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Department of International Trade
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Conceptual insights into the diverse pathways in migrant entrepreneurship

Aleksandra Gawęł, Katarzyna Mroczek-Dąbrowska, Agnieszka Głodowska, Krzysztof Wach

ABSTRACT

Objective: The objective of the article is to conceptualize and systematize the most relevant dimensions and issues of migrant entrepreneurship based on the literature review.

Research Design & Methods: In the article, we applied a narrative literature review. We identified relevant publications by indicating keywords that allowed for the selection of publications relating to the examined problem. We assumed an 11-year research period (2013-2023) and selected the Scopus database for the articles selection.

Findings: The study revealed that although there are similarities among various categories of migrant entrepreneurs, they also display notable differences in their preceding circumstances, variables contributing to their success, and characteristics that moderate their outcomes. The study recognises and conceptualises diverse migration motivation (forced, voluntary, or next generation), and dominant embeddedness (home country, host country or international embeddedness) as factors impacting the key characteristics of migrant entrepreneurship types.

Implications & Recommendations: The article suggests that customised assistance programmes are essential for various categories of migrant entrepreneurs, considering their distinct motivations and integration into the community. The recommendation is to develop focused programmes that target the individual issues encountered by each group, promoting both their assimilation and global economic growth.

Contribution & Value Added: The significance and merit of this article reside in its comprehensive review of several categories of migrant entrepreneurship including transnational, diaspora, ethnic, refugee, and returnee entrepreneurs. It helps to develop a more nuanced understanding of these entrepreneurs. This framework facilitates the identification of various entrepreneurial trajectories and the distinct obstacles and prospects encountered by diverse migrant communities.

Article type: literature review

Keywords: immigrant entrepreneurship; transnational entrepreneurship; diaspora entrepreneurship; ethnic entrepreneurship; refugee entrepreneurship; returnee entrepreneurship

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INTRODUCTION

In recent years, entrepreneurial activities undertaken by people with a migrant background in the host country referred to as migrant entrepreneurship, have attracted increasing attention from researchers and practitioners (Sinkovics & Reuber, 2021; Brzozowski, 2019). The escalation of migration and its diversity (van Mol & Valk, 2016; Castles & Miller, 2003) contributes to reflection on various dimensions of migration and its motives. Migrants are often identified with voluntary economic-based motives of international mobility, but nowadays forced migration has been increasing, either due to the political situation or unacceptable living conditions. In turn, this raised the question of whether different categories of migrants can undertake entrepreneurial activities and what differences exist between these groups of migrants in the context of their entrepreneurship. Migrant entrepreneurship is not uniