPS220092-2

Horobet, A., Simionescu, A.A., Dumitrescu, D.G., & Belascu, L. (2020). Europe's war against COVID-19: A map of countries' disease vulnerability using mortality indicators. *International Journal of Environmental Research and Public Health*, *17*(18), 6565. https://doi.org/10.3390/ijerph17186565

Hysa, E., Imeraj, E., Feruni, N., Panait, M., & Vasile, V. (2022). COVID-19—a black swan for foreign direct investment: Evidence from European countries. *Journal of Risk and Financial Management*, *15*(4), 156. https://doi.org/10.3390/jrfm15040156%0A

IMF. (2021). World Economic Outlook, October 2021: Recovery During A Pandemic. Retrieved from www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021 on January 15, 2024.

Javorcik, B. (2020/2021). *Kryzysy stwarzają możliwości: Polska i globalne łańcuchy dostaw w świecie po Covid-19*. Retrieved from https://www.coleurope.eu/sites/default/files/uploads/news/concilium_civitas_-_almanach_2020-2021.pdf#page=157 on January 11, 2024.

Kalotay, K., & Sass, M. (2021). Foreign direct investment in the storm of the COVID-19 pandemic and the example of Visegrad countries. *Acta Oeconomica*, *71*(S1), 73-92. https://doi.org/10.1556/032.2021.00030

Khan, S., Janjua, L., & Yu, Z. (2020). COVID-19: a learning opportunity to improve environmental sustainability. *Carbon Capture*, 43. https://doi.org/10.5772/intechopen.93893

Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C.A.M., Prochotta, A., Steinbrink, K.M., & Berger, E.S. (2020). Startups in times of crisis–A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, *13*, e00169. https://doi.org/10.1016/j.jbvi.2020.e00169

Paul, J., & Feliciano-Cestero, M.M. (2021). Five decades of research on foreign direct investment by MNEs: An overview and research agenda. *Journal of Business Research*, *124*, 800-812. https://doi.org/10.1016/j.frl.2024.105593

Rymarczyk J. (2010). *Międzynarodowe stosunki gospodarcze*. Warszawa: Wydawnictwo PWE.

Saurav, A., Kusek, P., Kuo, R., & Viney, B. (2020). *The Impact of COVID-19 on Foreign Investors: Evidence from the Quarterly Global MNE Pulse Survey for the Third Quarter of 2020*. Retrieved from https://openknowledge.worldbank.org/server/api/core/bitstreams/ff1b779d-045f-5938-a75a-3d01fc51cf03/content on January 11, 2024.

Seric, A., & Hauge, J. (2020). *COVID-19 and the global contraction in foreign direct investment. Series on tackling COVID-19 in developing countries*. Retrieved from www.oecd-development-matters.org on January 5, 2024.

Seric, A., Görg, H., Mösle, S., & Windisch, M. (2020). *Managing COVID-19: How the pandemic disrupts global value chains.* Retrieved from https://iap.unido.org/articles/how-pandemic-disrupts-global-value-chains on January 10, 2024.

Taleb, N.N. (2020). *Czarny Łabędź. Jak nieprzewidywalne zdarzenia rządzą naszym życiem*. Poznań: Zysk i S-ka.

UNCTADstat. (2023). *TradeMerchTotal*. Retrieved from www.unctad.org on January 10, 2024.

Walsh, B. (2020). *The coronavirus is a force for deglobalization*. Retrieved from https://www.axios.com/coronavirus-economic-globalization-744b0660-ce56-4ffa-93e9-cc4c20ee135c. html on January 12, 2024.

World Association of Investment Promotion Agencies (2020). *The impact of COVID-19 from the perspective of IPAS*. Retrieved from https://waipa.org/waipa-content/uploads/The-impact-of-COVID-19- from-the-perspective-of-IPAs.pdf on January 5, 2024.

Author

Wojciech Zysk

Associate Professor (Prof. UEK) of the Krakow University of Economics (Poland). Habilitated Doctor of Economics (DEcon), PhD in economics; specialist in foreign trade and FDI. His research interests include Fair Trade, SRI, CSR, international entrepreneurship, e-commerce, foreign trade, and European business. Author and co-author of several books and over 90 scientific articles.

Correspondence to: Dr hab. Wojciech Zysk, prof. UEK, Krakow University of Economics, ul. Rakowicka 27, 31-510 Kraków, Poland, e-mail: zyskw@uek.krakow.pl

ORCID https://orcid.org/0000-0003-2231-7941

Acknowledgements and Financial Disclosure

'The publication/article presents the result of Project no. 078/EEZ/2024/POT financed from the subsidy granted to the Krakow University of Economics.'

Conflict of Interest

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

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.06

A visual analysis of new technologies and craft aspects in the context of sustainable development

Katarzyna Mazur-Włodarczyk

ABSTRACT

Objective: The objective of the article is to present the state of the latest research and identify emerging trends and research gaps related to the use of new technologies in crafts, perceived as a tool enabling moving towards sustainable development, as well as to show trends focusing on popularity and novelty. Crafts are experiencing a renaissance and are increasingly marking their presence on the domestic and international markets as an intensively developing sector. Crafts are also a relatively 'new' but increasingly popular area of scientific research within economic sciences. New technologies in the area of craft involve several vital issues, including an obvious consequence of progressing economic development; tools useful for craftsmen at work but not necessary for them; expensive tools that affect the price of the final product; tools of the young generation of producers whose products are interested in the young generation of consumers; a mega trend affecting the possibility of applying for subsidies; tools of companies specializing in new technologies that provide goods and services intended for craftsmen; and tools enabling moving towards sustainable development.

Research Design & Methods: The article presents the results of a bibliometric study devoted to the issues of new technologies and crafts in the context of the last of the aspects mentioned above. It aims to present the state of the latest research and identify emerging trends and research gaps in the selected topic. The aim was to give the subject of using new technologies in crafts, perceived as a tool by enabling a movement towards sustainable development, and to isolate trends focusing on popularity and novelty. A systematic literature review was conducted on documents created and indexed until November 2023 in the Scopus database – one of the most popular databases of scientific texts.

Findings: The visualization of quantitative data (words appearing in titles and abstracts) was presented as cluster maps of terms generated by the VOSviewer program and word clouds created using the WordArt program.

Implications & Recommendations: More publications need to refer to Sustainable Development Goals number 8, 9, and 12. Attention was drawn to the need to redefine what contemporary craftsmanship is, considering the use of new technologies.

Contribution & Value Added: The article emphasizes the importance of sustainable development in preserving cultural heritage and reducing production waste, including pollution prevention. It indicates areas for further research and technological solutions that support craftsmen and enable more sustainable development. Technological advancements can aid sustainable development in crafts but require supportive programs, subsidies, and training, particularly for SMEs.

Article type:	original literature review
Keywords:	crafts; new technologies; innovative technologies; sustainable development; cultural economics
JEL codes:	Q01, Q56, Z10

Received: 5 February 2024 | Revised: 1 October 2024 | Accepted: 11 October 2024

Suggested citation:

Mazur-Włodarczyk, K. (2025). A visual analysis of new technologies and craft aspects in the context of sustainable development. *International Entrepreneurship Review,* 11(1), 93-110. https://doi.org/10.15678/IER.2025.1101.06

INTRODUCTION

Crafts are an essential part of economic life (Li, 2016). However, scholars describe it as an ambiguous construction, especially from the point of view of the separation between issues related to culture and economy (Berta, 2023). We may notice another ambiguity in issues relating only to the practical orientation of crafts and even the developing craft science (Westerlund *et al.*, 2022), *i.e.* its scientific and academic approach. Its orientation not only to practice but also to knowledge is associated with changes in the perception of crafts within the knowledge-based economy (Klamer, 2012). Another area of ambiguity is linking crafts with the space of tradition and legacy (*e.g.* traditional crafts and folk crafts) or linking them with development and modernity (*e.g.* within contemporary crafts, innovative crafts, and virtual crafts). The factors supporting craft enterprises, classified by Walker *et al.*'s team, in addition to elements such as multi-factor accessibility included (Walker *et al.*, 2022):

- educational resources and training,
- cultural events providing opportunities for sales, dissemination, demonstrations, workshops and raising awareness of crafts,
- organizations supporting culture and regional policies related to maintaining heritage creation practices,
- transport and tourism infrastructure,
- tourist attractions, regional cuisine, natural beauty, galleries, and museums,
- the national or international profile of the region by, for example, obtaining the status of a UNESCO World Heritage Site.

The next factor include the use of modern tools, including new technologies.

New technologies are crucial for the transformation of economies. In the craft space, they are sometimes described as an obvious consequence of progressing economic development – a consequence of changes introduced as part of business activities, including those related to production. Their use may influence the interest of a given group of consumers, especially those representing younger age groups and people interested in the future's new trends and technologies. On the other hand, UNESCO (2003) draws attention to the importance of conducting training for creators of creative works (including craftsmen) on, among others, copyright, and neighbouring rights, which are still serious due to digital network technologies and the phenomenon of piracy, especially in developing countries and in countries in transition.

New technologies are also treated as tools used in craftwork. In this context, they are sometimes perceived as (see: Mazur-Włodarczyk et al., 2024):

- useful at work but not necessary for craftsmen,
- expensive and affecting the price of the final product,
- issues enabling applying for available national and EU subsidies, etc.,
- tools used primarily by the young generation of craftsmen,
- tools used by companies specializing in modern technologies whose clients are craftsmen,
- tools whose use contributes to moving towards sustainable development.

New technologies are used in crafts, including craft product design. Digital technologies, in particular, make it possible to improve the performance and aesthetics of modern products (Zhao & Chen, 2022). Craftsmen see the possibilities that technology offers, including increasing creators' productivity and creativity (Song, 2022). New technologies may also influence the development of particular crafts or other areas not previously associated with crafts. Examples include eTextiles/Smart Textiles integrating textile materials with electronics (Posch & Fitzpatric, 2021), virtual crafts development thanks to e-tools such as Tilt Brush enabling creation in virtual reality (Kim, 2023), the use of a Gore-Tex membrane in production handcrafted footwear by the Italian company AKU (Polski Caravaning, 2015), providing 'services of the future' in the field of optics and optometry (KRIO, 2023), using new material technologies in the manual production of furniture, combining technology with craft knowledge and an understanding of the material (Besch, 2019), *etc*. Artificial intelligence (AI) is used, among others, in craft education (Vartiainen &

Tedre, 2023). Generative AI is also starting to be integrated into manufacturing and creation projects, especially in idea generation and exploring the design space, trying different form factors for the same object type, design options, etc. (Druga & Hammond, 2023).

Another application of new technologies in connection with crafts is digitizing craft knowledge related to traditional craft techniques. These activities contribute to reviving dying crafts, making them more accessible. HORIZON-CL2-2022-HERITAGE-01-04 is a program that combines old craft techniques with the latest new technologies. Its assumptions emphasize that new technologies enable the conservation and restoration of cultural goods and the creation of new products and services, as well as the need to conduct training and create platforms connecting researchers, craftsmen, enterprises, and innovators (European Commission, 2022). Thus far, four projects are being implemented (European Commission, 2023a-c):

- HEPHAESTUS – Heritage in EuroPe: new techHologies in crAft for prEserving and innovating fUtureS. This project involves mapping knowledge of ancient techniques and materials and digitizing craft heritage to achieve social, cultural, environmental, and economic sustainability,
- Colour4CRAFTS – Color for Combining, Re-engineering, Applying, Futuring, Transforming, Stretching. This focuses on studying biological textile dyeing from a traditional historical perspective and combines it with state-of-the-art dye biosynthesis technologies and anhydrous application techniques. They aim to develop craft skills in textile dyeing and transform traditional processes into sustainable processes, referring to Sustainable Development Goals 4, 8, and 11,
- Tracks4Crafts – Transforming crafts knowledge for a sustainable, inclusive, and economically viable heritage in Europe. This project is related to achieving Sustainable Development Goals 4, 8, and 11, which seek to develop new digital technologies, strengthen and transform the transmission of knowledge about traditional crafts, and thus achieve a more effective economic and social valuation of crafts,
- CRAEFT – Craft Understanding, Education, Training, and Preservation for Posterity and Prosperity. This project is related to craft education and training space using digital aids, telecommunications, craft-specific simulators, advanced immersion, and advanced digitalization.

These programs are planned for several years of implementation (2023-2026/2027), and their financing focuses only on the EU contribution (amounts from USD 3-4 million). They cover more developed European countries (Denmark, Finland, Belgium, and Greece) and therefore are characterized by uneven geographical benefits.

Given the current conditions and ways of functioning of crafts presented above. I conducted a bibliometric study devoted to the issues of new technologies and crafts in the context of striving for sustainable development. It is planned to present the state of the latest research and identify emerging trends and research gaps in this topic. The aim was to present the topic of the use of new technologies in crafts, perceived as a tool enabling moving towards sustainable development, as well as to isolate trends focusing on popularity and novelty. Given the above, I identified three research questions.

RQ1: What are the key research areas?

RQ2: What are the key emerging research trends?

RQ3: What are the research gaps?

A systematic literature review was conducted in November 2023 based on texts from the Scopus scientific materials database.

The composition of this article includes a presentation of the applied SLR and quantitative analysis process, characterization of the specificity of the selected texts (including subject areas, distribution of publications on the timeline, form of publication, and territorial assignment), the specificity of the bibliographic data (including aspects of co-authorships and citations) and the specificity of the text data (including the most frequently occurring words in titles and abstracts, clusters of specified key terms and their visualization). The discussion section refers to the following groups of terms: 1) 'Columbia' and 'Madeira', 2) 'wood', 'construction industry' and 'construction organization', 3) 'knowledge' and 'technology', 4) 'intangible culture', 'inheritance', and 'culture', and 5) 'sustainability',

'sustainable development', and 'pollution prevention'. In summary, apart from addressing the research questions posed, the need to redefine what craft is today was also emphasized.

MATERIAL AND METHODS

The article describes the bibliometric study within which the Structured Literature Review (SLR) was conducted. The study was guided by two main research questions as part of scientific texts devoted to crafts, new technologies, and sustainable development:

RQ1: What are the emerging trends?

RQ2: What are the research gaps?

To find answers to the formulated research questions, I used the interdisciplinary and ranking database of scientific texts the Scopus published by Elsevier, *i.e.* a database of abstracts and citations, enabling precise narrowing of the search area. This database has been operating since 2004 and includes texts published since 1970, including the latest literature on the subject. This database does not index all scientific texts but only those that met a group of selection criteria, including those related to the regularity of publication, review process, having abstracts in English, statements of ethical principles, online availability, reputation, and high quality. Scopus is sometimes treated as an 'indicator of a scientist's authority' (Scientific Publications, 2022) and, above all, as the largest database of scientific texts, allowing access to scientific publications from any discipline (Library of the Faculty of Philology of the Jagiellonian University, 2023). Within this database, I used narrowing through search criteria combining the phrases: *new technologies/ modern technologies/ innovative technologies/ artificial intelligence/ 3D printing/ virtual reality/ augmented reality, craft*, and *sustainable development*. In this way, I obtained 17 texts devoted to the selected issues. I narrowed the search to the article title, abstract, and keywords, and then downloaded the CSV file. Figure 1 shows the detailed SLR process.

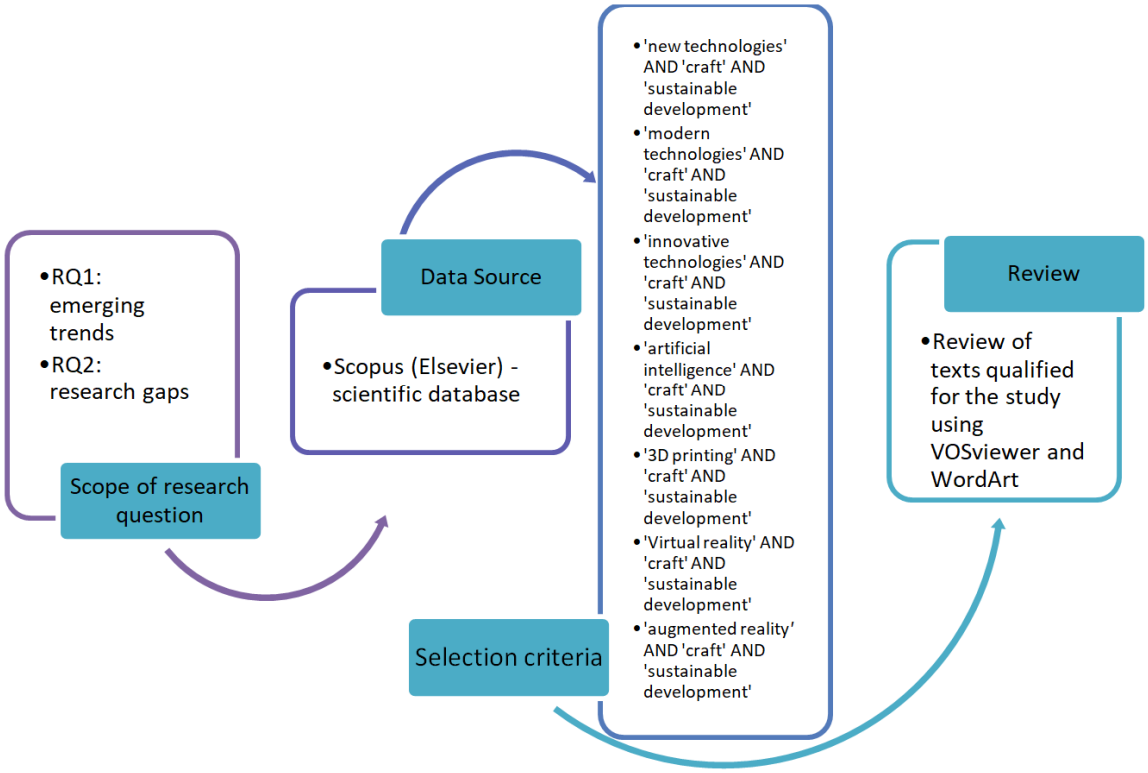


Figure 1. SLR process
Source: own elaboration.

In the next step, I performed a quantitative analysis using programs specializing in data visualization, such as VOSviewer and WordArt. The first one allows for the creation of maps based on

bibliographic data (including cooperation between authors and between representatives of given countries) and text data (derived from the titles and abstracts of indexed works). The second program allows for the visualization of the most frequently occurring words/phrases in the text, showing the results as transparent word clouds.

LITERATURE REVIEW AND THEORY DEVELOPMENT

The Specificity of the Indexed Texts

The selected texts can be divided into 12 subject areas (Figure 2), within which the most significant number of texts is devoted to the areas of engineering (5 texts), environmental science, computer science, and physics and astronomy (4 texts each). The publications were published between 2003 and 2023. In this period, the most significant number of publications was published in 2019 (Figure 3). The indexed documents are dominated by conference papers, journal articles (eight texts each), and one book chapter. The authors of the texts mainly represent the People's Republic of China (5 texts), the United States (3 texts) and Great Britain (2 texts) (Figure 4). The dominant language of the indexed materials was English (16 texts). Only one text was published in another language, *i.e.* in Croatian.

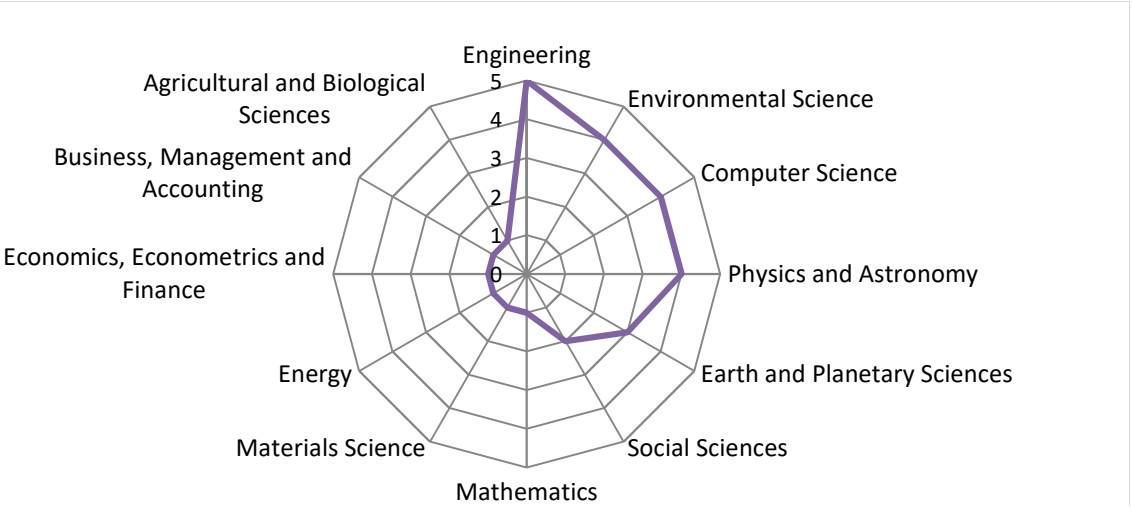


Figure 2. Subjects area
Source: own elaboration.

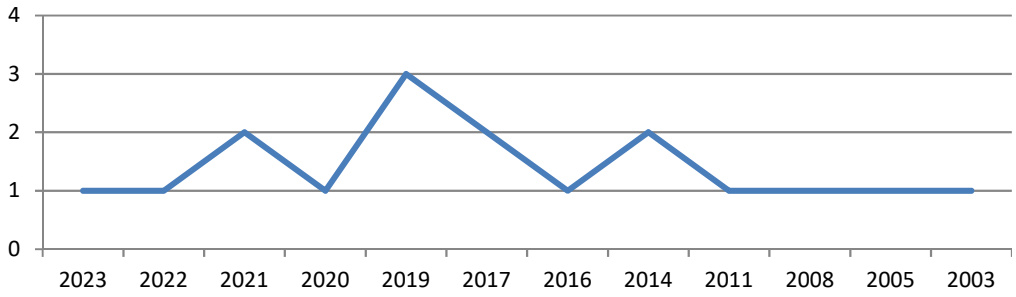


Figure 3. Publication date
Source: own elaboration.

Creating authorship maps within the selected texts in VOSviewer was impossible. When selecting complete counting methods and the minimum number of documents of an author – 2, the total link strength for all items was 0. Cooperation between authors within the researched issues therefore applies only to individual texts. The most frequently cited texts were the texts by Nasso *et al.* (2019), which had 20 citations, and the team of Benford *et al.* (2017), which had 13 citations. Detailed information is presented in Figure 5.

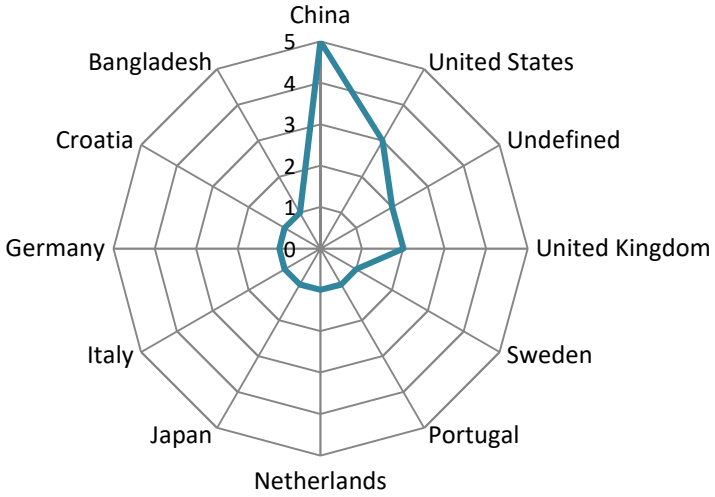


Figure 4. Country/ territory
Source: own elaboration.

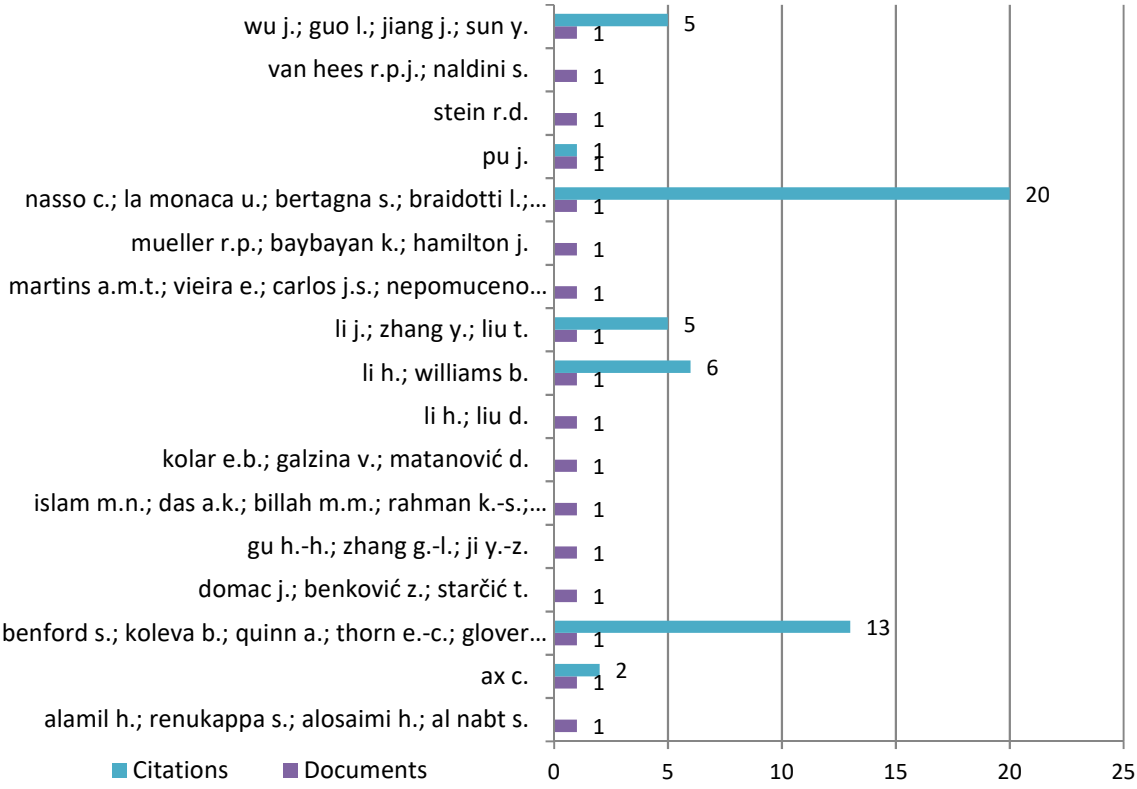


Figure 5. Co-authorship: authors
Source: own elaboration.

Similarly, in the case of cooperation between countries, I could not generate a country co-authorship map. After selecting complete counting methods and the minimum number of documents of an author, in 2 of the 14 countries, 3 meet the threshold. For each of them, the total link strength was 0. Out of 14 specific countries, only three representatives cooperated on the researched topic; these included scientists from the United States, China, and Great Britain. The cited texts also came from Great Britain – 13 citations, China – 11 citations, and the United States – 6 citations.

The Specificity of the Text Data

The most frequently appearing entries in the titles of the selected texts included *sustainable, craft, industry, sustainable, culture*, and *heritage*. However, within the abstracts, the most frequently appearing

words were *technology, culture, craft, products, charcoal, knowledge, intangible*, and *wood*. Figures 6a and 6b present word clouds generated by WordArt illustrating all the components of titles and abstracts. Within them, the font size indicates the frequency of appearance in titles or abstracts, respectively.

6a. Titles

6b. Abstracts

Figure 6a-b. Wordclouds for titles (a) and abstracts (b). WordArt
Source: own elaboration.

Using the VOSviewer program, we can generate maps based on the text data, including information contained in the title and abstract fields. I selected the whole counting method and specified the minimum number of term's occurrences: 3. In this way, of the 889 terms, 75 meet the threshold. I divided the terms into 6 clusters (Figure 7a):

- the knowledge cluster is marked in purple, which includes elements such as *knowledge, construction industry, process, person, interactive decoration*, and *construction organization*,
- the blue colour combines the craft element: *craft/crafts, intangible culture, inheritance, protection, intangible cultural heritage, processing, information, influence, art, value*, and *development*,
- the sustainability cluster is marked in red, including the following elements: *sustainability, action, learning, cost, Madera, Columbia, space, shoe, creation, new technology, solution, learning, construction*, and *cost*,
- the yellow colour indicates the technology cluster, elements: *technology, problem, resource, sustainable development, mining area, pollution prevention, area*, and *industry*,
- the green-production cluster, containing such elements as *production, producer, Croatia, market, demand, charcoal, tonne, water management*, and *economy*,
- the turquoise colour – wood cluster with elements*: wood* and *product*.

Within network maps, the 'bubble' size indicates the multiple occurrences and the number of connections with other terms appearing in publications. Figure 7b shows the overlay map – network visualization from the publication dates page. The darker the colour of the 'bubble,' the earlier the term appeared. The oldest terms include *mining area, economy, environmental protection, producer, water management,* and *construction*. The newest ones were *craft, wood, space, Columbia, Madeira, sustainability, art, intangible culture, inheritance, protection, culture, construction industry*, and *construction organization*.

The last visualization, *i.e.* the density map (Figure 7c), shows the previously presented terms from the point of view of exploring a given topic (the most frequently researched issues). The brighter the fields (yellow), the greater the research intensity. The brightest areas include technology, craft, knowledge, production, and action.

Only three of the terms listed in VOSviewer refer directly to sustainable development. These included the following terms: *sustainability, sustainable development*, and *pollution prevention*, as shown in Figures 8a-c. Of these, the first two had the most connections with other terms. Within them, the term sustainability was associated with a more significant number of terms from newer publications, *i.e.* published after 2020, while the term *sustainable development* was associated with terms assigned to publication dates between 2010 and 2015.

Another distinctive group of terms relates to issues of culture and heritage (Figures 9a-c), *i.e.* with terms such as *intangible cultural heritage, intangible culture*, and *culture*. Among them, the term culture had the most connections. Moreover, terms containing the word culture were associated with newer publications than those containing the word *heritage*.

The last group of terms listed concerned the names of geographical locations: *Columbia, Croatia*, and *Madeira* (Figures 10a-c). Within this group, *Croatia* had the most connections with other terms, but most of them concerned older issues, including those related to publications from before 2010.

DISCUSSION

The selection criteria used only 17 publications from the Scopus database, which may indicate that the topic combining the issues of crafts, new technologies, and sustainable development is relatively new and yet to be very popular in the scientific community. Using the VOSviewer and WordArt programs, the frequencies of terms in their titles and abstracts were visually compared. The conducted. analysis made it possible to specify the most popular, contemporary topics as well as the newest and least researched aspects within the examined issues, *i.e.:*

1. trends related to the latest terms: craft, wood, space, Columbia, Madeira, sustainability, art, intangible culture, inheritance, protection, culture, construction industry, and construction organization,
2. trends related to the most intensively explored issues: *technology, craft, knowledge, producer*, and *action*,
3. other distinctive terms directly referring to sustainable development are *sustainability, sustainable development*, and *pollution prevention*.

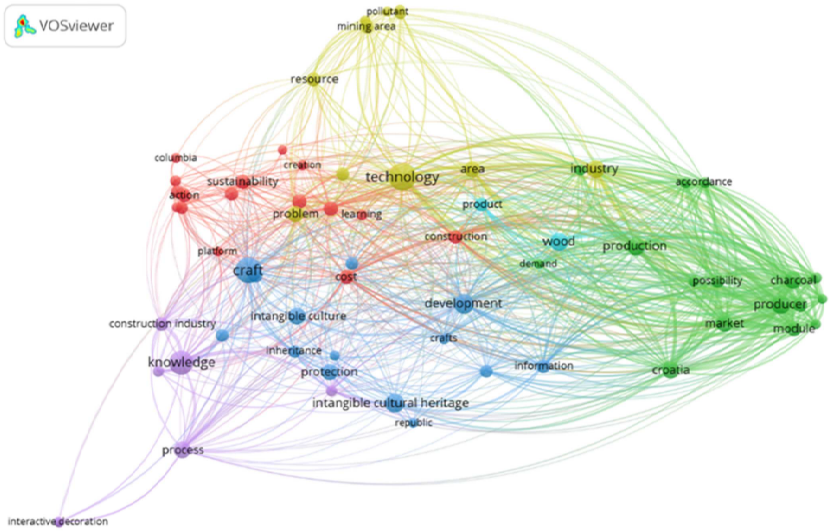
Terms: 'Columbia' and 'Madeira'

The term *Columbia* does not directly refer to the country in South America. It stands for STS-52 Columbia, *i.e.* the thirteenth mission of the Space Shuttle Columbia and the fifty-first space shuttle program. It appeared in a text devoted to contemporary sea voyages in small vessels with a minimum crew, comparable in size to crews exploring space. The text devoted to this issue focuses on applying systems engineering solutions. As a case study, the author cites an ancient Hawaiian sailing ship used to explore the Pacific (Mueller *et al.*, 2021).

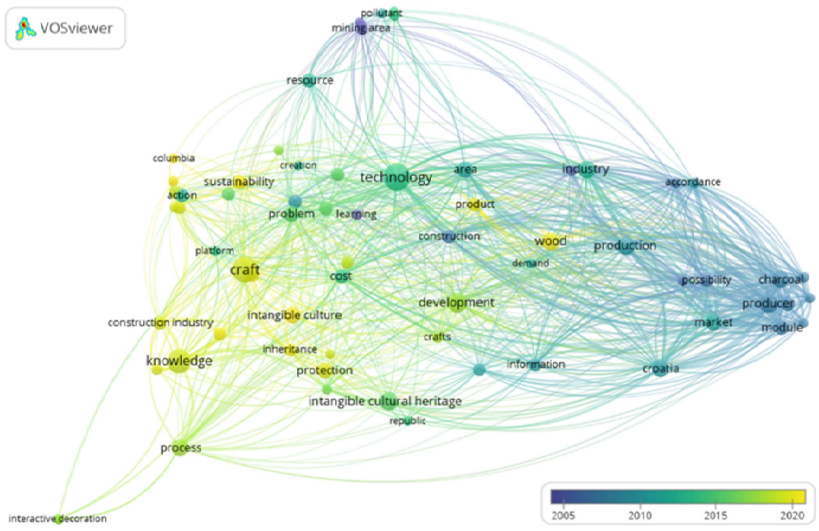
The term *Madeira* refers to the archipelago of volcanic origin of Madeira in Portugal. It used architecture rooted in local tradition, created by local craftsmen. In the literature, this issue presents the need for sustainable buildings using lessons from folk architecture. It highlights the importance of protecting native building resources, an overview of Madeira vernacular architecture, and the importance of exchanging information beneficial from the point of view of both the preservation of objects of the past and the know-how used in contemporary sustainable construction (Martins *et al.*, 2019).

Terms: 'wood', 'construction industry' and 'construction organization'

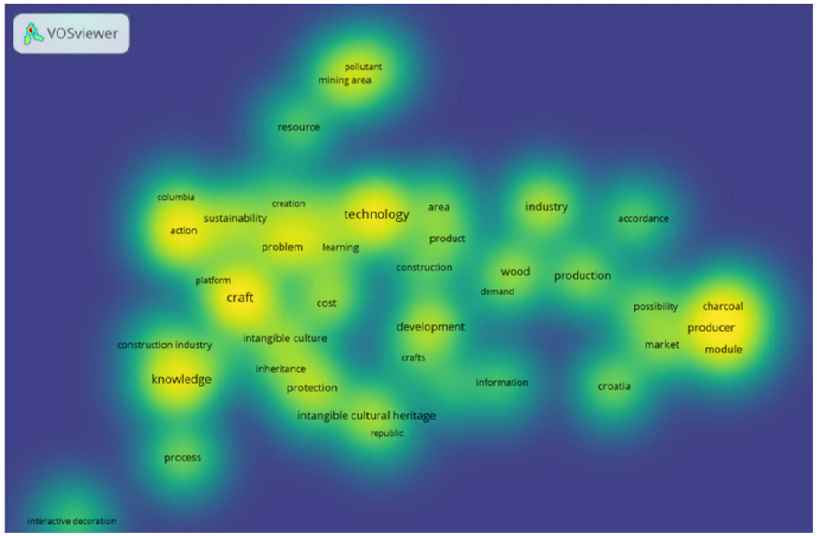
Issues related to wood refer to three aspects of craftsmanship and new technologies. The first shows wood as a renewable material, defined as one of the most valuable and standard new technologies used, among others, to create advanced wood-based products – using lasers in architecture and producing furniture, toys, and artistic crafts. The use of lasers to determine the quality of wood, improve work, design in wood, and clean monuments made of wood may contribute to the sustainable development of wood-based products and industries through the efficient use of resources and – very significantly – may affect the protection of forests and the mitigation of climate change (Islam *et al.*, 2023).



7a. Network visualization



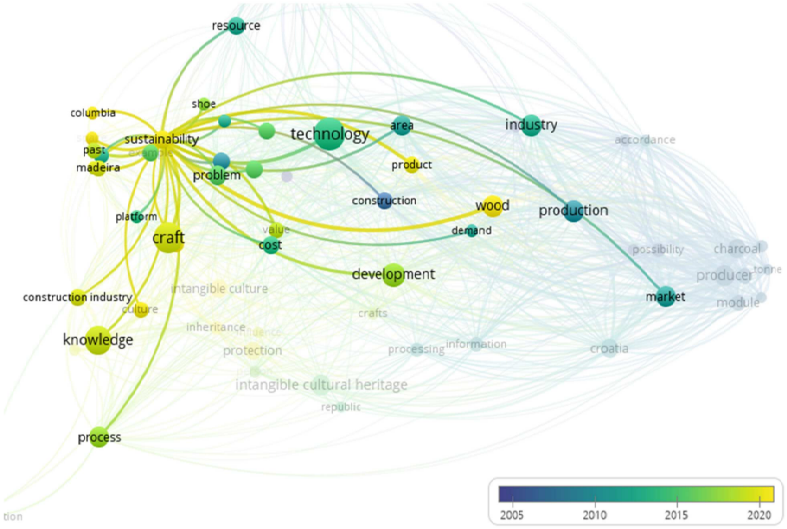
7b. Overlay visualization



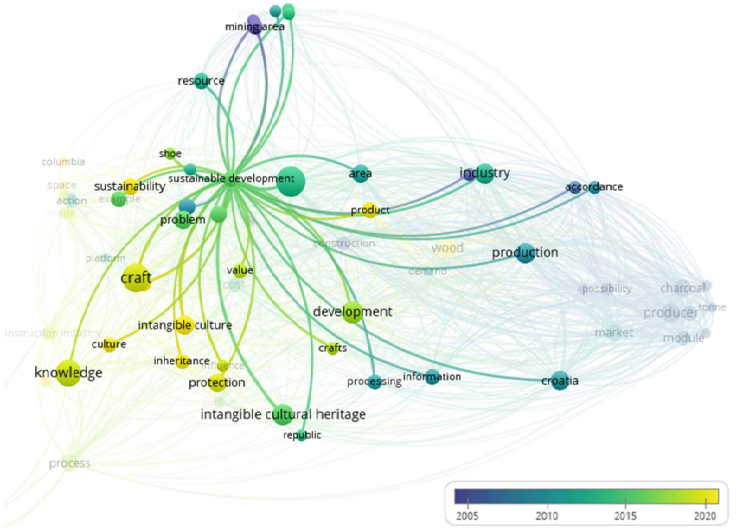
7c. Density visualization

Figure 7a-c. Network visualization (a), overlay visualization (b), density visualization (c)

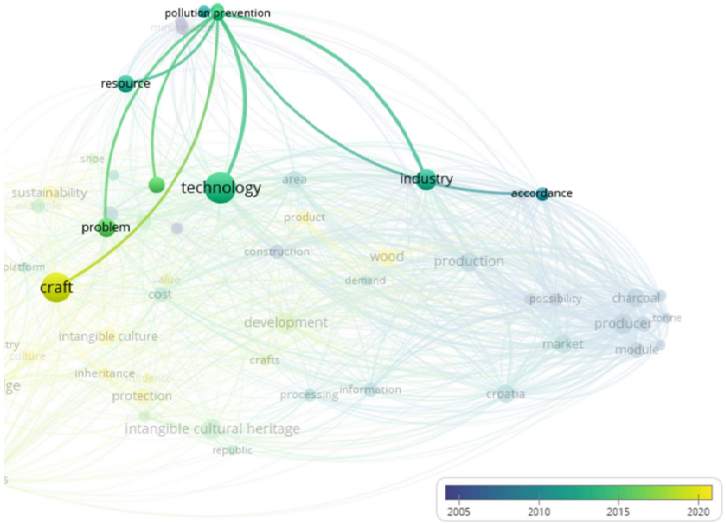
Source: own elaboration.



8a. Term *sustainability*



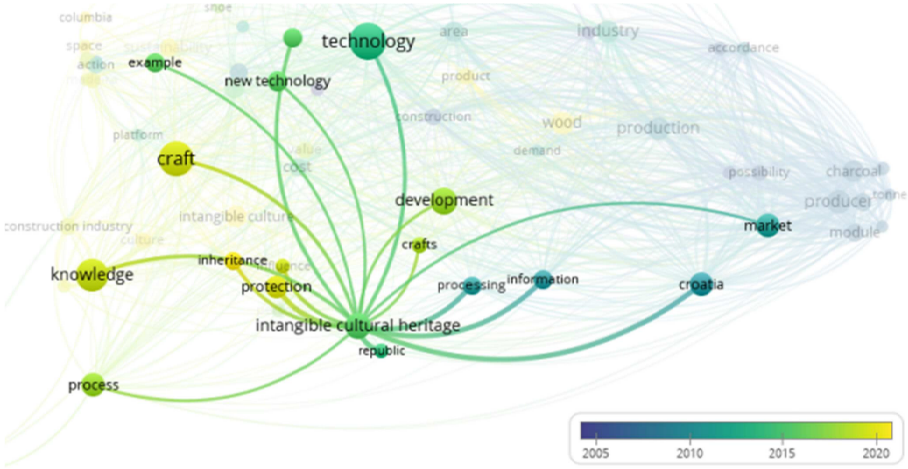
8b. Term *sustainable development*



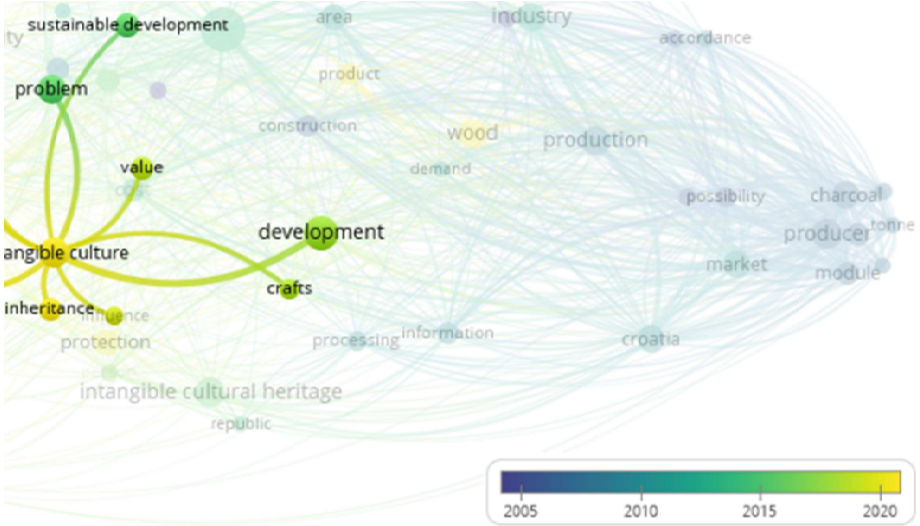
8c. Term *pollution prevention*

Figure 8a-c. Overlay map for terms: *sustainability* (8a), *sustainable development* (8b), and *pollution prevention* (8c)

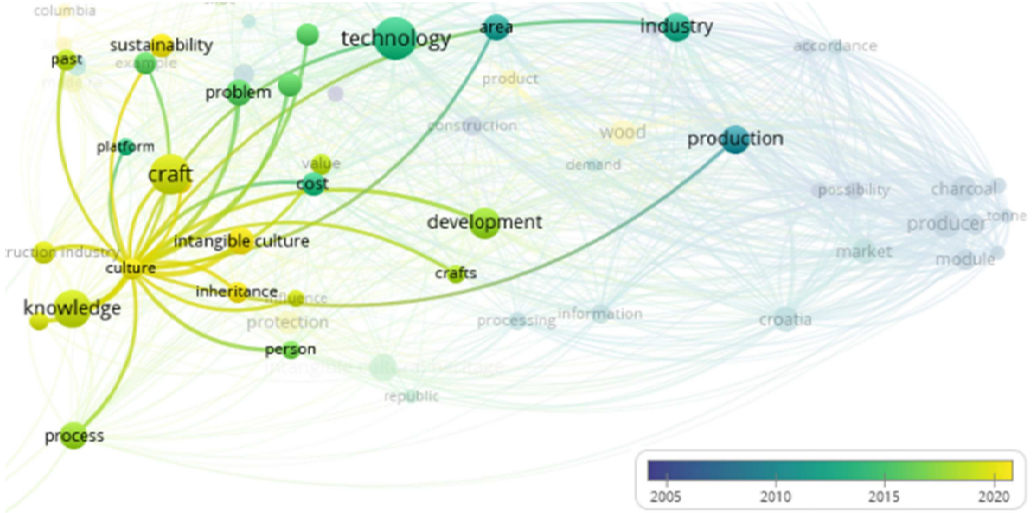
Source: own elaboration.



9a. Term *intangible cultural heritage*



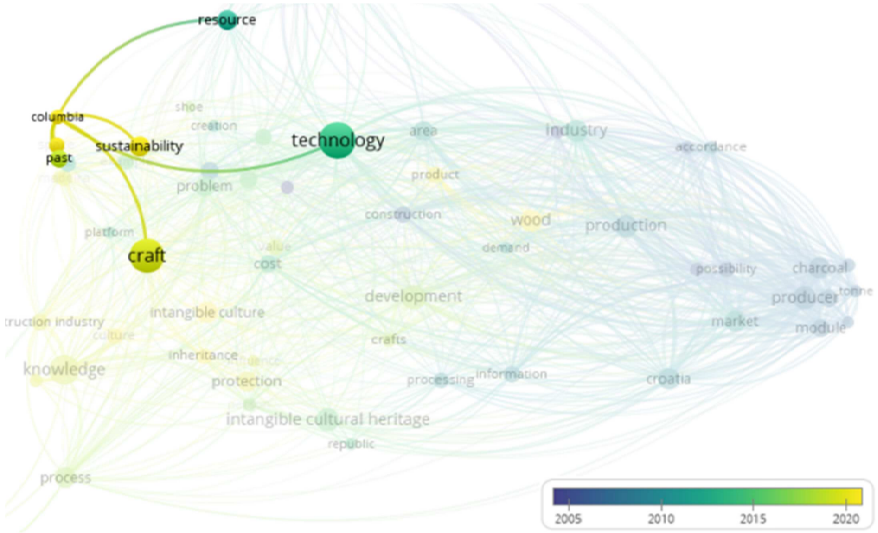
9b. Term *intangible culture*



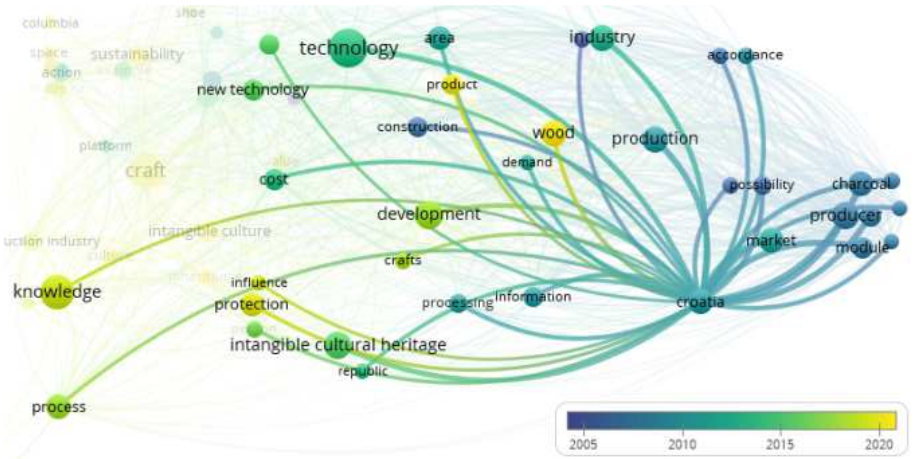
9c. Term *culture*

Figure 9a-c. Overlay map for terms: intangible cultural heritage (9a), intangible culture (9b), and culture (9c)

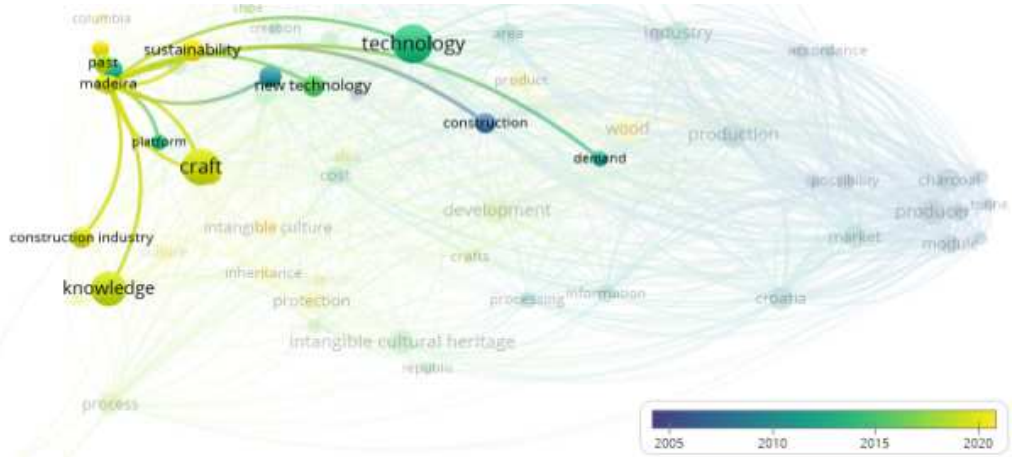
Source: own elaboration.



10a. term *Columbia*



10b. term *Croatia*



10c. term *Madeira*

Figure 10a-c. Overlay map for terms: Columbia (10a), Croatia (10b), and Madeira (10c)
Source: own elaboration.

The second aspect raises the issue of traditional methods of charcoal production, requiring renovation and modernization to improve the efficiency of converting wood into charcoal and to cope with national and international competition in the raw material (wood) and product (charcoal) markets, and thus improve the situation, among others in Croatia in terms of income obtained in this industry and reducing the level of unemployment in rural areas. Activities aimed at sustainable charcoal production include information and training, analysis and research of costs associated with obtaining raw materials, the production process and the price of final products, technical, economic, and environmental competitiveness within existing technologies and industries of charcoal production, determining the profitability of various methods of charcoal production, as well as the implementation of integrated policies and programs in the studied area (Domac *et al.*, 2008).

The last aspect concerns reducing air pollution in the transport system, including inland navigation, by building wooden ships and using a hybrid electric power system. The choice of wood as a material is considered more sustainable, especially in the context of the disposal problem of ships at the end of their service life (Nasso *et al.*, 2019).

Terms related to *construction* were presented in six selected texts (*i.e.* in over 1/3 of the analysed materials). They concern aspects of wood production (described above) and:

- the use of wood in architecture, rooted in local tradition in Portugal (Martins *et al.*, 2019),
- aspects of folk architecture and construction based on nature and adaptation to the prevailing climate, including combining the vernacular approach with modern technologies for the purposes of, among others, technical maintenance (Stein, 2003),
- the topic of structuring exploration and reconstruction activities conducted in mining areas to optimize operations, cleaner production, and the production of ecological products (Gu *et al.*, 2005),
- aspects of knowledge management in the construction industry of the Kingdom of Saudi Arabia, including sharing design knowledge and experience in craft positions (Alamil *et al.*, 2019).

Terms: 'knowledge' and 'technology'

The issue of protection of craft knowledge, practice, and skills as part of the intangible cultural heritage of the Republic of Croatia is the topic of research by Emina Berbić Kolar's team (2014). These researchers list areas in which new technologies may be helpful. These include data collection – digitization, processing, storage, and making it available to end users (Kolar *et al.*, 2014).

The second text related to the space of non-material culture refers to the local knowledge system within the Chinese art and craft culture of Jingdezhen. It proposes developing an intangible culture based on an artificial intelligence decision support system. The study conducted among porcelain producers indicates a positive impact of using new technologies in this craft, visible in the increased rate of technical progress by 2.4% (Li & Liu, 2022).

The issue of knowledge management in the construction space of the Kingdom of Saudi Arabia as an essential element enabling a competitive advantage is the subject of research by Hani Alamil *et al.* (2019). This text highlights that sharing know-how (including experience and design knowledge) is a critical element in the age of knowledge and even a survival strategy for a construction company. It employs various workers, including craftsmen. However, groups sharing knowledge and ideas – including recognizing opportunities and threats related to new technologies – should obtain institutional support (Alamil *et al.*, 2019).

The categories of knowledge and technology on interactive decorations are also discussed in the text, in which craft knowledge applies to creating aesthetic and functional decorations on products such as ceramic bowls, embroidered gift cards, fabric souvenirs, and acoustic guitars. Meanwhile, new technologies were used to create a portfolio of interactive artifacts – everyday objects decorated with patterns- triggering digital interactions when scanning the developed codes. An essential aspect of the project is mapping the physical artifact and the digital content. An example may be posting a code that links to a restaurant's menu or a piece of music that can be listened to using a mobile device (Benford *et al.*, 2017). Another example is using a laser to preserve and dry wood and produce wood-based products (Islam *et al.*, 2023). The new direction of technical con-

servation combines craftsmanship based on building traditions, local craft knowledge, and modern technologies (Van Hees *et al.*, 2016; Stein, 2003).

Moreover, in some crafts, technology directly serves to prevent and control pollution, including through a real-time monitoring system and a decision support system. An example is the extraction of vanadium from hard coal and the prevention and control of pollution in wastewater, gases, and slags to guarantee ecological safety and human health and improve production capacity and crafts (Li *et al.*, 2014). Another example within the same industry is using new technologies to support land reclamation of former mining areas, especially in e-economy optimization, cleaner production (pollution control based on ecological industrial technology), and organic crops (Gu *et al.*, 2005).

An example specific to new technologies is artificial intelligence (AI). Within arts and crafts, big data and software enable innovation. Among others, AI allows arts and crafts design, the development and inheritance of contemporary arts and crafts, and opens up space for educational opportunities. The last of these aspects facilitates the creation of a personalized educational network, including supporting resources and tools, recommending the best teachers, creating an interactive form of explanations and tips, and sharing experiences (Pu, 2020). The educational network may also be addressed not only to artists and craftsmen themselves (as part of talent training) but also to the recipients of their products.

Terms: 'intangible culture', 'inheritance', and 'culture'

Scholars also discuss intangible cultural heritage, among others, Croatia's cultural heritage. Many issues related to sustainable development exist; the need to order them and insufficient documentation regarding intangible assets are emphasized. It is also emphasized that the task of current and future generations is to work on preserving cultural heritage. New technologies can be used, among others, to digitize data, process it to the level of information, store it, and further make it available. However, this requires not only the involvement of new technologies but also the recruitment of a carefully selected, educated staff. Moreover, the factors necessary for this include providing collectors and researchers with mobile and good digitization equipment, an adapted vehicle with a place to store equipment and collected items, creating a digital repository, organizing an appropriately equipped exhibition space for the exhibition of the collected heritage, which is to enable its sharing through multiple channels and in a usage-oriented manner (Kolar *et al.*, 2014). Another aspect of intangible culture concerns the technical conservation of objects, some of which are included in the UNESCO World Heritage List (Stein, 2003). Scholars also discuss this topic from the point of view of difficulties with inheriting precious intangible culture. In this space, new technologies serve to promote craft regional brands and apply intangible cultural innovations (Li & Liu, 2022).

Terms: 'sustainability', 'sustainable development', and 'pollution prevention'

Scholars describe sustainability mainly in two ways. On the one hand, as the previously discussed activities aimed at preserving the intangible cultural heritage, and on the other hand, as activities implemented in the craft production system, including those that have an impact counteracting the phenomenon of unemployment or pollution prevention.

Regarding the first of the issues mentioned above, new technologies serve in the digitization process. This results in the creation of a database of digital cultural content, including images, multimedia, digital animations, network communications, and cloud storage services. Haifeng Li and Dongcheng Liu (2022) present an example of Chinese crafts from Jiangxi Province, pointing to 18 folk cultures and ten types of intangible cultural heritage in this area (Li & Liu, 2022). Another example from the People's Republic of China is the issue of the inheritance of bamboo weaving crafts in Dongyang. It included, among others, virtual reality and digital 3D programming tools used to gain a deeper understanding of traditional crafts and the need to protect and inherit intangible cultural heritage (Wu *et al.*, 2021).

Among others, the production area is shown in research conducted by Christine Ax (2017) on resource efficiency in manual and industrial footwear production. Tailoring shoes is associated with the aspects of a labour-intensive production method, the possibility of repairing existing shoes and their durability, which not only affects the production of ecological products but also enables the

creation or maintenance of jobs (Ax, 2017). The space relating to production and environmental protection appears, among others, in the context of a more sustainable exploitation of resources, restoring utility or natural values, including controlling pollutants (Gu *et al.*, 2005).

CONCLUSIONS

The conducted bibliographic study indicates a low representation of texts in the literature on the subject that combine the issues of crafts, new technologies, and sustainable development. The latest texts, *i.e.* those published after 2020, mainly concern issues related to the need to preserve intangible cultural heritage, crafts related to wood-based products, and the construction industry. The topics most intensively explored thus far relate to craft knowledge and production activities. However, references to sustainable development mainly refer to the need to preserve cultural heritage and facilitate the acquisition of qualifications and production, as well as activities related to the minimization of production waste, including pollution prevention.

Noteworthy, the conducted study can contribute to the implementation of sustainable programs oriented towards crafts and new technologies in the information aspect, emphasizing the existing bridge between the world of science, crafts, and their environment. It also indicates existing areas for further research and technological solutions that support craftsmen and enable more sustainable development. The influence on public policy decisions regarding crafts may include, among others, the development of reports, recommendations, and other scientific studies, as well as the development of innovations and building cooperation between different stakeholder groups.

New technologies can aid more sustainable development of crafts and the region/country where craftsmen work. However, this requires the introduction of programs supporting the development of technologies in the craft sector, not only in the institutional sense but also aimed at individual manufacturers – the SME sector. They can include subsidies, tax relief, or dedicated training to introduce technical solutions that facilitate not only the production process but also the management process in the craft enterprise. Providing protection of intellectual property, product certification, consumer and data protection, and minimizing other concerns related to new technologies.

Considering the importance of crafts, their increasing popularity, and the fact that various crafts are currently experiencing a renaissance and are increasingly marking their presence as an intensively developing sector, we can state that the area of research gap includes primarily the space of economic responsibility, the space of the economic sphere related to problem areas. Sustainable development refers to the fair distribution of benefits resulting from economic development. These include, for example, the situation of craftsmen on the labour market, reflected, among others, by employment offers, employment stability, the ratio of remuneration to market realities and aspects of satisfactory income, opportunities to conduct craft entrepreneurship, and achieving profitable, high-quality production. To sum up the above, there is a lack of publications referring to Sustainable Development Goals number 8, 9, and 12, namely: promoting stable, sustainable, and inclusive economic growth, full and productive employment and decent work, building a stable infrastructure, promoting sustainable industrialization and supporting innovation and ensuring sustainable consumption and production patterns (UN, n.d.). Due to the use of new technologies in crafts, there is also a need to redefine what contemporary craftsmanship is, emphasizing aspects other than manuality (traditional approach) that distinguish craft products, such as creating tailor-made goods/services, building trust and personal relationship with consumers of crafts, etc.

This study, like any SLR, is associated with certain limitations resulting from the specific structure of article selection limited to searches based on subjectively defined terms and logical operators AND and OR. Further limitations include focusing on the analysis of texts from only one database of scientific texts, and in a broader scope, not analysing scientific texts that have not been indexed in such databases.

REFERENCES

Alamil, H., Renukappa S., Alosaimi, H., & Al Nabt, S. (2019). Drivers for sharing knowledge in the kingdom of Saudi Arabia construction industry: An empirical study. In *ACM International Conference Proceeding Series*, (pp. 109-113). https://doi.org/10.1145/3325917.3325959

Ax, C. (2017). Slow consumption for sustainable jobs: The example of hand-crafted shoes. In M. Charter & M. Tischner (Eds.), *Sustainable Solutions: Developing Products and Services for the Future*, (pp. 402-409). https://doi.org/10.4324/9781351282482-26

Benford, S., Koleva, B., Quinn, A., Thorn, E.-C., Glover, K., Preston, W., Hazzard, A., Rennick-Egglestone, S., Greenhalgh, C., & Mortier, R. (2017). Crafting interactive decoration. *ACM Transactions on Computer-Human Interaction*, *24*(4), 1-39. https://doi.org/10.1145/3058552

Berta, O.G. (2023). Culture or commerce? Craft as an ambiguous construction between culture and economy. *Journal of Cultural Economy 18*(1), 92-108. https://doi.org/10.1080/17530350.2023.2229335

Besch, M. (2019). *Technology in Contemporary Craft*, *Craftsmanship Soul*. Retrieved from https://craftsmanshipsoul.com/technology-in-contemporary-craft/ on November 26, 2023.

Biblioteka Wydziału Filologicznego Uniwersytetu Jagiellońskiego (2023). *Explore the Scopus database* (in Polish: *Poznajbazę Scopus*). Retrieved from https://biblioteka.filg.uj.edu.pl/poznaj-baze-scopus on November 27, 2023.

Domac, J., Benkovic, Z., & Starcic, T. (2008). Development of a sustainable charcoal industry. *Sumarski List*, *132*, 11-12, 555-561. Retrieved from https://hrcak.srce.hr/file/48681 on November 27, 2023.

Druga, S., & Hammond, K. (2023). *Generative AI for Makers: AI Has Truly Arrived — and It's Here to Help You Make and Craft*. Retrieved from https://makezine.com/article/craft/fine-art/generative-ai-for-makers-ai-has-truly-arrived-and-its-here-to-help-you-make-and-craft/ on September 23, 2024.

European Commission (2022). *Traditional crafts for the future: a new approach*. Retrieved from https://cordis.europa.eu/programme/id/HORIZON_HORIZON-CL2-2022-HERITAGE-01-04/en on November 26, 2023.

European Commission (2023a). *Saving traditional crafts with new technology*. Retrieved from https://cordis.europa.eu/project/id/101095123 on November 26, 2023.

European Commission (2023b). *Colour4CRAFTS – Colour for Combining, Re-engineering, Applying, Futuring.* Retrieved from https://cordis.europa.eu/project/id/101094809 on November 14, 2023.

European Commission (2023c). *Transforming crafts knowledge for a sustainable, inclusive and economically viable heritage in Europe*. Retrieved from https://cordis.europa.eu/project/id/101094507 on November 26, 2023.

European Commission. (2023d). *Craft Understanding, Education, Training, and Preservation for Posterity and Prosperity*. Retrieved from https://cordis.europa.eu/project/id/101094349 on November 6, 2023.

Gu, H.-H., Zhang, G.-L., & Ji, Y.-Z. (2005). Ecology economic mode of mining area and its way to realize. *Transactions of Nonferrous Metals Society of China* (English Edition), *15*(Special 1), 92-96.

Islam, M.N., Das, A.K., Billah, M.M., Rahman, K.-S., Hiziroglu, S., Hattori, N., Agar, D.A., & Rudolfsson, M. (2023). Multifaceted Laser Applications for Wood – A Review from Properties Analysis to Advanced Products Manufacturing. *Lasers in Manufacturing and Materials Processing*, *10*(2), 225-250. https://doi.org/10.1007/s40516-023-00204-x

Kim, M.Y. (2023). Virtual Craft: Experiences and Aesthetics of Immersive Making Culture. *Humanities*, *12*(5), 100. https://doi.org/10.3390/h12050100

Klamer, A. (2012). *Crafting Culture: The importance of craftsmanship for the world of the arts and the economy at large*. Retrieved from http://www.klamer.nl/wp-content/uploads/2017/08/crafting.pdf on November 10, 2023.

Kolar, E.B., Galzina, V., & Matanovic, D. (2014). Towards a safeguarding concept of the intangible cultural heritage in Slavonia, Baranya and Syrmia – Aspects of digitization, processing, conservation and dissemination of sound, image and shape. *MedijskaIstrazivanja*, *20*(2), 213-229.

KRIO (2023). *Optics in a changingworld* (in Polish: *Optyka w zmieniającym się świecie*), Krajowa Rzemieślnicza Izba Optyczna. Retrieved from https://www.krio.org.pl/optyka-w-zmieniajacym-sie-swiecie/ on November 15, 2023.

Li, H., & Williams, B. (2011). Hybrid planning with temporally extended goals for sustainable ocean observing. *Proceedings of the National Conference on Artificial Intelligence Boeing Research and Technology*, *25*(1). https://doi.org/10.1609/aaai.v25i1.7800

Li, H., & Liu, D. (2022). Innovative Development of Intangible Culture of Arts and Crafts in Artificial Intelligence Decision Support System. *Mobile Information Systems*, 1123356. https://doi.org/10.1155/2022/1123356

Li, J., Zhang, Y., & Liu, T. (2014). Research on pollution prevention and control technologies in the industry of vanadium extraction from stone coal. *International Journal of Environmental Technology and Management*, *17*(1). https://doi.org/10.1504/IJETM.2014.059468

Li, Z.Q. (2016). The Origin of the Peculiarity of Contemporary Chinese Arts and Crafts. In *International Conference on Arts, Design and Contemporary Education* (ICADCE 2016), pp. 454-456. https://doi.org/10.2991/icadce-16.2016.105

Martins, A.M.T., Vieira, E., Carlos, J.S., & Nepomuceno, M.C.S. (2019). *Learning from Tradition: Vernacular Built Heritage of Madeira (Portugal), a Sustainable Proposal*. IOP Conference Series: Earth and Environmental Science, *362*(1), 012085. https://doi.org/10.1088/1755-1315/362/1/012085

Mazur-Włodarczyk K., Rajchel A., Ruszczak B. (2024). Perception and use of New technologies in crafts education and craftsmanship among young craftsmen: a study of sustainable practices, Economics and Environment, 4(91), 1-25. https://doi.org/10.34659/eis.2024.91.4.946.

Mueller, R.P., Baybayan, K., & Hamilton, J. (2021). *Comparisons and Considerations, Earth and Space: Space Exploration, Utilization, Engineering, and Construction in Extreme Environments* – Selected Papers from the 17th Biennial International Conference on Engineering, Science, Construction, and Operations in Challenging Environments. https://doi.org/10.1061/9780784483374.046

Nasso, C., La Monaca, U., Bertagna, S., Braidotti, L., Mauro, F., Trincas, G., Marino, A., & Bucci, V. (2019). Integrated design of an eco-friendly wooden passenger craft for inland navigation. *International Shipbuilding Progress*, *66*(1), 35-55. https://doi.org/10.3233/ISP-180254

Polski Caravaning (2015). *AKU: The latest technology and traditional craftsmanship* (in Polish: *AKU: Najnowsza technologia I tradycyjne rzemiosło*). Retrieved from https://polskicaravaning.pl/artykuly/aku-najnowsza-technologia-i-tradycyjne-rzemioslo, 51935 on November 26, 2023.

Posch, I., & Fitzpatric, G. (2021). The Matter of Tools: Designing, Using and Reflecting on New Tools for Emerging eTextile Craft Practices. *ACM Transactions on Computer-Human Interaction*, *28*(1), Article 4. https://doi.org/10.1145/3426776

Pu, J. (2020). Integration of Arts and Crafts in Artificial Intelligence Environment. *Journal of Physics: Conference Series*, 1574, 012162, https://doi.org/10.1088/1742-6596/1574/1/012162

Scientific publications (2022). *Scopus database. How to publish scientific article?.* Retrieved from https://spubl.pl/en/blog/scopus-database-how-to-publish-a-scientific-article on November 27, 2023.

Song, M.J. (2022). Craftspeople's new identity: The impact of digital fabrication technologies on craft practices. *International Journal of Technology and Design Education, 32*, 2365-2383. https://doi.org/10.1007/s10798-021-09687-1

Stein, R.D. (2003). *A New Qualification Concept for Sewer and Pipeline Construction Based on an Innovative, Network-Based Solution for Virtual Teaching, Learning and Working*. Proceedings of the ASCE International Conference on Pipeline Engineering and Construction: New Pipeline Technologies, Security, and Safety. https://doi.org/10.1061/40690(2003)166

UN (n.d.). *Sustainable Development Goals*. Retrieved from https://www.un.org/sustainabledevelopment/ on December 12, 2023.

UNESCO (2003). *Arts, crafts and cultural enterprises. Creating today the heritage of tomorrow*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000132161 on September 23, 2024.

Van Hees, R.P.J., & Naldini, S. (2016). *Towards sustainable restoration: Learning from the past, a challenge, Structural Analysis of Historical Constructions: Anamnesis, diagnosis, therapy, controls*. Proceedings of the 10th International Conference on Structural Analysis of Historical Constructions, London. https://doi.org/10.1201/9781315616995

Vartiainen, H., & Tedre, M. (2023). Using artificial intelligence in craft education: crafting with text-to-image generative models. *Digital Creativity, 34*(1), 1-21. https://doi.org/10.1080/14626268.2023.2174557

Walker, S., Evans, M., Zhang, W.L., & Humphreys, P. (2022). The located making framework for supporting craft maker enterprises in China. *The Design Journal*, *25*(6), 976-996. https://doi.org/10.1080/14606925.2022.2112856

Westerlund, T. *et al.* (Eds.) (2022). *Craft Sciences*. Sweden: Kriterium. https://doi.org/10.21524/kriterium.40

Wu, J., Guo, L., Jiang, J., & Sun, Y. (2021). The Digital Protection and Practice of Intangible Cultural Heritage Crafts in the context of New Technology. *E3S Web of Conferences*, *236*, 05024. https://doi.org/10.1051/e3sconf/202123605024

Zhao, Z.F., & Chen, D. (2022). Modern Craft Product Design Using Digital Technology Combined with Visual Sensing System in Complex Environment. *Hindawi Mobile Information Systems*, 2248949. https://doi.org/10.1155/2022/2248949

Author

Katarzyna Mazur-Włodarczyk

PhD in economics. A researcher at the Faculty of Economics and Management at the Opole University of Technology (Poland). Winner of a scholarship for an outstanding young scientist (2022). Her research interests include economic culture, management culture, perspectives related to the Belt and Route Initiative, the socio-economic situation of the PRC, Sino–European Union business communication, and sustainable production and consumption.

Correspondence to: Katarzyna Mazur-Włodarczyk, Ph.D. Eng., Opole University of Technology, Faculty of Economics and Management, Luboszycka 7, 45-036 Opole, Poland, e-mail: k.mazur-wlodarczyk@po.edu.pl

ORCID https://orcid.org/0000-0002-4822-9328

Acknowledgements and Financial Disclosure

This work was financially supported by the Opole University of Technology as part of the DELTA project no. 246/23.

Conflict of Interest

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

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.07

The effect of entrepreneurial self-efficacy on entrepreneurial intentions: The moderating role of entrepreneurial passion for founding

Debora Vista Silty Ticoalu, Sarwono Nursito, Jeanne Maria Tuerah

ABSTRACT

Objective: The study aims to explore the moderating role of entrepreneurial passion for founding to unearth the mechanisms that underlie the effect of entrepreneurial self-efficacy on entrepreneurial intentions in the context of student entrepreneurship.

Research Design & Methods: This study employed survey methods involving 200 students from several private and public universities in greater Manado, North Sulawesi, Indonesia. We processed the data with Hayes' PROCESS Macro version 4.1 via SPSS 26.

Findings: Students' entrepreneurial passion for founding moderated the positive influence of students' entrepreneurial self-efficacy on entrepreneurial intentions. The significance of this moderating effect is that it applied only to students with a high entrepreneurial passion for founding.

Implications & Recommendations: In an initiative to rev up students' entrepreneurship development, it is essential to focus on founding passion due to its vital role in strengthening the relationship between self-efficacy and intention. Thus, the government and higher education institutions must create a supportive ecosystem to encourage students to develop a stronger passion for entrepreneurship.

Contribution & Value Added: This research enriches the literature by providing further insight into the mechanisms that underlie the process of forming students' entrepreneurial intentions. These findings confirm that students' passion for founding can strengthen the effect of self-efficacy on entrepreneurial intentions.

Article type: research article

Keywords: student entrepreneurship; entrepreneurial passion for founding; entrepreneurial self-efficacy; entrepreneurial intention

JEL codes: L26, D91

Received: 13 February 2024 | Revised: 29 September 2024 | Accepted: 12 November 2024

Suggested citation:
Ticoalu, D.V.S., Nursito, S., & Tuerah, J.M. (2025). The effect of entrepreneurial self-efficacy on entrepreneurial intentions: The moderating role of entrepreneurial passion for founding. *International Entrepreneurship Review,* 11(1), 111-123. https://doi.org/10.15678/IER.2025.1101.07

INTRODUCTION

The vital role of entrepreneurship has driven the governments of many countries to embark on diverse efforts to boost entrepreneurship (Miralles *et al.*, 2017). In this regard, one potential target group for this effort is university students. The cause is that their attitudes toward entrepreneurship form during the academic year (Shirokova *et al*., 2016). Then, armed with active thinking, better knowledge, and more advanced and in-depth understanding (Kong *et al*., 2020), their involvement in entrepreneurship will rev up economic growth (Ayob, 2021). Due to their potential (Chien-Chi *et al*., 2020), students can be decisive actors in determining the nation's future (Sieger *et al*., 2016). This circumstance requires the government to launch policies to boost entrepreneurial-oriented university students and the rise of graduates' new ventures (Baluku *et al.*, 2020). Thus, it is urgent to scrutinise what drives students to get into business.

In fostering entrepreneurship, entrepreneurial intention (EI) can be a vital requirement to focus on. In this case, EI is a definite requirement (Kong *et al.*, 2020) that determines one's involvement in entrepreneurship (Elnadi & Gheith, 2021). Without its presence, the next entrepreneurial step would not exist (Elnadi & Gheith, 2021; Liñán & Fayolle, 2015). Likewise, in the case of student entrepreneurship, EI could define students' entrepreneurial behaviour (Barba-Sánchez *et al*., 2022; Chien-Chi *et al*., 2020). Thus, to nudge students' entrepreneurship, it is vital to understand the mechanisms that underlie the EI's formation (Al-Mamary *et al.*, 2020; Miralles *et al.*, 2017). In this case, it is crucial to probe the diverse factors that affect the student's EI.

One factor that can be a salient predictor of EI is entrepreneurial self-efficacy (ESE) (Elnadi & Gheith, 2021; Newman *et al.*, 2019). Entrepreneurial self-efficacy plays a vital role in defining one's involvement in entrepreneurship (Neneh, 2022). However, previous studies on the ESE-EI link have shown inconsistent findings. It remains obscure what factors affect the magnitude of this link (Ng & Jenkins, 2018). Many studies have revealed a positive effect of ESE on EI (Newman *et al*., 2019), but other studies have shown opposing results. Research by Osadolor *et al.* (2021) showed that ESE had no significant effect on EI, while in the study of Rosalina and Satrya (2021), ESE affected EI negatively. In this case, the variation in the results of the ESE-EI link suggests the presence of various factors that could moderate it (Neneh, 2020). Thus, further study of other factors is needed to account for the inconsistency.

Extant studies have investigated various factors that affect the ESE-EI link. Despite their insight, prior studies on this link ignored the role of entrepreneurial passion for founding (EPF). This gap is especially notable as research has increasingly highlighted the importance of passion in entrepreneurship (Anjum *et al.*, 2021; Hu *et al.*, 2022). Entrepreneurial passion can be a factor that enables a person to persist amidst all the difficulties faced (Cardon & Kirk, 2015). In this case, among its distinct tasks (inventing and developing), EPF is central to the new venture creation process (Cardon *et al*., 2009). Moreover, EPF will drive someone to perform creative activities to create new ventures (Cardon *et al.*, 2013; Kiani *et al*., 2020).

Drawing on the identity-based model of passion (Cardon *et al.*, 2009), the current study addressed this gap by investigating if EPF, as the possible moderator, could explain the ESE-EI link. In the early stages of entrepreneurship, an efficacious person generally has high intentions (Nowiński *et al.*, 2019). Hence, with a high ESE, various obstacles (Maleki *et al.*, 2023) will not dampen their EI to start a venture. However, ESE does not always affect EI in all circumstances, as an individual may demonstrate a high ESE despite having a low EI (Hsu *et al*., 2019; Neneh, 2020). In this case, EPF enables someone to align cognition and behaviour toward entrepreneurial goals (Cardon *et al*., 2009). Equipped with strong EPF, someone with high ESE tends to be willing to be involved in identifying opportunities and executing them by establishing new ventures. It implies that developing EPF could strengthen self-belief to initiate a new venture.

Like other countries, the Indonesian government has initiated diverse efforts to boost youth entrepreneurship. One of these efforts is to optimise entrepreneurship education at all levels (Kusumojanto *et al.*, 2021; Wardana *et al.*, 2021). In the context of higher education, the government has launched the Indonesian Student Entrepreneurship Program, which aims to raise student motivation and graduates to create new ventures. However, the data reveals unfavourable conditions for Indonesia. The Global Entrepreneurship Monitor (GEM) data shows that the graduates' TEA rate for 2022 was 9% (ranked 38th out of 49) (Hill *et al*., 2023). Furthermore, the 2021 Global University Entrepreneurial Spirit Students' Survey (GUESS) data (Suhartanto, 2021) showed that almost half (49.79%) of Indonesian students tend to be paid employees. Only 38.90% of those choose to become entrepreneurs. These drawbacks denote that Indonesian students do not perceive entrepreneurship as a viable career option. Thus, boosting student entrepreneurship is vital for Indonesia.

Based on the preceding discussion, to shed light on the issues, this study aims to scrutinise the EPF as a moderating variable to probe how ESE affects EI in the case of student entrepreneurship. Focus on EPF, this study seeks to reveal students' intentions to create a new venture. This study makes two contributions. Firstly, it offers a broader insight into the literature on student entrepreneurship. By exploring the EPF, a less explored variable in prior studies, as a moderating variable, this study showed the possible mechanism by which ESE affects EI. The findings proved the significance of raising students' EPF as it significantly boosts their EI. Secondly, focusing the study on the Indonesian context is appropriate due to the relatively strong students' reluctance to choose careers in entrepreneurship. As being an employee

rather than self-employed is still a prime orientation, the graduates' early-stage entrepreneurial activity is still lacking. Thus, the findings can be a foothold for the government in any country to create policies to rev up students' entrepreneurship by focusing on attempts to raise entrepreneurial passion.

The article is structured as follows. After the introduction, we will present a literature review. Then, we will present the research methodology, data analysis, and a discussion of the results. Finally, we will present conclusions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The Link Between Entrepreneurial Self-efficacy and Entrepreneurial Intention

Entrepreneurship plays a strategic role in many aspects of human life. Entrepreneurship is not only important in socioeconomic terms (Vatavu *et al.*, 2022) but also in the internationalisation of digital start-ups (Tajpour & Razavi, 2023). The significance of entrepreneurship has made EI a prominent research field (Liñán & Fayolle, 2015). Entrepreneurial intention is the preparedness and tenacity to perform the required entrepreneurial efforts (Al-Mamary *et al*., 2020). As the main predictor of behaviour, EI determines one's involvement in entrepreneurship (Kong *et al*., 2020; Neneh, 2022). The presence of EI in the start-up process is essential. In the establishment of a new business, for instance, EI is a vital first step (Kong *et al*., 2020; Neneh, 2022) that determines whether the process will advance to the next phase or not (Elnadi & Gheith, 2021; Santos & Liguori, 2020). Likewise, in the case of student entrepreneurship, intention defines entrepreneurial behaviour (Elnadi & Gheith, 2021).

Entrepreneurship is a long and challenging process (Elnadi & Gheith, 2021; Newman *et al.*, 2019). In this case, apart from commitment, enthusiasm, and persistence, self-efficacy also plays a significant role. Meanwhile, ESE, which refers to someone's confidence in their capability to conduct the required entrepreneurial tasks (Neneh, 2022; Newman *et al*., 2019), defines one's involvement in entrepreneurship (Biraglia & Kadile, 2017; Neneh, 2022). It reflects the readiness to create a new venture despite facing tough challenges (Elnadi & Gheith, 2021). It constitutes a critical foundation in the whole stage of the start-up process. In the nascent stage, ESE denotes whether potential entrepreneurs have adequate capability to respond to entrepreneurial challenges (Brändle *et al*., 2018). Then, it directs performance in managing and developing new ventures and determines future success (McGee & Peterson, 2019). In student entrepreneurship, ESE also holds a decisive role. In this case, the higher the ESE level, the more prepared students are to face various challenges and prevail in entrepreneurship (Memon *et al*., 2019).

Scholars often use ESE as a robust predictor of EI in entrepreneurship research (Newman *et al*., 2019; Nowiński *et al*., 2019). ESE is a salient prerequisite for new business intentions. Someone with a high ESE tends to show positive attitudes toward entrepreneurship. They will be actively involved in efforts to start a new venture by developing their EI, responding to business opportunities positively, and being confident of achieving success (Cardon & Kirk, 2015; Elnadi & Gheith, 2021; Zhao *et al*., 2005). Otherwise, someone with a low level of ESE tends to show a negative attitude toward entrepreneurship. They tend to have a pessimistic view toward entrepreneurship, considering the early stages of venture initiation as a fraught step with huge costs and risks and reluctance to commence a new business (Ng & Jenkins, 2018). In sum, the level of ESE will determine the strength of EI (Chien-Chi *et al*., 2020). Myriad empirical proofs have shown a positive significant influence of ESE on EI (Hsu *et al.*, 2019; Nowiński *et al*., 2019). In line with extant research, we hypothesised:

H1: The student's entrepreneurial self-efficacy will positively and significantly influence the student's entrepreneurial intention.

The Moderating Role of Entrepreneurial Passion for Founding

Myriad barriers in setting up a new venture can often lead to fear of entrepreneurial failure. GEM data of 2023 showed that fear of failure is a profound constraint on venture creation in many economies from all income groups (Hill *et al*., 2024). Hence, it is not enough to rely solely on self-efficacy. In this case, it takes passion to undergo the entrepreneurial process. Passion is someone's intense desire for an activity that they relish, that is essential, and to which they are condescending to

devote effort and time (Vallerand *et al*., 2003). Passion is the heart of entrepreneurship (Cardon *et al*., 2009). Due to its role in boosting cognitive activity and providing meaning to daily work, passion is vital to entrepreneurial behaviour (Cardon *et al*., 2013; Santos & Cardon, 2019). In this case, passion can make entrepreneurs more motivated and creative besides more focused and resilient when facing risks (Türk *et al.*, 2020). Hence, a highly passionate person is more convinced to launch a new business (Karimi, 2020; Kiani *et al.*, 2020; Li *et al.*, 2020).

Entrepreneurial passion (EP) is an ardent, uplifting sense linked to entrepreneurial activity that is meaningful to the self-identity of an entrepreneur (Cardon *et al*., 2009). Based on its distinct tasks, EP consists of three types (Cardon *et al*., 2013). Firstly, EP for inventing relates to the creation of novel products. Next is EP for founding, which refers to activities to create a new venture. Thirdly, EP for development pertains to activities related to the growth of a venture. Further, some entrepreneurs may prefer all these roles, while others may perceive one identity as more vital (Cardon *et al*., 2013). Following prior research (Biraglia & Kadile, 2017; Kiani *et al.*, 2020; Lee *et al*., 2021), this study only examined EPF as it focused on students who had not yet been involved in entrepreneurship to seize passion in creating new ventures.

Meanwhile, EPF is the hub for the establishment of a new venture. In this case, EPF creates the preparation of a new venture start-up and boosts creativity and persistence (Biraglia & Kadile, 2017; Cardon *et al.*, 2013). More importantly, a person with a high level of EPF will primarily enjoy the new start-up establishment process (Cardon & Kirk, 2015). Thus, someone with a high EPF level will dedicate themselves to seizing and developing opportunities and subsequently establishing a new firm (Cardon *et al*., 2009). This study contends that EPF strengthens the impact of ESE on EI. EPF is the basis of individual persistence in pursuing future entrepreneurial goals (Cardon *et al*., 2009). With a strong EPF, a person with a high level of ESE is more likely to actively search for new knowledge, skills, and competencies (Kiani *et al*., 2020). They then proactively seek out promising opportunities, integrate their resources to overcome the barriers and raise their confidence to develop business opportunities into new ventures (Cardon *et al.*, 2013; Kiani *et al.*, 2020). For this reason, the second hypothesis was:

H2: The student's entrepreneurial passion for founding will moderate the positive effect of the student's entrepreneurial self-efficacy on the student's entrepreneurial intention.

Based on the link of the variable studied, we depicted a conceptual framework to probe the moderating role of students' EPF on the effect of ESE on EI. Figure 1 presents the framework:

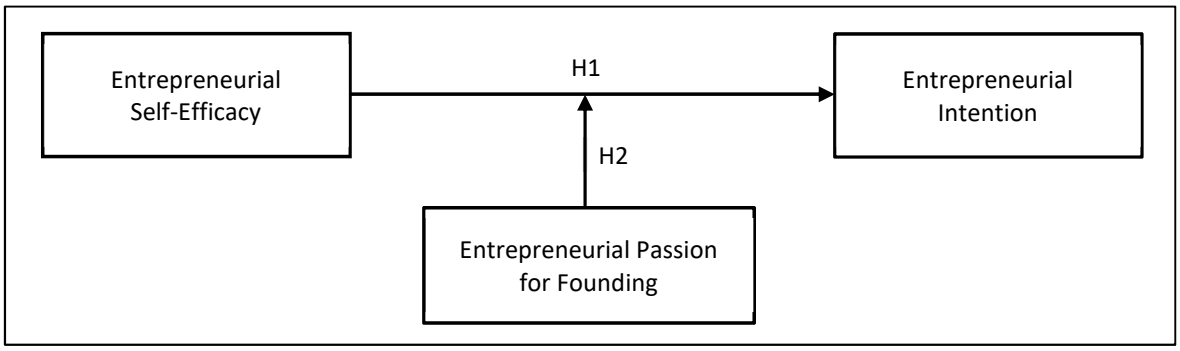


Figure 1. Proposed conceptual framework

Source: own elaboration based on Neneh (2022); Ng & Jenkins (2018); Kiani et al. (2020); Lee et al. (2021); Li et al. (2020).

RESEARCH METHODOLOGY

Research Design and Analytical Approach

This research used a survey model and questionnaire to collect data. These data consisted of the characteristics of respondents and the variables under study: self-efficacy, intention, and passion for founding. Further, reliability and validity are vital to the survey. They reflect stability and the ability to measure the construct. Thus, this study used confirmatory factor analysis (CFA) and Cronbach's alpha. This

study also applied a bootstrapping approach using Haye's PROCESS Macro version 4.1 model 1 (Hayes, 2018) via SPSS 26 to test the hypotheses. Macro is a widely used statistical tool to test moderation and conditional analysis. In this case, we used this approach to test the effect of ESE on EI and investigate the moderating role of EPF on the ESE-EI link.

Research Instrument

This study used validated scales taken from previous research. The questionnaire consists of 14 questions. We anchored each answer on a five-point Likert scale (1 for a strongly disagreed response to 5 for a strongly agreed response). To measure entrepreneurial passion for founding using the scale of Cardon *et al.* (2013), consisting of four items. Entrepreneurial self-efficacy was measured using the five-item scale of Zhao *et al*. (2005). Then, entrepreneurial intention was measured using the scale of Thompson (2009), which consisted of five items. Scholars have validated all instruments in previous research. Entrepreneurial self-efficacy in the study by Elnadi and Gheith (2021), Li *et al.* (2020), and Neneh (2020). The entrepreneurial intention in the studies of Barba-Sánchez *et al.* (2022), Ng and Jenkins (2018), and Santos and Liguori (2020). Lastly, the passion for founding is in the study of Karimi (2020), Kiani *et al.* (2020), and Lee *et al.* (2021).

Sampling and Data Collection

This study used a purposive sampling technique, which allowed the researcher to set criteria adjusted to the study's aims (Cooper & Schindler, 2014; Sekaran & Bougie, 2016). In this case, the criteria used were students who have studied entrepreneurship but have not yet set up a venture. Further, the study's population is economics students from several private and public universities in greater Manado, North Sulawesi, Indonesia. This study used 200 students for the research sample. The Directorate of Higher Education, Research, and Technology, as of the 2022 academic year, showed that around 8640 economics students studied in the area. Based on the sample size criteria of Bartlett *et al*. (2001), a population of up to 10 000 members requires at least 119 samples. Thus, in this case, this study used 200 students. Hence, the sample size was adequate to represent the study population. The current study was carried out from June to August 2023.

Table 1. Respondents' demographic

Categories	Characteristics	Frequency	Percentage
Gender	Male	87	43.50
	Female	113	56.50
Age	18-20 years old	75	37.50
	21-22 years old	99	49.50
	> 23 years old	26	13.00
Fields of study	Accounting	68	34.00
	Management	115	57.50
	Economics and Development Studies	14	7.00
	Entrepreneurship/Marketing/Digital Business	3	1.50
Semester	4th semester	86	41.00
	6th semester	91	45.50
	8th semester	27	13.50

Source: own study.

Table 1 presents the demographic profile of respondents based on gender, age, field of study, and semester. The number of female respondents was higher than that of males: 113 (56.5%) compared to 87 (43.5%). About half of the respondents, 99 (49.5%), were 21-22 years old, and most respondents, 91 (45.5%) were in semester 6. Based on the field of study, the most respondents, 115 (57.5%), were from management. Next, 68 (34.0%) came from accounting. Then, 14 (7.0%) came from economics and development studies. The rest, 3 (1.5%), were from entrepreneurship, marketing, or digital business.

RESULTS AND DISCUSSION

Validity and Reliability

Table 2 presents the results of the validity and reliability. The final results fulfilled the fit index (Jackson, 2003). The value of the Chi-square/df was 1.758, which was lower than 3, and the root mean square error of approximation (RMSEA) value obtained was 0.062, below 0.08. Moreover, the goodness of fit index (GFI), comparative fit index (CFI), and Tucker Lewis index (TLI) values were higher than 0.9: 0.922, 0.952, and 0.937, respectively. Meanwhile, the adjusted goodness-of-fit index (AGFI) and normed fit index (NFI) values exceeded 0.8, that is, 0.882 and 0.898.

Table 2. Confirmatory factor analysis and Cronbach's alpha

Variable	Code	Loading	CR	AVE	Cronbach's Alpha
Entrepreneurial self-efficacy (Zhao *et al*., 2005)	Effic1	0.816	0.816	0.527	0.841
	Effic2	0.676			
	Effic3	0.665			
	Effic4	0.736			
	Effic5	0.699			
Entrepreneurial intention (Thompson, 2009)	Inten1	0.619	0.811	0.483	0.807
	Inten2	0.765			
	Inten3	0.721			
	Inten4	0.661			
	Inten5	0.624			
Entrepreneurial passion for founding (Cardon *et al*., 2013)	Found1	0.666	0.805	0.509	0.802
	Found2	0.746			
	Found3	0.775			
	Found4	0.660			

Source: own study.

The results showed that the factor loadings of all measurement items exceeded 0.5, which ranged from 0.619 to 0.816. The composite reliability (CR) values for all variables exceeded the required limit, higher than 0.8. The CR values for entrepreneurial self-efficacy, intention, and passion for founding were 0.816, 0.811, and 0.805, respectively. Next was the average variance extracted (AVE) value. The result showed that two variables exhibited AVE values exceeding the minimum requirements, more than 0.5, which were entrepreneurial self-efficacy and passion for founding, with AVE values of 0.527 and 0.509, respectively. As for entrepreneurial intentions, the AVE value was 0.483. Though it was below the requirements, smaller than 0.5, this value was adequate considering the CR value was above 0.6 (e.g., Ertz *et al.*, 2016; Lam, 2012; Loan *et al.*, 2021). Lastly, the Cronbach alpha value for all variables exceeded 0.7. It is 0.842 for entrepreneurial self-efficacy, 0.807 for entrepreneurial intention, and 0.802 for entrepreneurial passion for founding. These findings suggest that the validity and reliability of the current study met the requirements.

Hypotheses Testing

Table 3 shows the results of the hypothesis testing. The findings showed that ESE affected EI positively and significantly ($b = 0.012$, $SE = 0.059$, $p < 0.05$). It means that ESE can enhance students' EI. Hence, this finding confirms the first hypothesis. Next is the moderation effect. This present study assessed the role of students' EPF as a moderating variable in the ESE-EI link. The results showed the moderation effect of students' EPF was positive and significant ($b = 0.063$, $SE = 0.025$, $p = 0.015$, $p < 0.05$). Moreover, there was no zero value between the Lower Levels Confidence Interval (LLCI) and Upper Levels Confidence Interval (ULCI). This finding shows that students' EPF can strengthen the positive influence of ESE on EI. Thus, this finding supports the second hypothesis.

Further, this study probed the conditional effects of ESE on the values of EPF to show the moderating effect of EPF more clearly. We compared two distinct EPF values, low (-1 standard deviation (-2.415)) and

high (+1 standard deviation (+2.415)), to show the conditional effect of ESE on EI. Table 3 summarises the results. We found that only a high level of students' EPF would positively and significantly moderate the impact of ESE on EI (β = 0.164, P < 0.05, LLCI = 0.001, ULCI = 0.327). By contrast, a low level of EPF showed no significant effect (β = -0.140, P > 0.05, LLCI = -0.315, ULCI = 0.035). Thus, these findings provide further support for the second hypothesis. Figure 2 shows the moderating effect of students' EPF.

Table 3. The results of moderated regression analysis

Moderation Effect of EPF on ESE – EI Relationship						
Variables	Coefficient	se	t	p	LLCI	ULCI
Constant	19.496	0.171	113.650	0.000	19.158	19.830
Self-efficacy	0.012	0.059	0.204	0.039	0.105	0.130
Passion for founding	0.397	0.071	5.578	0.000	0.257	0.538
Interaction	0.063	0.025	2.457	0.015	0.012	0.113
Conditional effects of the focal predictor on values of the moderator						
Variables	Moderator	Effect	se	p	LLCI	ULCI
Low passion for founding	-2.415	-0.140	0.089	0.116	-0.315	0.035
High passion for founding	2.415	0.164	0.083	0.048	0.001	0.327

Source: own study.

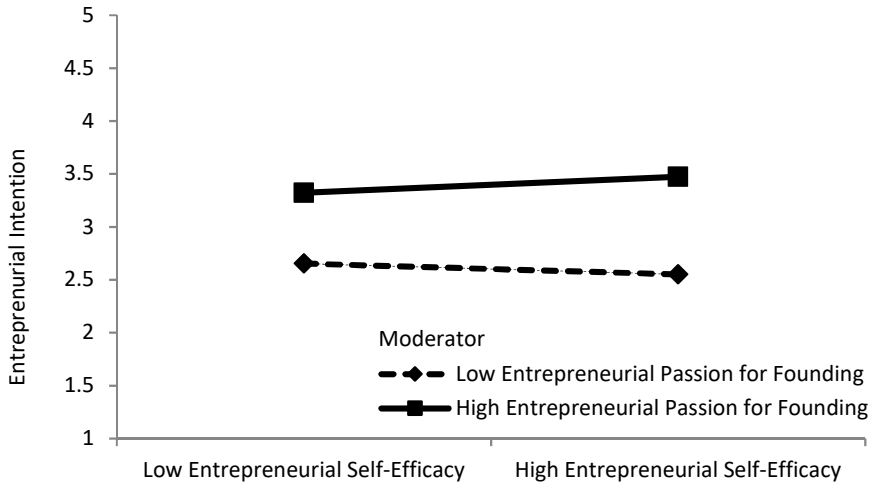


Figure 2. The moderating effect of EPF on ESE-EI Link
Source: own elaboration.

Discussion

The lack of development of graduate entrepreneurship urges the government to rev up student entrepreneurship. In this case, it remains vital to comprehend the mechanisms that underlie the EI formation. This research probed the mechanism that underlies how ESE affects EI by developing a model to show the moderating role of students' EPF.

The findings confirmed all hypotheses. In line with the first hypothesis, students' ESE positively affected EI. This result corroborates previous studies that showed ESE is a robust predictor of EI (Elnadi & Gheith, 2021; Loan *et al*., 2021; Ng & Jenkins, 2018; Schmutzler *et al*., 2019). Belief in ability is vital in the new start-up process. A highly confident student could use their EI to start a new business (Fuller *et al.*, 2018; Kalitanyi & Bbenkele, 2019). It means that when students are convinced of their skills to accomplish the activities and tasks required for new venture creation, they tend to get things done and strive hard to succeed (Cardon & Kirk, 2015). Students will then expand the intention to create their own business (Neneh, 2020).

Given that ESE does not raise EI in all circumstances, the current study strives to define the moderating role of students' EPF in the ESE-EI link as the novelty of this research. Although small, the findings showed that students' EPF could strengthen the positive effect of ESE on EI. This research affirms prior studies that placed passion as a moderating variable. Though not focused on EPF, research by De Clercq *et al.* (2013) proved the moderation effect of work passion on the link between perceived attractiveness and perceived ability on EI. Other studies focused on the moderating role of EPF. Research by Mumi *et al.* (2018) proved that EPF moderated the link between opportunity recognition and pre-commitment search orientation. In a study by Kiani *et al.* (2020), EPF also strengthened the effect of learning orientation on EI.

In the start-up process, as a form of favourable emotion, passion is vital for someone who intends to launch a new business (Cardon *et al*., 2012; Kiani *et al*., 2020). Thus, in this regard, the finding that shows the moderating effect of students' EPF implies that the presence of EPF, even though students feel convinced that they have the required skills, is critical to strengthening students' EI. It means that ESE will not raise EI when EPF is low. ESE will significantly expand EI when students have a high EPF. Thus, the findings can be a basis for the government to rev up students' EPF. In this case, the government must create a supporting entrepreneurial environment by providing students grants to launch new ventures, creating incubators to support students' idea development, and facilitating mentorship and networking to allow students to learn from experienced entrepreneurs.

CONCLUSIONS

The potential of students toward entrepreneurship to rev up the economy in the future has urged government policy to boost student entrepreneurship. As such, it remains urgent to unearth what drives students to be involved in entrepreneurship. The findings enrich the literature and advise on entrepreneurship development. In line with most prior research, the findings show that students' ESE is vital in forming EI. More importantly, as its main contribution, this study provides a more nuanced understanding by showing the significant moderating effect of students' EPF in the ESE-EI link. Thus, the results of this study can be a foothold for the government's efforts to foster students' venture creation.

This study provides practical implications for students' entrepreneurship development. First, students' ESE needs to be raised and nurtured. One way to achieve this is by creating activity-based teaching methods to help students acquire the required skills. This kind of support by the higher education institution will enhance students' ESE (Saeed *et al*., 2015). Second, students' EPF is vital in strengthening the ESE-EI link. In this case, instead of skills and knowledge, passion often has more influence (Cardon *et al*., 2012). This suggests that even though students are confident in creating their new venture, they do not necessarily feel passionate about it. Thus, in this case, the government should create a supportive ecosystem to help students feel passionate about entrepreneurship.

This study has several limitations that can pave the way for further analysis. First, this study is focused only on the formation of EI. However, rather than the EI's formation alone, the proof of entrepreneurship development success is more in the real venture start-up. In this regard, EI should turn into actual behaviour (Shirokova *et al*., 2016). However, to nudge students' entrepreneurship, it is vital to ensure that EI has been firmly formed. Without EI, actual entrepreneurial behaviour will never exist. Thus, it is urgent to probe the diverse factors influencing the student's EI formation. It is not enough to rely on ESE only. In this case, the long process of entrepreneurial success requires additional energy, namely passion. Thus, considering that EP can fluctuate as time passes (Cardon *et al.*, 2009), further studies could employ a longitudinal method to probe the effect of EP throughout the entrepreneurship process. Second, this study just tested one moderating variable. Thus, in this case, future studies can expand this study by exploring a more complex model to offer a better understanding of the ESE-EI link. Lastly, this study used data only from a few students in one area. Therefore, the results cannot represent the entire condition of student entrepreneurship in Indonesia. Any attempt to generalise or extend the findings to other studies in distinct contexts has to be careful. Scholars should perform future studies in different countries with distinct contexts to nourish more nuanced results.

REFERENCES

Al-Mamary, Y.H.S., Abdulrab, M., Alwaheeb, M.A., & Alshammari, N.G.M. (2020). Factors impacting entrepreneurial intentions among university students in Saudi Arabia: Testing an integrated model of TPB and EO. *Education + Training*, *62*(7/8), 779-803. https://doi.org/10.1108/ET-04-2020-0096

Anjum, T., Heidler, P., Amoozegar, A., & Anees, R.T. (2021). The Impact of Entrepreneurial Passion on the Entrepreneurial Intention; Moderating Impact of Perception of University Support. *Administrative Sciences*, *11*(2), 45. https://doi.org/10.3390/admsci11020045

Ayob, A.H. (2021). Entrepreneurship education, institutions and student entrepreneurship: A cross-country analysis. *Compare: A Journal of Comparative and International Education*, *51*(5), 745-763. https://doi.org/10.1080/03057925.2019.1673701

Baluku, M.M., Kikooma, J.F., Otto, K., König, C.J., & Bajwa, N.U.H. (2020). Positive Psychological Attributes and Entrepreneurial Intention and Action: The Moderating Role of Perceived Family Support. *Frontiers in Psychology*, *11*, 546745. https://doi.org/10.3389/fpsyg.2020.546745

Barba-Sánchez, V., Mitre-Aranda, M., & Brío-González, J.D. (2022). The entrepreneurial intention of university students: An environmental perspective. *European Research on Management and Business Economics*, *28*(2), 100184. https://doi.org/10.1016/j.iedeen.2021.100184

Bartlett, J.E., Kotrlik, J.W., & Higgins, C.C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, *19*(1), 43-50. Retrieved from https://www.opalco.com/wp-content/uploads/2014/10/Reading-Sample-Size1.pdf on July 1, 2024.

Biraglia, A., & Kadile, V. (2017). The Role of Entrepreneurial Passion and Creativity in Developing Entrepreneurial Intentions: Insights from American Homebrewers: Journal of Small Business Management. *Journal of Small Business Management*, *55*(1), 170-188. https://doi.org/10.1111/jsbm.12242

Brändle, L., Berger, E.S.C., Golla, S., & Kuckertz, A. (2018). I am what I am—How nascent entrepreneurs' social identity affects their entrepreneurial self-efficacy. *Journal of Business Venturing Insights*, *9*, 17-23. https://doi.org/10.1016/j.jbvi.2017.12.001

Cardon, M.S., Foo, M., Shepherd, D., & Wiklund, J. (2012). Exploring the Heart: Entrepreneurial Emotion is a Hot Topic. *Entrepreneurship Theory and Practice*, *36*(1), 1-10. https://doi.org/10.1111/j.1540-6520.2011. 00501.x

Cardon, M.S., Gregoire, D.A., Stevens, C.E., & Patel, P.C. (2013). Measuring entrepreneurial passion: Conceptual foundations and scale validation. *Journal of Business Venturing*, *28*(3), 373-396. https://doi.org/10.1016/j.jbusvent.2012.03.003

Cardon, M.S., & Kirk, C.P. (2015). Entrepreneurial Passion as Mediator of the Self–Efficacy to Persistence Relationship. *Entrepreneurship Theory and Practice*, *39*(5), 1027-1050. https://doi.org/10.1111/etap.12089

Cardon, M.S., Wincent, J., Singh, J., & Drnovsek, M. (2009). The nature and experience of entrepreneurial passion. *Academy of Management Review*, *34*(3), 511-532. https://doi.org/10.5465/amr.2009.40633190

Chien-Chi, C., Sun, B., Yang, H., Zheng, M., & Li, B. (2020). Emotional Competence, Entrepreneurial Self-Efficacy, and Entrepreneurial Intention: A Study Based on China College Students' Social Entrepreneurship Project. *Frontiers in Psychology*, *11*, 547627. https://doi.org/10.3389/fpsyg.2020.547627

Cooper, D.R., & Schindler, P.S. (2014). *Business research methods* (12. edition). Irwin/McGraw-Hill.

De Clercq, D., Honig, B., & Martin, B. (2013). The roles of learning orientation and passion for work in the formation of entrepreneurial intention. *International Small Business Journal: Researching Entrepreneurship*, *31*(6), 652-676. https://doi.org/10.1177/0266242611432360

Elnadi, M., & Gheith, M.H. (2021). Entrepreneurial ecosystem, entrepreneurial self-efficacy, and entrepreneurial intention in higher education: Evidence from Saudi Arabia. *The International Journal of Management Education*, *19*(1), 100458. https://doi.org/10.1016/j.ijme.2021.100458

Ertz, M., Karakas, F., & Sarigöllü, E. (2016). Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *Journal of Business Research*, *69*(10), 3971–3980. https://doi.org/10.1016/j.jbusres.2016.06.010

Fuller, B., Liu, Y., Bajaba, S., Marler, L.E., & Pratt, J. (2018). Examining how the personality, self-efficacy, and anticipatory cognitions of potential entrepreneurs shape their entrepreneurial intentions. *Personality and Individual Differences*, *125*, 120-125. https://doi.org/10.1016/j.paid.2018.01.005

Hayes, A.F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs*, *85*(1), 4-40. https://doi.org/10.1080/03637751.2017.1352100

Hill, S., Ionescu-Somers, A., Coduras, A., Guerrero, M., Menipaz, E., Boutaleb, F., Zbierowski, P., Sahasranamam, S., & Shay, J. (2024). *GEM 2023/2024 Global Report: 25 Years and Growing* (pp. 1-240). Global Entrepreneurship Research Association, London Business School, Regents Park, London NW1 4SA, UK.

Hill, S., Ionescu-Somers, A., Coduras, A., Guerrero, M., Menipaz, E., Boutaleb, F., Zbierowski, P., Schott, T., Sahasranamam, S., & Shay, J. (2023). *Global Entrepreneurship Monitor 2022/2023 Global Report: Adapting to a "New Normal"* (pp. 1-253). Global Entrepreneurship Research Association, London Business School, Regents Park, London NW1 4SA, UK.

Hsu, D.K., Burmeister-Lamp, K., Simmons, S.A., Foo, M.-D., Hong, M.C., & Pipes, J.D. (2019). "I know I can, but I don't fit": Perceived fit, self-efficacy, and entrepreneurial intention. *Journal of Business Venturing*, *34*(2), 311-326. https://doi.org/10.1016/j.jbusvent.2018.08.004

Hu, W., Xu, Y., Zhao, F., & Chen, Y. (2022). Entrepreneurial Passion and Entrepreneurial Success—The Role of Psychological Capital and Entrepreneurial Policy Support. *Frontiers in Psychology*, *13*, 792066. https://doi.org/10.3389/fpsyg.2022.792066

Jackson, D.L. (2003). Revisiting Sample Size and Number of Parameter Estimates: Some Support for the N:q Hypothesis. *Structural Equation Modeling: A Multidisciplinary Journal*, *10*(1), 128-141. https://doi.org/10.1207/S15328007SEM1001_6

Kalitanyi, V., & Bbenkele, E. (2019). Measuring University Students' Perceptions About the Role of Self-efficacy on Entrepreneurial Intentions in Cape Town. *Journal of Entrepreneurship and Innovation in Emerging Economies*, *5*(2), 214-232. https://doi.org/10.1177/2393957519863900

Karimi, S. (2020). The role of entrepreneurial passion in the formation of students' entrepreneurial intentions. *Applied Economics*, *52*(3), 331-344. https://doi.org/10.1080/00036846.2019.1645287

Kiani, A., Liu, J., Ghani, U., & Popelnukha, A. (2020). Impact of Future Time Perspective on Entrepreneurial Career Intention for Individual Sustainable Career Development: The Roles of Learning Orientation and Entrepreneurial Passion. *Sustainability*, *12*(9), 3864. https://doi.org/10.3390/su12093864

Kong, F., Zhao, L., & Tsai, C.-H. (2020). The Relationship Between Entrepreneurial Intention and Action: The Effects of Fear of Failure and Role Model. *Frontiers in Psychology*, *11*, 229. https://doi.org/10.3389/fpsyg.2020.00229

Kusumojanto, D.D., Wibowo, A., Kustiandi, J., & Narmaditya, B.S. (2021). Do entrepreneurship education and environment promote students' entrepreneurial intention? The role of entrepreneurial attitude. *Cogent Education*, *8*(1), 1948660. https://doi.org/10.1080/2331186X.2021.1948660

Lam, L.W. (2012). Impact of competitiveness on salespeople's commitment and performance. *Journal of Business Research*, *65*(9), 1328-1334. https://doi.org/10.1016/j.jbusres.2011.10.026

Lee, Y., Cortes, A.F., & Joo, M. (2021). Entrepreneurship Education and Founding Passion: The Moderating Role of Entrepreneurial Family Background. *Frontiers in Psychology*, *12*, 743672. https://doi.org/10.3389/fpsyg.2021.743672

Li, C., Murad, M., Shahzad, F., Khan, M.A.S., Ashraf, S.F., & Dogbe, C.S.K. (2020). Entrepreneurial Passion to Entrepreneurial Behavior: Role of Entrepreneurial Alertness, Entrepreneurial Self-Efficacy and Proactive Personality. *Frontiers in Psychology*, *11*, 1611. https://doi.org/10.3389/fpsyg.2020.01611

Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, *11*(4), 907-933. https://doi.org/10.1007/s11365-015-0356-5

Loan, L.T., Doanh, D.C., Thang, H.N., Viet Nga, N.T., Van, P.T., & Hoa, P.T. (2021). Entrepreneurial behaviour: The effects of the fear and anxiety of Covid-19 and business opportunity recognition. *Entrepreneurial Business and Economics Review*, *9*(3), 7-23. https://doi.org/10.15678/EBER.2021.090301

Maleki, A., Moghaddam, K., Cloninger, P., & Cullen, J. (2023). A cross-national study of youth entrepreneurship: The effect of family support. *The International Journal of Entrepreneurship and Innovation*, *24*(1), 44-57. https://doi.org/10.1177/14657503211054284

McGee, J.E., & Peterson, M. (2019). The Long-Term Impact of Entrepreneurial Self-Efficacy and Entrepreneurial Orientation on Venture Performance. *Journal of Small Business Management*, *57*(3), 720-737. https://doi.org/10.1111/jsbm.12324

Memon, M., Soomro, B.A., & Shah, N. (2019). Enablers of entrepreneurial self-efficacy in a developing country. *Education + Training*, *61*(6), 684-699. https://doi.org/10.1108/ET-10-2018-0226

Miralles, F., Giones, F., & Gozun, B. (2017). Does direct experience matter? Examining the consequences of current entrepreneurial behavior on entrepreneurial intention. *International Entrepreneurship and Management Journal*, *13*(3), 881-903. https://doi.org/10.1007/s11365-016-0430-7

Mumi, A., Ciuchta, M.P., & Yang, Y. (2018). Social Media for Entrepreneurial Opportunity and Process: An Effectuation Perspective. *Academy of Management Proceedings*, *2018*(1), 15826. https://doi.org/10.5465/AMBPP.2018.27

Neneh, B.N. (2020). Entrepreneurial passion and entrepreneurial intention: The role of social support and entrepreneurial self-efficacy. *Studies in Higher Education*, *47*(3), 587-603. https://doi.org/10.1080/03075079.2020.1770716

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of Vocational Behavior*, *110*, 403-419. https://doi.org/10.1016/j.jvb. 2018.05.012

Ng, L., & Jenkins, A.S. (2018). Motivated but not starting: How fear of failure impacts entrepreneurial intentions. *Small Enterprise Research*, *25*(2), 152-167. https://doi.org/10.1080/13215906.2018.1480412

Nowiński, W., Haddoud, M.Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, *44*(2), 361-379. https://doi.org/10.1080/03075079.2017.1365359

Osadolor, V., Agbaeze, E.A., Isichei, E.I., & Olabosinde, T.O. (2021). Entrepreneurial self-efficacy and entrepreneurial intention: The mediating role of the need for independence. *Journal of Entrepreneurship, Management and Innovation*, *17*(4), 91-119. https://doi.org/10.7341/20211744

Rosalina, G., & Satrya, A. (2021). Effect of entrepreneurial self-efficacy and proactive personality on the entrepreneurial intention of post-migrant workers through attitude toward entrepreneurship. In S. Noviaristanti, *Contemporary Research on Business and Management* (1st ed., pp. 133-136). CRC Press. https://doi.org/10.1201/9781003196013-33

Saeed, S., Yousafzai, S.Y., Yani-De-Soriano, M., & Muffatto, M. (2015). The Role of Perceived University Support in the Formation of Students' Entrepreneurial Intention. *Journal of Small Business Management*, *53*(4), 1127-1145. https://doi.org/10.1111/jsbm.12090

Santos, S.C., & Cardon, M.S. (2019). What's Love Got to do With It? Team Entrepreneurial Passion and Performance in New Venture Teams. *Entrepreneurship Theory and Practice*, *43*(3), 475-504. https://doi.org/10.1177/1042258718812185

Santos, S.C., & Liguori, E.W. (2020). Entrepreneurial self-efficacy and intentions: Outcome expectations as mediator and subjective norms as moderator. *International Journal of Entrepreneurial Behavior & Research*, *26*(3), 400-415. https://doi.org/10.1108/IJEBR-07-2019-0436

Schmutzler, J., Andonova, V., & Diaz-Serrano, L. (2019). How Context Shapes Entrepreneurial Self-Efficacy as a Driver of Entrepreneurial Intentions: A Multilevel Approach. *Entrepreneurship Theory and Practice*, *43*(5), 880-920. https://doi.org/10.1177/1042258717753142

Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A skill-building approach* (7. edition). John Wiley & Sons.

Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. *European Management Journal*, *34*(4), 386-399. https://doi.org/10.1016/j.emj.2015.12.007

Sieger, P., Fueglistaller, U., & Zellweger, T. (2016). *Student Entrepreneurship 2016: Insights From 50 Countries*. St. Gallen/Bern: KMU-HSG/IMU.

Suhartanto, E. (2021). *Entrepreneurial Intention, Behaviour and Activities of Indonesian Universities Students—The Indonesia Report of the 2021 GUESSS Project*. Universitas Prasetya Mulya, Indonesia (Association of Indonesian Entrepreneurship Educators (PERWIRA).

Tajpour, M., & Razavi, S.M. (2023). The effect of team performance on the internationalization of Digital Startups: The mediating role of entrepreneurship. *International Journal of Human Capital in Urban Management*, *8*(1). https://doi.org/10.22034/IJHCUM.2023.01.02

Thompson, E.R. (2009). Individual Entrepreneurial Intent: Construct Clarification and Development of an Internationally Reliable Metric. *Entrepreneurship Theory and Practice*, *33*(3), 669-694. https://doi.org10.1111/j.1540-6520.2009.00321.x

Türk, S., Zapkau, F.B., & Schwens, C. (2020). Prior entrepreneurial exposure and the emergence of entrepreneurial passion: The moderating role of learning orientation. *Journal of Small Business Management*, *58*(2), 225-258. https://doi.org/10.1080/00472778.2019.1659678

Vallerand, R.J., Blanchard, C., Mageau, G.A., Koestner, R., Ratelle, C., Léonard, M., Gagné, M., & Marsolais, J. (2003). Les passions de l'âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756-767. https://doi.org/10.1037/0022-3514.85.4.756

Vatavu, S., Dogaru, M., Moldovan, N.-C., & Lobont, O.-R. (2022). The impact of entrepreneurship on economic development through government policies and citizens' attitudes. *Economic Research-Ekonomska Istraživanja*, *35*(1), 1604-1617. https://doi.org/10.1080/1331677X.2021.1985566

Wardana, L.W., Narmaditya, B.S., Wibowo, A., Fitriana, Saraswati, T.T., & Indriani, R. (2021). Drivers of entrepreneurial intention among economics students in Indonesia. *Entrepreneurial Business and Economics Review*, *9*(1), 61-74. https://doi.org/10.15678/EBER.2021.090104

Zhao, H., Seibert, S.E., & Hills, G.E. (2005). The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology*, *90*(6), 1265-1272. https://doi.org/10.1037/0021-9010.90.6.1265

Authors

The contribution share of authors amounted to 42.5% for Debora Vista Silty Ticoalu (conceptualisation, devised the project, and conducted the research), Sarwono Nursito 42.5% (conceptualisation, devised the project, provided the technical details, analysis, final writing), Jeanne Maria Tuerah (15%) (data collection, conduct the research).

Debora Vista Silty Ticoalu
Lecturer at the Faculty of Economics and Business, Universitas Negeri Manado, North Sulawesi, Indonesia. Her research interests include public economy, institutional economics and entrepreneurship.
Correspondence to: Debora Vista Silty Ticoalu S.Pi., M.Sc., M.Pd., Faculty of Economics and Business, Universitas Negeri Manado, Jl. Kampus Unima, Tondano, Minahasa Regency, North Sulawesi, Indonesia, e-mail: debora.ticoalu789@gmail.com
ORCID https://orcid.org/0000-0002-5261-6929

Sarwono Nursito
Lecturer and researcher at the Department of Management, Faculty of Economics and Psychology, Universitas Widya Dharma, Klaten, Central Java, Indonesia. His research interests include strategic management, entrepreneurship, and organisational development.
Correspondence to: Sarwono Nursito S.E., M.Sc., Faculty of Economics and Psychology, Universitas Widya Dharma, Jl. Ki Hajar Dewantara, Klaten, Central Java, Indonesia, e-mail: nursito.357@gmail.com
ORCID https://orcid.org/0009-0002-6440-9158

Jeanne Maria Tuerah
Lecturer at the Faculty of Mathematics, Natural and Earth Science, Universitas Negeri Manado, North Sulawesi, Indonesia. Her research interests include chemistry and entrepreneurship.
Correspondence to: Dra. Jeanne Maria Tuerah, M. Si, Faculty of Mathematics, Natural and Earth Science, Universitas Negeri Manado, Jl. Kampus Unima, Tondano, Minahasa Regency, North Sulawesi, Indonesia, e-mail: jeannetuerah@unima.ac.id
ORCID https://orcid.org/0009-0007-5054-6799

Acknowledgements and Financial Disclosure

There was no financial aid or sponsorship for this study. Any costs incurred were borne by the authors.

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.

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

International Entrepreneurship Review

2025, Vol. 11, No. 1

10.15678/IER.2025.1101.08

Work engagement and staff turnover in the hospitality industry: An analysis of selected job characteristics

Aleksandra Grobelna, Anna Tokarz-Kocik

ABSTRACT

Objective: The objective of the article is to determine the relationships between selected job characteristics in hotel enterprises and employees' work engagement and investigate how this may relate to their intention to leave.

Research Design & Methods: The research involved employees directly serving hotel guests (front office) of six Tricity hotels in Poland. The hotels included in the study were medium and higher standard facilities that provide a wide and comprehensive range of services. We conducted the research using a direct survey, with 108 participating respondents.

Findings: Survey research conducted among employees of Tricity hotels showed a significant correlation between the analyzed job characteristics and work engagement, which in turn significantly weakens hotel employees' intention to leave.

Implications & Recommendations: The obtained results provide valuable information about the relationships between selected characteristics of the work process in the hotel industry and how they affect work engagement and intention to leave. The results may help the management of hospitality companies formulate recommended actions to optimize work conditions so that they are conducive to higher service quality and reduced employee turnover.

Contribution & Value Added: The research results expand knowledge of human resources management, in particular regarding optimization of the work process conditions in the hotel industry to strengthen employees' engagement. This is an original study, which treats the proposed relationships holistically in the context of the specifics of the hotel industry.

Article type:	research article
Keywords:	hospitality enterprises; hotel employees; work engagement; job characteristics; turnover intention
JEL codes:	J24, J28, J63, M12

Received: 19 February 2024 Revised: 8 October 2024 Accepted: 16 October 2024

Suggested citation:
Grobelna, A., & Tokarz-Kocik, A. (2025). Work engagement and staff turnover in the hospitality industry: An analysis of selected job characteristics. *International Entrepreneurship Review,* 11(1), 125-141. https://doi.org/10.15678/IER.2025.1101.08

INTRODUCTION

The success of a hotel company in conditions of ever-increasing competition requires not only the acquisition and retention of appropriate staff but also engagement of all its employees, especially since the high rate of labour turnover (Glińska-Neweś *et al.*, 2020; Gordon *et al.*, 2019; Lu *et al.*, 2016) and post-pandemic staff shortages (Travel & Tourism Economic Impact: Global Trends, 2022) are a major threat for the tourism industry today. Recently, the phenomenon of excessive staff turnover has intensified in the hotel industry in Poland, with 83% of hoteliers reporting problems with retaining employees (Employee-turnover, 2024). High turnover rates mainly affect hotel operational areas (Glińska-Neweś *et al.*, 2020) whose employees can freely move to other service sectors due to the transferability of their skills, which are applicable across various jobs (Kusluvan, 2003). This creates a continuous challenge and undermines hotels' competitiveness, as chronic problems with at-

tracting and retaining skilled employees result in both tangible and intangible costs, including job stress, low morale, service disruption, and ultimately customer dissatisfaction (Zhao *et al.,* 2016; Ozturk *et al*., 2014; Lu *et al.*, 2016). Therefore, this situation demands empirical attention to significant determinants of this phenomenon in hotels (Kim & Jogaratnam, 2010). Poland is no exception here, as it also seriously suffers from a shortage of skilled and experienced employees, making the prevention of staff turnover and retention a top priority for the industry.

In this context, work engagement can play a particular role in the success of service enterprises and their employees. Engaged workers tend to be highly energetic and enthusiastic about their work (Liu *et al*., 2017) and they may be more reluctant to leave their jobs. It is particularly important in the hotel industry, where employees frequently interact with customers (Choi *et al.,* 2012) and their attitudes and behaviours have a direct impact on the quality of provided services. These employees represent the hotel to customers (Karatepe & Kilic, 2007) and play a paramount role in building a strong relationship with guests, thus leading to customer loyalty (Chen *et al.,* 2014).

Given the intense competition and the need to improve productivity and service quality, employee engagement has become an important and valuable area of study (Ghorbannejad & Esakhani, 2016). Although work engagement has been a subject of scientific investigation for many years (mainly in the field of psychology), it is gaining increasing importance in management and quality sciences, as evidenced by numerous scientific articles and empirical studies on the subject (Bakker & Demerouti, 2008; Chen & Chen, 2012; Choo, 2016; Karatepe, 2015; Lee & Ok, 2015; Xanthopoulou *et al.*, 2009).

Nevertheless, work engagement remains one of the biggest challenges in business (Liu *et al.,* 2017). According to Gallup's latest State of the Global Workplace Report 2024, mental well-being has been declining over the past decade, with 41% of employees worldwide experiencing severe stress every day (State of the Global Workplace, 2024). The nature of the service delivery process in hospitality creates a particularly stressful work environment (Zhao *et al.,* 2016). It is also worrisome that disengaged employees constitute 15% of the global workforce. This situation is even worse in Poland, where employee engagement is alarmingly low, *i.e.* 10%, which is even below the European average (13%) and means that 90% of Polish employees are not engaged (State of the Global Workplace, 2024).

In this light, studies on work engagement are surprisingly limited (Kim *et al.*, 2009), which also includes the hospitality setting (see Grobelna, 2019; Grobelna & Dolot, 2018; Karatepe *et al.,* 2013). Although research analyzing the phenomenon of work engagement in hotel enterprises has been conducted, among others, in countries such as Malaysia (Choo, 2016), USA (Oparka & Nowicka, 2003), the Netherlands (Schaufeli, 2017), Türkiye (Karatepe, 2015), Romania (Karatepe, 2013), and Jordan (Sarhan *et al*., 2020), in the Polish context, the engagement of hotel employees has been hardly researched. Therefore, more research on work engagement in hospitality is needed (Liu *et al.,* 2017), especially in Poland where hotels need a pool of engaged employees who will be likely to stay in their organizations providing high-quality of hotel services.

Given the above, we aimed to determine the relationships between selected job characteristics in hotel enterprises and employees' work engagement and investigate how this may relate to their intention to leave.

Therefore, this study will contribute to extending the research results in this field to another cultural and social background and help better understand the phenomenon of work engagement among hotel employees in Poland.

The research involved critical analysis of the subject literature, factors determining work engagement in the hotel industry, and the causes of staff turnover in enterprises (the theoretical part) as well as a survey conducted among employees of Tri-City hotels (the empirical part). The results of empirical research will help to expand knowledge of human resources management as regards optimizing the work process conditions in hospitality aiming to strengthen employee engagement. The study is original in nature because it treats the proposed relationships holistically and places them in the context of the hotel industry.

In the next section, we present the theoretical background and develop this study's hypotheses. This is followed by a description of the research methodology. Then the study's findings are presented

and discussed in a broader comparative setting. The article concludes with theoretical and practical implications. This study's limitations and directions for future research are also provided.

LITERATURE REVIEW

The Essence and Dimensions of Work Engagement

Work engagement means an employee's positive attitude towards the company in which they work and towards the assigned tasks. Engagement in work is accompanied by positive emotions, such as excitement, enthusiasm, contentment, pleasure, and even happiness.

According to Schaufeli and Bakker's theory (2004), work engagement is a constant and deepening affective and cognitive attitude of employees towards duties, people, and objects related to work. According to these authors, work engagement is expressed in three dimensions, *i.e.* vigour, dedication, and absorption. Vigour means a high level of energy and resilience at work, the will to invest effort in work and perseverance in facing difficulties. Dedication to work means strong identification with it, a sense of its importance, enthusiasm, and pride in doing it. Absorption stands for concentration on work, engrossment in it, the feeling of unnaturally fast passage of time while performing one's tasks and difficulties in detaching from them (Derbis & Baka, 2011).

The conducted research shows that work engagement positively correlates with many positive phenomena in human work, such as work efficiency (Bakker & Demerouti, 2008), proactive behaviour, development motivation, and customer satisfaction (Salanova *et al.*, 2005). Studies also confirm that work engagement is strongly related to the work environment, *e.g.* with a high level of autonomy, feedback availability, variety of responsibilities, support from superiors and co-workers, and development opportunities (Bakker *et al.*, 2003). Hackman and Oldham's model shows the mentioned conditions of the work process. It distinguishes five axial characteristics (properties) of work (Hackman & Oldham, 1976):

- skill variety – concerns the extent to which performing tasks at a given job position requires the employee to have various skills (the more challenging the job is, the more important it is for the employee),
- task identity – determines how much an employee can complete a task in its entirety, as opposed to performing only its selected elements,
- task significance – determines the extent to which work in a given position affects other people's lives (co-workers and clients),
- autonomy – the employee's independence in performing and planning work; it concerns the degree to which the employee can freely choose how to perform their work,
- feedback – determines the degree to which employees receive precise feedback on the individual effects of their work.

The five basic features of work presented in the Hackman and Oldham model affect employees' three critical mental states (Hsieh, 2013):

- experiencing meaningfulness of work – a degree of a person's beliefs that their work is inherently meaningful and valuable,
- experiencing responsibility for work results – a sense of ownership and responsibility for the output of one's work,
- knowledge of results – employee's understanding of how effective their actions are based on the received feedback.

All these psychological states increase employee motivation, task performance, and job satisfaction.

Positive work characteristics mean that employees experience positive emotions when doing their job well. This situation encourages continued good job performance, consistent with the expectation that good job performance will lead to positive feelings. The strength of individual motivation to perform tasks well (work engagement) depends on the individual need for development and achievement. The stronger this need, the more important the positive feelings that arise from doing good work (Nemmaniwar & Deshpande, 2016).

Engaged employees are among the most crucial factors in an organization's success. Work engagement brings many important benefits both for the organization (such as greater employee performance) and for the well-being of the employees themselves (Kapica *et al.*, 2022). This is substantiated by research (Harter *et al.*, 2006) showing that companies whose ranks were dominated by engaged employees were characterized by 12% greater profitability and 18% greater productivity than those in which the majority of employees were disengaged. Furthermore, there were 27% fewer absentee days among those involved.

Employees of Hotel Enterprises and the Specificity of Their Work

The ability of any organization to accomplish its goals stems from appropriately selected resources and their effective use. In the hotel industry, researchers assign a special role to intangible resources, especially the human capital embodied in employees (Bednarska, 2016). Their knowledge and skills are a condition for the launch and productive use of the material resources of an economic entity. Employees bring their values, as well as abilities and skills to the hotel, which constitute the basis for creating a unique organizational culture that allows the company to effectively achieve its goals.

Hotel staff are very diverse and can be divided into three groups (Boella & Goss-Turner, 2013):

- employees with direct contact with guests (reception staff, parking staff, housekeeping staff, waiters, bartenders, hotel management),
- employees working for guests but having only occasional contact with them (floor service employees, kitchen and pastry workers, security),
- employees without direct contact with guests (administration, accounting, maintenance workers).

Employees play the most vital role in the hotel as they directly serve hotel guests (front office). They are responsible for the guests' well-being during their stay and their readiness to return to the facility in the future. They influence the guests' opinion about the hotel and the assessment of the quality of hotel services, and they directly build relationships with customers (Jeznach *et al.*, 2016). Hotel ground staff and reception staff are the showcase of a hotel company in contact with customers.

The basic tasks of reception staff include:

- taking reservations, checking room availability, and completing the guest check-in process,
- informing about the hotel and its services and local tourist attractions,
- handling complaints and problems reported by guests and ensuring customer satisfaction,
- cooperating with other hotel departments (*e.g.*, coordination of tasks with cleaning staff, contact with the sales department).

The task of the front office employees is to ensure efficient guest service, a unique, peaceful, and welcoming atmosphere, and most importantly, hospitality. Readiness to help is important, both in a friendly attitude towards the guest and in upselling. The level of service provided to tourists in a hotel shapes their opinion about the company.

Another group of employees in the hotel are housekeeping staff (*i.e.,* the head housekeeper and chambermaids). The head housekeeper is responsible for organizing the work of the operational service subordinated to them. This executive's tasks also include organizing training for the chambermaids in terms of new work methods, personal culture, and the ability to behave in special situations. Housekeepers are directly responsible for the proper preparation of accommodation units for hotel guests, and their tasks primarily include maintaining cleanliness in the rooms and ensuring the safety of guests and their property (Boella & Goss-Turner, 2013). Employees of administrative and technical departments are also important to maintain the proper functioning of a hotel facility.

Managers at various levels also play a special role. The highest position in the organizational hierarchy is the hotel director, who manages the company's activities, defines the hotel's strategic, tactical, and operational goals, manages the hotel's HR policy, monitors the work of individual departments, supervises the security of the hotel's property and deals with hotel employees and guests' complaints.

Line managers are a crucial element of the hotel structure, as their role is not limited only to supervising the tasks performed by subordinate employees, but they also influence the achieved results and the atmosphere in the company. They strongly affect the work quality and engagement of the

employees subordinated to them. In their HR activities (especially motivational ones), managers should consider the specific nature of work in hospitality.

Among others, the uniqueness of work in hotel enterprises manifests in the fact that it is continuous, multi-shift, full-week, and independent of officially accepted days off from work (Boella & Goss-Turner, 2013). It is difficult to standardize and set working time within 8 hours. Hotels function 24 hours a day. Furthermore, during the tourist season, tourist traffic increases, which raises the burden on employees involved in its service (especially in facilities located in attractive tourist places).

This entails the need for different regulations of employees' working time, days off, rest and meal breaks, as well as the shaping of interpersonal relations and the atmosphere in the workplace. Moreover, there is a fluctuation in demand for labour. This is related to fluctuations in the volume of demand for hotel services. For this reason, in many hotels, some employees are employed on a fixed-term or part-time basis (Kusluvan, 2003). The work process conditions in the hotel industry determine employees' specific behaviours and attitudes and are also one of the determinants of their decision to resign from work.

Staff Turnover in Hotel Enterprises

Human capital is the key to modern service organizations' success. Therefore both recruiting appropriate employees and maintaining staff stability determine the hotel enterprise development.

High employment fluency is a source of many negative consequences for the organization. This especially applies to situations in which the departure is initiated by the employee and does not result from the employer's planned actions (Huang, 2017). Fluctuation generates additional costs due to the need to start the recruitment process for the vacancy, and then conduct training and take other actions to help new employees adapt. These expenses are usually accompanied by a decline in productivity. Changes in staffing often lead to a deterioration in the quality of service and the ensuing decrease in customer loyalty due to the disorganization of the service provision process and the loss of tacit knowledge (Taylor, 2002). Resignations also affect intra-group social bonds, limiting the processes of building teamwork patterns and lowering employee morale (Taylor, 2002).

Because fluctuation carries a serious threat both to maintaining high quality of hotel services and to satisfactory consumption experiences, it is in the interest of hotel enterprises to take actions aimed at creating conditions conducive to employee loyalty. As a multidimensional category, employee loyalty manifests itself in various attitudes and behaviours. One of its behavioural aspects is the unforced readiness to continue working and maintaining lasting contact with the employer (Huang, 2017).

The effectiveness of activities ensuring the stability of personnel in an enterprise requires knowledge of the sources of employee turnover. The reasons for leaving a job are various. Often, the decision to change an employer results from dissatisfaction with the performed duties or a critical assessment of the employment conditions in a hotel company. Todorov (2017) indicates that the reasons for leaving may be employees' feeling of improper use of their qualifications, insufficient appreciation by their superiors, low remuneration, and communication problems. Other reasons for employees' voluntary departures include factors such as the superiors' attitude, work schedules (*e.g.* shifts maladapted to the employee's needs), work overload, and lack of training (Todorov, 2017).

The perception of the content of work and the conditions of its performance may become an important determinant of the decision to change the workplace (Lewicka, 2016). Among the circumstances that may strongly influence the leaving intention, job satisfaction, and engagement remain the most important ones (Bednarska, 2016).

Based on the literature review and previous empirical findings, the present work attempts to identify correlations that selected job characteristics and hotel employees' work engagement have with their turnover intentions. Previous studies, including those from hospitality setting, have provided empirical support for a claim that job characteristics positively influence job satisfaction (Kim & Jogaratnam, 2010) and negatively affect job stress (Zhao *et al*., 2016). Specifically, skill variety, task significance, and task identity reflect meaningfulness experienced at work (Zhao *et al.,* 2016). Noteworthy, in their study among restaurant and hotel employees in Seoul (South Korea), Jung and Yoon (2016) revealed that employees' sense of the meaningfulness of work is a major factor in increasing

engagement in work. In other words, employees who perceive their work as highly meaningful perform it more enthusiastically than those who do not. Moreover, Hadi and Adil (2010) found that all job characteristics proved to correlate significantly and positively with intrinsic motivation, which, as shown in the study by Putra *et al.* (2015) conducted among hospitality employees in a Midwestern town (the United States), played an important role in improving employees' work engagement.

Therefore, the literature review and empirical findings lead to the following hypothesis:

H1: There is a significant and positive relationship between certain job characteristics, namely autonomy (H1a), task significance (H1b), task identity (H1c), skill variety (H1d), and hotel employees' work engagement.

Work engagement helps employees to apply their full potential in their jobs (Liu *et al.,* 2017). Engaged workers are fulfilled in their jobs and thus highly productive, which positively affects business profits (Liu *et al*., 2017). They are highly energetic and enthusiastic about their work, and often fully absorbed in their work (Karatepe & Ngeche, 2012). Unfortunately, compared to workers in other industries, hospitality employees generally face greater psychological pressure (Liu *et al*., 2017) due to long antisocial work hours, heavy workloads, inconvenient work schedules, customer aggression or extensive emotional labour (Karatepe & Kilic, 2007; Karatepe & Uludag, 2007; Kusluvan, 2003). These are among the potential stressors that may hinder work engagement and lead to leaving intention, which is a significant predictor of actual employee turnover behaviour (Liu *et al.,* 2017).

Previous studies provide empirical support that work engagement negatively correlates to frontline employees' turnover intention, as shown, for example, by Lu *et al.* (2016) in their study among employees of hotels managed by a North American branded hotel management company, Liu *et al.* (2017) in a study on hospitality employees in a Midwestern US town, or the latest study by Asghar *et al.* (2020) in the hospitality context. Therefore, based on the literature studies and the rationale of empirical findings, we formulated the following hypothesis:

H2: Hotel employees' work engagement significantly and negatively correlated with their leaving intentions.

Figure 1 presents the hypothetical relationships between the investigated variables. We based the empirical verification of the proposed model on research conducted among hotel employees in the Pomeranian Voivodeship.

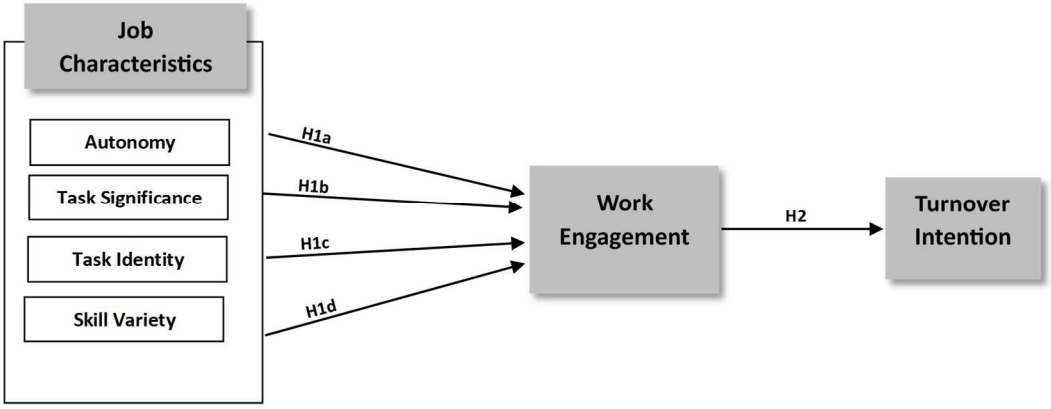


Figure 1. Research model of the correlations between job characteristics, hotel employees' work engagement and their intention to leave

Source: own elaboration.

RESEARCH METHODOLOGY

Research Design and Sources of Data

This case study is part of a bigger project on the influence of selected jobs and individual characteristics on hotel employees' attitudes and behaviours at work (Grobelna & Wyszkowska-Wróbel, 2023). It involved contacting hotel employees of hotel enterprises located in Tricity who have direct relationships with guests. We selected six hotels by convenience sampling due to their availability, prior cooperation, and/or the researcher's acquaintance with their management (Kim, 2008; Lam & Chen, 2012).

According to legal and administrative requirements (Rozporządzenie Ministra Gospodarki i Pracy z dnia 19 sierpnia 2004 roku), the studied hotels were medium and higher standard full-service establishments with different operational departments and providing a wide range of services. Hence, we could reach a wide range of employees who had numerous direct interactions with hotel guests and who were particularly responsible for providing high-quality service and shaping guests' satisfactory experiences of stay (Faulkner & Patiar, 1997). Moreover, by collecting data from different hotel departments, we could reduce a single-department bias, thus supporting the external validity of the research (Chang & Teng, 2017). Before the research, we conducted consultations with hotel managers, during which we discussed the purpose, content, and procedure of its realization.

The survey involved 108 participants. Among them, 72.2% were women and 27.8% – men. Most respondents (73.2%) were between the ages of 21 and 40. Furthermore, 13.9% were between 41 and 50 years old, while 4.6% were under 20, and 8.3% were over 50. A sizeable portion of participants had upper secondary (47.2%) or higher education (44.4%). The majority (84.3%) worked full-time in hotel jobs, with only 15.7% being employed part-time.

Research Methods

This study collected data via a questionnaire survey, a tool which is very popular and often used in social research (Gray *et al*., 2007). The literature on the subject emphasizes numerous advantages of survey research (Gray *et al*., 2007), including relatively low cost, adaptable time to complete the survey, lack of pressure to provide an immediate answer as respondents have an opportunity to adequately consider a question which requires a deeper reflection, greater propensity to provide honest answers, especially in the context of sensitive questions such as those related to feelings regarding performed work. Moreover, the measurement control by gathering questionnaires by interviewers may ensure more than twice the percentage of responses (Punch, 2013). Respondents were assured of their voluntary and anonymous participation, and that we would later present the research results only in an aggregate form.

We tested the study hypotheses with the Pearson correlation coefficient (Pearson's r) and analyzed the data with IBM SPSS Statistics (Statistical Package for the Social Sciences).

Measurement

We operationalized the study constructs (illustrated in Figure 1) using items obtained from earlier empirical research in the relevant literature. We measured job characteristics in this study, namely job autonomy, task identity and significance, and skill variety using statements adapted from the Job Diagnostic Survey (JDS) (Hackman & Oldham, 1975; Sashkin, 1982). We used three statements adequately to measure each of the job characteristics. The sample items were as follows: 'My job permits me to decide on my own how to go about doing the work' (Autonomy; AU); 'My job itself is very significant and important in the broader scheme of things' (Task Significance; T_S); 'My job provides me with a chance to completely finish the pieces of work I begin' (Task Identity; T_I); 'My job requires me to do many different things at work, using a variety of my skills and talents' (Skill Variety; S_V). Noteworthy, these statements have been also successfully applied in many previous studies (Al-Tit & Suifan, 2015; Hadi & Adil, 2010; Kumar *et al.*, 2011; Morris & Venkatesh, 2010), including those related to hospitality, in Poland and abroad (Ferreira *et al.,* 2017; Grobelna, 2019; Lee-Ross, 2005; Zhao *et al.*, 2016). We ensured the high reliability and validity of the scales.

We assessed work engagement (W_E) using nine items (three items respectively to measure each dimension, namely vigour (VIG), dedication (DED), and absorption (ABS)) from the abridged Utrecht Work Engagement Scale, with previously confirmed cross-national validity (Schaufeli *et al.*, 2006). Furthermore, this scale, both in its full and shortened version, has also been extensively used in previous hospitality research (Karatepe & Olugbade, 2009; Kim *et al.*, 2009; Lee & Ok, 2015; Park & Gursoy, 2012). Sample items for VIG, DED, and ABS were: 'At my work, I feel bursting with energy,' 'I am enthusiastic about my job,' and 'I am immersed in my work,' respectively.

We measured turnover intention (T_INT) using Boshoff and Allen's three items (2000) in line with Karatepe *et al.* (2006). These measures have also been widely used in previous hospitality studies (Karatepe & Uludag, 2007; Park & Gursoy, 2012; Yavas *et al.*, 2008). A sample item is as follows: 'I will probably be looking for another job soon.'

We rated all items on a five-point scale, with '1 = strongly disagree' to '5 = strongly agree.' To ensure accurate understanding and equivalent meaning of the scale items, we first prepared the survey in English and then translated it into Polish through the back-translation method. We conducted pilot tests under conditions matching the main research (Punch, 2013), which confirmed that employees had no difficulties in comprehending the survey items clearly and adequately.

We assessed the scale reliability using Cronbach's alpha (α) with values above 0.7 indicating high reliability (Choi *et al.*, 2014; Choi, 2006; Nunnally, 1978). In this study, the alpha coefficients were 0. 899 for W_E, 0.892 for T_INT, 0.869 for AU, 0.726 and 0.794 for T_S and T_I, respectively, and 0.795 for S_V, which confirmed the measures' internal reliability.

RESULTS AND DISCUSSION

This study results (Figure 2) revealed that all variables tested in the relationship model significantly correlated and supported the assumed directions. Thus, we positively verified the proposed research hypotheses (H1a-d; H2) as we found support for it in the empirical data.

Specifically, we proved the positive and significant relationships between job characteristics examined in this study and work engagement. However, we observed the strongest correlation between AU and W_E (r=0.561; p<0.001). Therefore, if employees experienced considerable freedom, independence, and discretion in scheduling and performing their tasks, they may feel significantly stronger work engagement. By contrast, the weakest relationship, however still significant, has been observed between T_I and W_E (r=0.283; r=0.003). In other words, to some extent, the level of employees' engagement may also depend on how employees perceive the identity (completeness) of the tasks they perform, *i.e.* whether they perform a task from start to end with visible outcomes or whether they concentrate only on part of the task. The results show that if employees know what they do at work, know why they do it, and understand what the effects are, the level of their work engagement may significantly increase.

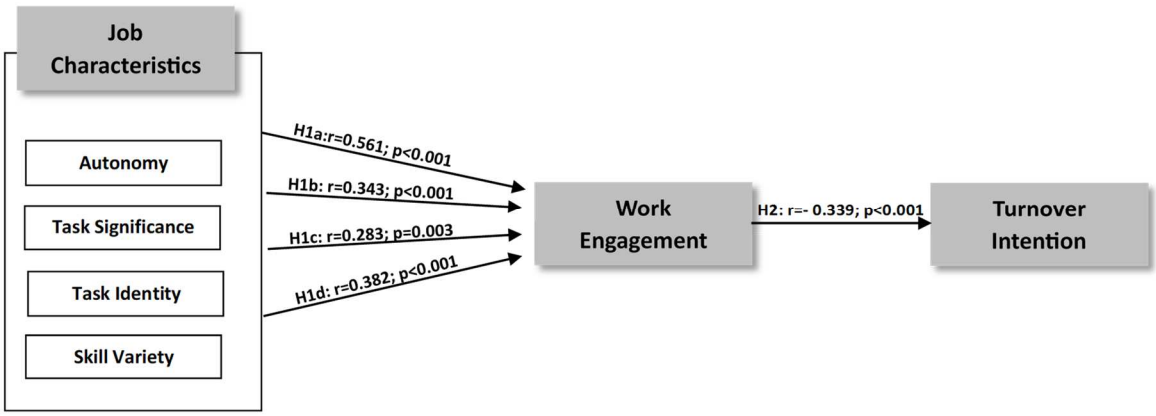


Figure 2. Verified model of the correlations between job characteristics, hotel employees' work engagement and their intention to leave

Source: own elaboration.

Similarly, the study findings revealed that work engagement may be significantly enhanced if employees perceive their work as important, with a substantial impact on others. The results of the Pearson correlation suggested a significant and positive correlation between T_S and W_E (r=0.343; p<0.001). In other words, work with meaning and sense understandable to employees, especially in the context of influencing others, has a much higher motivational potential than work which in the employee's opinion is completely meaningless.

The results also demonstrated positive and significant correlations between S_V and W_E (r=0.382; p<0.001). This suggests that when employees view their work as complex, involving diverse activities, requiring various skills and talents, they tend to be more engaged. As the literature emphasizes, performing various tasks using various skills and talents may result in the employee's belief in the personal importance of the work performed and increase their motivation to work (Paliga, 2021; Sultan, 2012).

The study also demonstrated a negative and significant relationship between W_E and T_INT (r=-0.339; p<0.001). This indicates that hotel employees who feel energized, enthusiastic, and proud of their work are more likely to form strong bonds with their jobs, which may significantly reduce their intention to leave.

Additionally, a post-hoc analysis examined the relationships between job characteristics, specific dimensions of work engagement, and their consequences for turnover intention. As shown in Table 1, the strength of the relationship between selected job characteristics and the three dimensions of work engagement varies. Among other characteristics, autonomy correlates the most strongly with all dimensions of work engagement, especially with DED and VIG, as two dimensions of W_E (r=0.592, p<0.001; r=0.435, p<0.001, respectively). Employees who feel independence and freedom while performing their work duties may identify with their work more strongly, feeling its greater meaning, purpose, and importance.

Table 1. Relationships between job characteristics and work engagement dimensions

Variables / Statistics		Vigor	Dedication	Absorption
Autonomy	Pearson's Correlation	0.435	0.592	0.429
	p-value	<0.001	<0.001	<0.001
	N	108	108	108
Task significance	Pearson's Correlation	0.207	0.340	0.346
	p-value	0.032	<0.001	<0.001
	N	108	108	108
Task identity	Pearson's Correlation	0.256	0.322	0.152 (ns)*
	p-value	0.007	<0.001	0.116
	N	108	108	108
Skill variety	Pearson's Correlation	0.243	0.327	0.427
	p-value	0.011	<0.001	<0.001
	N	108	108	108

Note: *(ns) not significant.
Source: own study.

The next analyzed job characteristic, *i.e.* task identity, correlated most strongly with the dedication dimension of W_E (r=0.322, p<0.001). Hence, the employees' perception of greater task completeness, *i.e.* when they work on the complete task and see its results, positively correlated with their dedication to work, *i.e.* their perceived sense of their work and their greater enthusiasm, inspiration, or pride in it. However, we found no statistically significant correlation between this characteristic and hotel employees' work absorption, whereas the remaining job characteristics, namely task significance and skill variety, correlated most strongly just with this dimension (r=0.346, p<0.001; r=0.427, p<0.001, respectively). This may suggest that the more employees perceive their work as significant, having an impact on others and requiring various skills and talents, the deeper their immersion in their tasks, the more they feel time passes quickly and find it challenging to disconnect from their work responsibilities.

Analyzing the relationships between specific dimensions of work engagement and hotel employees' turnover intention (Table 2), we noted that all these dimensions of W_E significantly and negatively correlate with employees' leaving intentions. However, we observed the strongest relationship

between DED and T_INT (r=-0.440, p<0.001). Thus, we may state that the more enthusiastic and purposeful employees in hotels feel about their work, particularly when facing challenges in accomplishing goals, the less likely they are to leave their work.

Table 2. Relationships between dimensions of work engagement and hotel employees' turnover intention

Variables / Statistics		Vigor	Dedication	Absorption
Turnover Intention	Pearson's Correlation	-0.339	-0.440	-0.190
	p-value	<0.001	<0.001	0.049
	N	108	108	108

Source: own study.

Discussion

Work in hospitality is often viewed as tedious, characterized by low status and unfavourable employment conditions (Kusluvan, 2003). Therefore, it is often performed without adequate engagement (Ferreira *et al*., 2017) or effective motivation on the part of managers. Consequently, this promotes employees' leaving intentions, which seems to be critical given the high rate of employee turnover (Lu *et al.,* 2016), especially in the contemporary post-pandemic reality which has been extremely challenging for the already fragile tourism and hospitality industry, raising serious doubts as to its survival (Kaushal & Srivastava, 2021).

This study developed and tested a research model examining the relationships between selected job characteristics (*i.e.* autonomy, task significance, task identity, and skill variety) and hotel employees' work engagement, while also exploring examining its connection to turnover intention. The empirical data supported all hypothesized relationships. The results of this study confirmed the motivational potential of each tested job characteristic, which may significantly strengthen employees' work engagement.

Previous studies reported similar findings. For instance, Saks (2006) reported core job characteristics to positively relate to job engagement, whereas Grobelna (2019) proved a significant and positive impact of task significance on hotel employees' work engagement in the hospitality setting. Similarly, Christian *et al.* (2011) showed that task significance and variety seem to be linked to engagement, thus suggesting a stronger correlation between work engagement and the characteristics that relate to the perceived meaningfulness of the work itself. As indicated in this study, with regard to autonomy, it is important to remember that the more autonomy employees have, the higher level of energy and enthusiasm they may experience, which may result from the fact that such employees are more likely to make substantial effort while performing their work and try to persevere in it, even when facing certain difficulties (Kapica *et al*., 2022).

Similar findings have been reported in previous studies and discussed in the literature. For example, Saks (2006) found that core job characteristics positively influence job engagement, and Grobelna (2019) demonstrated a significant positive effect of task significance on hotel employees' work engagement in the hospitality industry. Christian *et al.* (2011) also indicated that task significance and variety are linked to engagement, suggesting a stronger correlation between work engagement and job characteristics that relate to the perceived meaningfulness of the work itself. Regarding autonomy, this study emphasized that employees with more autonomy tend to experience higher levels of energy and enthusiasm, likely because they are more motivated to exert effort and persevere in their tasks, even when facing difficulties (Kapica *et al.*, 2022).

Moreover, the correlation analysis showed that the higher work engagement, particularly within the dimension of dedication, the lower turnover intention hotel employees have. These findings align with previous research (Chen & Chen, 2012; Saks, 2006), including studies from the hospitality context (Karatepe, 2015; Karatepe *et al*., 2018; Lu *et al*., 2016) which also demonstrated that work engagement significantly reduces employees' turnover intentions.

CONCLUSIONS

Work engagement is a vital construct in management research due to its positive impact on organizations. Unfortunately, such research in the hospitality context remains relatively limited (Liu *et al*., 2017). The available empirical evidence on these relationships in the hospitality management literature is scarce, with very few studies addressing job characteristics in the hospitality industry (Ozturk *et al.,* 2014).

Therefore, the present study provides a deeper theoretical insight into the relationships between job characteristics and hotel employees' work engagement and their leaving intentions. The results of the previous research presented in this article as well as a review of extensive literature confirm that the work environment affects work engagement. The study's results showed that each of the tested job characteristics has its own particular importance in shaping work engagement and its individual dimensions.

This study aimed to expand knowledge in human resource management, especially by optimizing the work process in the hotel industry by enhancing the motivational potential of the core job characteristics. Specifically, this research adds to the existing research on hotel employees' work engagement (Karatepe *et al*., 2013; Chen *et al*., 2014; Grobelna, 2019; Karatepe *et al.,* 2018) and helps to understand this phenomenon better by testing the relationships between job characteristics, work engagement, and leaving intentions among hotel employees in Poland. Thus, this research offers new perspectives in the context of East-Central Europe, an area that still needs further empirical investigation.

The study also offers practical recommendations for hotel managers seeking effective methods to increase employee engagement and decrease staff turnover.

Notably, as regards work engagement, autonomy plays the most important role and should be increased in various ways, among others, by providing employees with additional responsibility or control appropriate to management (Paliga, 2021), which could make their work more interesting. Moreover, autonomy is key for fostering intrinsic motivation (Andrew *et al*., 2016), driven by true passion and interest in the work itself (Amabile, 1998). When people are intrinsically motivated, they engage in the work because of the challenges it brings and the genuine pleasure they derive from it. Providing employees with autonomy is crucial, especially in hotels, where employees deal with extremely high variability and unpredictability of the service process, which can increase service quality and recovery performance (Jaiswal, 2017), as employees experiencing more autonomy are more able to develop their own individual strategies and operational practices, implementing them successfully to increase the effectiveness of their work (Grobelna, 2019). Moreover, involving employees in decision-making can help them feel more valued in the organization (Andrew *et al.,* 2016). However, they should be adequately trained to boost their confidence in this process (Ro & Chen, 2011).

To increase the perceived importance and work completeness, tasks require logical organization to help employees achieve specific and satisfactory goals. Moreover, employees should understand how their work contributes to the overall success of the hotel, so managers should clearly communicate how individual effort affects guests' satisfaction and the overall functioning of the hotel and its reputation. Feedback from managers can help employees recognize their value in the organization (Lu *et al.,* 2016). Recognition programs, such as public acknowledgement, incentives, financial bonuses, etc. (Lu *et al.,* 2016) may further reinforce their conviction that their efforts are appreciated, valued, recognized, and respected.

Managers should also ensure that employees can perform a variety of tasks requiring different skills. A job rotation system could help employees acquire new skills and avoid monotony (Yang, 2010). Moreover, tasks should be combined or new ones introduced to diversify job responsibilities (Paliga, 2021). Rigorous recruitment and selection processes should be applied to hire candidates with appropriate skills, and new training programs should be regularly provided to address skill gaps (Andrew *et al.*, 2016). These should be regularly identified and determined within hotel organizations.

These actions should strengthen work engagement, which is likely to reduce turnover intentions and foster stronger bonds with the organization. However, this requires a systemic approach (Karinuada & Suwandana, 2022) that prioritizes employee engagement and well-being within human resource management strategies.

Improving employees' work engagement can contribute to better guest service, higher professional satisfaction, and lower staff turnover (Rumpoko *et al*., 2022), ultimately strengthening the hotel's competitive position in the contemporary market. Therefore, managers should particularly care about building a work environment with motivational potential that will be conducive to employees' work engagement. This study attempted to identify the relationships between selected job characteristics and hotel employees' engagement as well as its effects on their leaving intentions. The results confirmed the significant importance of the tested job characteristics in strengthening and boosting engagement, which may contribute to reducing employee turnover.

The study contributes to the hospitality management literature by expanding research on job characteristics and work engagement to a different context using data from frontline hotel employees in Poland. The results show that job characteristics are instrumental in designing roles that build the motivational potential of work, leading to higher engagement levels and reducing employees' intentions to leave.

However, this study also has some limitations. Firstly, as it is a case study, its results should not be generalized; they may refer only to the employees investigated in this study. However, the results may provide useful information for hotel managers on how to manage the motivational potential of work to increase employees' engagement and reduce their turnover. Hence, this study advances engagement theory and constitutes a basis for further extensive research. Further studies could expand the proposed model by incorporating other individual and organizational characteristics to examine their impact on work engagement and its different outcomes, both attitudinal and behavioural. It would also be worth extending the scope of the study to the whole country and considering less subjective measurement instruments.

Moreover, further research should investigate whether there is a relationship between the personalization of professional development, such as training tailored to employees' individual needs (*e.g.* using educational platforms with elements of gamification) and employee engagement. It would also be valuable to explore how and to what extent artificial intelligence (AI) can influence work in hospitality, particularly its effect on the nature of hotel jobs and, consequently, the level of employees' work engagement.

REFERENCES

Al-Tit, A., & Suifan, T. (2015). The Mediating Role of Job Characteristics in the Relationship between Organizational Commitment and Job Satisfaction. *International Journal of Business and Management, 10*, 215-222. https://doi.org/10.5539/ijbm.v10n9p215

Amabile, T.M. (1998). How to Kill Creativity. *Harvard Business Review*. Retrieved from https://hbr.org/1998/09/how-to-kill-creativity on January 12, 2024.

Andrew, L., Haris, N., Zakariah, H., & Zekaria, N.A.B. (2016). *Job Characteristics and Job Satisfaction Among Employees: A Case Study at Craun Research Sdn. Bhd*. Kuching, Sarawak.

Asghar, M., Gull, N., Tayyab, M., Zhijie, S., & Tao, X. (2020). Polychronicity at work: Work engagement as a mediator of the relationships between job outcomes. *Journal of Hospitality and Tourism Management, 45,* 470-478. https://doi.org/10.1016/j.jhtm.2020.10.002

Bakker, A.B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International, 13*(3), 209-223. https://doi.org/10.1108/13620430810870476

Bakker, A.B., Demerouti, E., Taris, T. W., Schaufeli, W.B., & Schreurs, P.J. (2003). A multigroup analysis of the job demands-resources model in four home care organizations. *International Journal of Stress Management, 10*(1). Retrieved from https://psycnet.apa.org/journals/str/10/1/16/ on January 12, 2024.

Bednarska, M. (2016). Satysfakcja z pracy i jej wpływ na lojalność wobec pracodawcy. Studium sektora HoReCa. *Organizacja i Kierowanie, 171*(1), 97-114. Retrieved from http://bazekon.icm.edu.pl/bazekon/element/bwmeta1.element.ekon-element-000171443376 on March 3, 2024.

Boella, M.J., & Goss-Turner, S. (2013). *Human resource management in the hospitality industry: A guide to best practice*. Routledge. https://doi.org/10.4324/9780203095584

Boshoff, C., & Allen, J. (2000). The influence of selected antecedents on frontline staff's perceptions of service recovery performance. *International Journal of Service Industry Management, 11*(1), 63-90. https://doi.org/10.1108/09564230010310295

Chang, J.-H., & Teng, C.-C. (2017). Intrinsic or extrinsic motivations for hospitality employees' creativity: The moderating role of organization-level regulatory focus. *International Journal of Hospitality Management, 60,* 133-141. https://doi.org/10.1016/j.ijhm.2016.10.003

Chen, C.-F., & Chen, S.-C. (2012). Burnout and Work Engagement Among Cabin Crew: Antecedents and Consequences. *The International Journal of Aviation Psychology, 22,* 41-58. https://doi.org/10.1080/10508414.2012.635125

Chen, C.-Y., Yen, C.-H., & Tsai, F. C. (2014). Job crafting and job engagement: The mediating role of person-job fit. *International Journal of Hospitality Management, 37,* 21-28. https://doi.org/10.1016/j.ijhm.2013.10.006

Choi, C.H., Kim, T., Lee, G., & Lee, S. (2014). Testing the stressor-strain-outcome model of customer-related social stressors in predicting emotional exhaustion, customer orientation and service recovery performance. *International Journal of Hospitality Management, 36*, 23-31. https://doi.org/10.1016/j.ijhm.2012.09.009

Choi, K. (2006). A Structural Relationship Analysis of Hotel Employees' Turnover Intention. *Asia Pacific Journal of Tourism Research, 11*(4), 321-337. https://doi.org/10.1080/10941660600931150

Choo, L.S. (2016). A Study of the Role of Work Engagement in Promoting Service-Oriented Organizational Citizenship Behavior in the Malaysian Hotel Sector. *Global Business and Organizational Excellence, 35*(4), 28-43. https://doi.org/10.1002/joe.21682

Christian, M.S., Garza, A.S., & Slaughter, J.E. (2011). Work Engagement: A Quantitative Review and Test of Its Relations with Task and Contextual Performance. *Personnel Psychology, 64*(1), 89-136. https://doi.org/10.1111/j.1744-6570.2010.01203.x

Derbis, R., & Baka, Ł. (2011). Znaczenie wsparcia społecznego i zaangażowania w pracę dla związku stresorów w pracy i wypalenia zawodowego. *Czasopismo Psychologiczne, 17*(2), 277-287.

Employee-turnover (2024). Retrieved from https://harver.com/blog/causes-of-employee-turnover-in-hospitality/ on February 14, 2024.

Faulkner, B., & Patiar, A. (1997). Workplace induced stress among operational staff in the hotel industry. *International Journal of Hospitality Management, 16*(1), 99-117. https://doi.org/10.1016/S0278-4319(96)00053-9

Ferreira, A.I., Martinez, L.F., Lamelas, J.P., & Rodrigues, R.I. (2017). Mediation of job embeddedness and satisfaction in the relationship between task characteristics and turnover: A multilevel study in Portuguese hotels. *International Journal of Contemporary Hospitality Management, 29*(1), 248-267. https://doi.org/10.1108/IJCHM-03-2015-0126

Glińska-Neweś, A., Haffer, R., Wińska, J., & Józefowicz, B. (2020). The Hospitality World in Poland: A Dynamic Industry in Search of Soft Skills. In *Shapes of Tourism Employment* (pp. 77-94). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119751342.ch6

Gordon, S., Tang, C.-H. (Hugo), Day, J., & Adler, H. (2019). Supervisor support and turnover in hotels: Does subjective well-being mediate the relationship?. *International Journal of Contemporary Hospitality Management, 31*(1), 496-512. https://doi.org/10.1108/IJCHM-10-2016-0565

Gray, P.S., Williamson, J.B., Karp, D.A., & Dalphin, J.R. (2007). The Research Imagination: An Introduction to Qualitative and Quantitative Methods. Cambridge University Press.

Grobelna, A. (2019). Effects of individual and job characteristics on hotel contact employees' work engagement and their performance outcomes: A case study from Poland. *International Journal of Contemporary Hospitality Management, 31*(1), 349-369. https://doi.org/10.1108/IJCHM-08-2017-0501

Grobelna, A., & Dolot, A. (2018). Understanding the Work Engagement Dimensions and Their Relationships with Hotel Service Quality Efficacy. *In International Conference on Tourism Research* (pp. 48-56). Academic Conferences International Limited.

Grobelna, A., & Wyszkowska-Wróbel, E. (2023). Promoting hotel employees' work engagement and its service outcomes: The critical role of intrinsic motivation. *International Journal of Management and Economics, 59*(3), 264-274. https://doi.org/10.2478/ijme-2023-0011

Ghorbannejad, P., & Esakhani, A. (2016). Capacity to engage: studying role of individual differences in work engagement – evidences from Iran. *Journal of Management Development, 35*(9), 1174-1183. https://doi.org/10.1108/JMD-02-2015-0029

Hackman, J.R., & Oldham, G.R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology, 60*(2), 159-170. https://doi.org/10.1037/h0076546

Hackman, J.R., & Oldham, G.R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250-279. Retrieved from https://www.sciencedirect.com/science/article/pii/0030507376900167 on April 1, 2024.

Hadi, R., & Adil, A. (2010). Job Characteristics as Predictors of Work Motivation and Job Satisfaction of Bank Employees. *Journal of the Indian Academy of Applied Psychology, 36,* 294-299. Retrieved from https://psycnet.apa.org/record/2011-19930-015 on April 1, 2024.

Harter, J.K., Schmidt, F.L., Killham, E.A., & Asplund, J.W. (2006). *Q12 meta-analysis*. Omaha, NE: Gallup.

Hsieh, J.Y. (2013). Impact of individual and organizational factors on job satisfaction: A comparison of multilevel models and multiple regression models using different data arrangements. *Journal of Management & Organization, 19*(1), 44-59. Retrieved from https://ideas.repec.org/a/cup/jomorg/v19y2013i01p44-59_00.html on April 1, 2024.

Jeznach, M., Tul - Krzyszczuk, A., & Niewęgłowska, N. (2016). The Importance of the Hotel Staff in Building Relationships with Customers. *Ekonomiczne Problemy Turystyki, 34,* 143-153. https://doi.org/10.18276/ept.2016.2.34-12

Huang, J. (2017, October). Employee Loyalty and Its Impact on Hotel Growth. In *7th International Conference on Management, Education, Information and Control (MEICI 2017)* (pp. 718-722). Atlantis Press.

Jaiswal, D., & Dhar, R.L. (2017). Impact of human resources practices on employee creativity in the hotel industry: The impact of job autonomy. *Journal of Human Resources in Hospitality & Tourism, 16*(1), 1-21. https://doi.org/10.1080/15332845.2016.1202035

Jung, H.S., & Yoon, H.H. (2010). What does work meaning to hospitality employees? The effects of meaningful work on employees' organizational commitment: The mediating role of job engagement. *International Journal of Hospitality Management*, *53*, 59-68. https://doi.org/10.1016/j.ijhm.2015.12.004

Kapica, Ł., Baka, Ł., & Stachura-Krzyształowicz, A. (2022). Job resources and work engagement: The mediating role of basic need satisfaction. *Workers' Health and Safety, 73*(5)*,* 407-416. https://doi.org/10.13075/mp.5893.01257

Karatepe, O., Karadas, G., Azar, A., & Naderiadib, N. (2013). Does Work Engagement Mediate the Effect of Polychronicity on Performance Outcomes? A Study in the Hospitality Industry in Northern Cyprus. *Journal of Human Resources in Hospitality & Tourism, 12,* 52-70. https://doi.org/10.1080/15332845.2013.723266

Karatepe, O.M., & Kilic, H. (2007). Relationships of Supervisor Support and Conflicts in the Work – family Interface with the Selected Job Outcomes of Frontline Employees. *Tourism Management, 28*(1), 238-252. https://doi.org/10.1016/j.tourman.2005.12.019

Karatepe, O.M. (2013). High-performance work practices and hotel employee performance: The mediation of work engagement. *International Journal of Hospitality Management, 32,* 132-140. https://doi.org/10.1016/j.ijhm.2012.05.003

Karatepe, O.M. (2015). The effects of family support and work engagement on organizationally valued job outcomes. Tourism: *An International Interdisciplinary Journal, 63*(4), 447-464. Retrieved from https://hrcak.srce.hr/149998 on April 1, 2024.

Karatepe, O.M., & Ngeche, R.N. (2012). Does job embeddedness mediate the effect of work engagement on job outcomes? A study of hotel employees in Cameroon. *Journal of Hospitality Marketing and Management*, *21*(4), 440-461. https://doi.org/10.1080/19368623.2012.626730

Karatepe, O.M., & Olugbade, O.A. (2009). The effects of job and personal resources on hotel employees' work engagement. *International Journal of Hospitality Management, 28*(4), 504-512. https://doi.org/10.1016/j.ijhm.2009.02.003

Karatepe, O.M., & Uludag, O. (2007). Conflict, exhaustion, and motivation: A study of frontline employees in Northern Cyprus hotels. *International Journal of Hospitality Management, 26*(3), 645-665. https://doi.org/10.1016/j.ijhm.2006.05.006

Karatepe, O.M., Yavas, U., Babakus, E., & Deitz, G.D. (2018). The effects of organizational and personal resources on stress, engagement, and job outcomes. *International Journal of Hospitality Management, 74*, 147-161. https://doi.org/10.1016/j.ijhm.2018.04.005

Karatepe, O., Uludag, O., Menevis, I., Hadzimehmedagic, L., & Baddar, L. (2006). The effects of selected individual characteristics on frontline employee performance and job satisfaction. *Tourism Management, 27*(4), 547-560. https://doi.org/10.1016/j.tourman.2005.02.009

Karinuada, I.K.G., & Suwandana, I.G.M. (2022). The Role of Organizational Commitment as a Mediation Variable on The Effect of Job Stress on Turnover Intention at Hotel Dafam Savvoya Seminyak Badung, Indonesia. *European Journal of Business and Management Research, 7*(6), Article 6. https://doi.org/10.24018/ejbmr.2022.7.6.1715

Kaushal, V., & Srivastava, S. (2021). Hospitality and tourism industry amid COVID-19 pandemic: Perspectives on challenges and learnings from India. *International Journal of Hospitality Management, 92*. https://doi.org/10.1016/j.ijhm.2020.102707

Kim, H.J. (2008). Hotel service providers' emotional labor: The antecedents and effects on burnout. *International Journal of Hospitality Management, 27*(2), 151-161. https://doi.org/10.1016/j.ijhm.2007.07.019

Kim, K., & Jogaratnam, G. (2010). Effects of Individual and Organizational Factors on Job Satisfaction and Intent to Stay in the Hotel and Restaurant Industry. *Journal of Human Resources in Hospitality & Tourism, 10*(3), 318-339. https://doi.org/10.1080/15332845.2010.487043

Kim, H.J., Shin, K.H., & Swanger, N. (2009). Burnout and engagement: A comparative analysis using the Big Five personality dimensions. *International Journal of Hospitality Management, 1*(28), 96-104. https://doi.org/10.1016/j.ijhm.2008.06.001

Kumar, A., Abbas, Q., Ghumro, I.A., & Zeeshan, A. (2011). Job characteristics as predictors of job satisfaction and motivation. *Asian Journal of Business and Management Sciences, 1*(4), 206-216.

Kusluvan, S. (2003). Characteristics of employment and human resource management in the tourism and hospitality industry. In S. Kusluvan (Ed.), *Managing Employee Attitudes and Behaviors in the Tourism and Hospitality Industry* (pp. 3-24), Nova Publisher: Hauppauge, NY, USA, 2003.

Lam, W., & Chen, Z. (2012). When I put on my service mask: Determinants and outcomes of emotional labor among hotel service providers according to affective event theory. *International Journal of Hospitality Management, 31*(1), 3-11. https://doi.org/10.1016/j.ijhm.2011.04.009

Lee, J., & Ok, C. (2015). Drivers of work engagement: An examination of core self-evaluations and psychological climate among hotel employees. *International Journal of Hospitality Management, 44,* 84-98. https://doi.org/10.1016/j.ijhm.2014.10.008

Lee-Ross, D. (2005). Perceived job characteristics and internal work motivation: An exploratory cross-cultural analysis of the motivational antecedents of hotel workers in Mauritius and Australia. *Journal of Management Development, 24,* 253-266. https://doi.org/10.1108/02621710510584062

Lewicka, D. (2016). Jak zatrzymać wartościowych pracowników w organizacji? Wyzwania dla strategicznego ZKL. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 444,* 274-284. Retrieved from https://www.ceeol.com/search/article-detail?id=493772 on February 18, 2024.

Liu, J., Cho, S., & Putra, E.D. (2017). The moderating effect of self-efficacy and gender on work engagement for restaurant employees in the United States. *International Journal of Contemporary Hospitality Management, 29*(1), 624-642. https://doi.org/10.1108/IJCHM-10-2015-0539

Lu, L., Lu, A.C.C., Gursoy, D., & Neale, N.R. (2016). Work engagement, job satisfaction, and turnover intentions: A comparison between supervisors and line-level employees. *International Journal of Contemporary Hospitality Management, 28*(4), 737-761. https://doi.org/10.1108/IJCHM-07-2014-0360

Morris, M.G., & Venkatesh, V. (2010). Job Characteristics and Job Satisfaction: Understanding the Role of Enterprise Resource Planning System Implementation. *MIS Quarterly, 34*(1), 143-161. https://doi.org/10.2307/20721418

Nemmaniwar, A., & Deshpande, M.S. (2016). Job satisfaction among hospital employees: a review of literature. *IOSR Journal of Business and Management* (IOSR-JBM)*, 18*(6), 27-31. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.iosrjournals.org/iosr-jbm/papers/Vol18-issue6/Version-3/D1806032731.pdf on April 2, 2023.

Nunnally, J.C. (1978). *Psychometric Theory*. McGraw-Hill.

Ozturk, A.B., Hancer, M., & Im, J.Y. (2014). Job Characteristics, Job Satisfaction, and Organizational Commitment for Hotel Workers in Turkey. *Journal of Hospitality Marketing & Management, 23*(3), *294-313.* https://doi.org/10.1080/19368623.2013.796866

Paliga, M. (2021). *Satysfakcja z pracy i wydajność pracowników. Relacja (nie)oczekiwana*. University of Silesia Press. https://doi.org/10.31261/PN.4061

Park, J., & Gursoy, D. (2012). Generation effects on work engagement among U.S. hotel employees. *International Journal of Hospitality Management, 31*(4)*,* 1195-1202. https://doi.org/10.1016/j.ijhm.2012.02.007

Putra, E.D., Cho, S., & Liu J. (2015). Extrinsic and intrinsic motivation on work engagement in the hospitality industry: Test of motivation crowding theory. *Tourism and Hospitality Research, 0*(0) 1-14. https://doi.org/10.1177/1467358415613393

Punch, K.F. (2013). *Introduction to social research: Quantitative and qualitative approaches*. SAGE.

Ro, H., & Chen, P-J. (2011). Empowerment in hospitality organizations: Customer orientation and organizational support, *International Journal of Hospitality Management, 30*(2), 422-428. https://doi.org/10.1016/j.ijhm.2010.09.003

Rozporządzenie Ministra Gospodarki i Pracy z dnia 19 sierpnia 2004 roku w sprawie obiektów hotelarskich i innych obiektów, w których są świadczone usługi hotelarskie (consolidated text). *Journal of Laws 2011 No 259* (1553).

Rumpoko, H., Budiyanto, & Asyik, N. (2022). The Influence of Organizational Environment, Work Motivation and Organizational Commitment on Intention to Quit Through Job Satisfaction of Four-Star Hotel Employees in Surabaya. *East Asian Journal of Multidisciplinary Research, 1,* 2321-2330. https://doi.org/10.55927/eajmr.v1i10.1704

Saks, A.M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology, 21*(7), 600-619. https://doi.org/10.1108/02683940610690169

Salanova, M., Agut, S., & Peiró, J.M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology, 90*(6), 1217. Retrieved from https://psycnet.apa.org/journals/apl/90/6/1217 on February 14, 2024.

Sarhan, N., Harb, A., Shrafat, F., & Alhusban, M. (2020). The effect of organizational culture on the organizational commitment: Evidence from hotel industry. *Management Science Letters, 10*(1), 183-196. Retrieved from http://growingscience.com/beta/msl/3400-the-effect-of-organizational-culture-on-the-organizational-commitment-evidence-from-hotel-industry.html on February 14, 2024.

Sashkin, M. (1982). Work Redesign J.R. Hackman and G. R. Oldham Reading, MA: Addison-Wesley, 1980. *Group & Organization Studies, 7*(1), 121-124. https://doi.org/10.1177/105960118200700110

Schaufeli, W.B. (2017). Applying the job demands-resources model. *Organizational Dynamics, 2*(46), 120-132. https://doi.org/10.1016/j.orgdyn.2017.04.008

Schaufeli, W.B., & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*(3)*,* 293-315. https://doi.org/10.1002/job.248

Schaufeli, W.B., Bakker, A.B., & Salanova, M. (2006). The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study. *Educational and Psychological Measurement, 66*(4), 701-716. https://doi.org/10.1177/0013164405282471

Sultan, S. (2012). Examining the Job Characteristics: A Matter of Employees' Work Motivation and Job Satisfaction. *Journal of Behavioural Sciences, 22*(2), 31-42.

State of the Global Workplace. The Voice Of The World's Employees (2024). Gallup Report.

Taylor, S. (2002). *The employee retention handbook*. CIPD Publishing

Todorov, D. (2017). *Turnover Problems with Hotel Service Staff in Bulgaria*. Yearbook of Varna University of Management.

Travel & Tourism Economic Impact. Global Trends. (2022). Retrieved from https://wttc.org/Portals/0/Documents/Reports/2022/EIR2022-Global%20Trends.pdf on February 11, 2024.

Xanthopoulou, D., Bakker, A.B., Demerouti, E., & Schaufeli, W.B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology, 82*(1), 183-200. https://doi.org/10.1348/096317908X285633

Yavas, U., Babakus, E., & Karatepe, O.M. (2008). Attitudinal and behavioral consequences of work-family conflict and family-work conflict: Does gender matter?. *International Journal of Service Industry Management, 19*(1), 7-31. https://doi.org/10.1108/09564230810855699

Yang, J.T. (2010). Antecedents and consequences of job satisfaction*. International Journal of Hospitality Management*, *29*(4), 609-619. https://doi.org/10.1016/j.ijhm.2009.11.002

Zhao, X. (Roy), Ghiselli, R., Law, R., & Ma, J. (2016). Motivating frontline employees: Role of job characteristics in work and life satisfaction. *Journal of Hospitality and Tourism Management, 27,* 27-38. https://doi.org/10.1016/j.jhtm.2016.01.010

Authors

The contribution shares of authors were: AG – 85% (conceptualisation, literature writing, methodology, data collection, data cleaning and preparation, discussion); A.T-K – 15% (conceptualisation, literature writing, discussion).

Aleksandra Grobelna
PhD in the field of economy; an Assistant Professor at Gdynia Maritime University (Poland) at the Faculty of Management and Quality Science; a member of the Polish Economics Society. Her scientific studies focus particularly on human resource management and service quality management in Tourism and Hospitality (T&H). She regularly publishes peer-reviewed academic papers in quality journals and presents her research results at national and international scientific conferences. In her research projects, she cooperates closely with T&H business practitioners helping them to solve topical management problems.
Correspondence to: Aleksandra Grobelna, PhD, Gdynia Maritime University, Faculty of Management and Quality Science, ul. Morska 81-87, 81-225 Gdynia, Poland, e-mail: a.grobelna@wznj.umg.edu.pl
ORCID https://orcid.org/0000-0002-1765-6757

Anna Tokarz-Kocik
An Associate Professor at the University of Szczecin (Faculty of Economics, Finance and Management, Institute of Management); a member of the Polish Economics Society. Her research interests focus on human capital in the service sector. She is the author of numerous publications (books and articles) in the field of human resources management in service enterprises (especially hotel enterprises).
Correspondence to: Anna Tokarz-Kocik, Assoc. Prof., University of Szczecin, Institute of Management, ul. Cukrowa 8, 71-004 Szczecin, Poland, e-mail: anna.tokarz-kocik@usz.edu.pl
ORCID https://orcid.org/0000-0002-4129-045X

Acknowledgements and Financial Disclosure

This research was partly co-financed within the framework of research project No. WZNJ/2024/PZ/07 and by the Minister of Science under the 'Regional Excellence Initiative.'

Conflict of Interest

This research was partly co-financed within the research support of the Faculty of Management and Quality Science, Gdynia Maritime University, and by the Minister of Science under the 'Regional Excellence Initiative.'

Copyright and License

This article is published under the terms of
the Creative Commons Attribution (CC BY 4.0) License
http://creativecommons.org/licenses/by/4.0/

Published by Krakow University of Economics – Krakow, Poland

The publisher:

Department of International Trade
Centre for Strategic and International Entrepreneurship
Krakow Uniwersity of Economics
ul. Rakowicka 27, 31-510 Krakow, Poland
phone +12 293 5929, -5376, fax +12 293 5037
e-mail: ier@uek.krakow.pl
http://ier.uek.krakow.pl

KRAKOW
UNIVERSITY
OF ECONOMICS

Centre for Strategic and International Entrepreneurship

INTERNATIONAL
TRADE
DEPARTMENT

ISSN 2658-1841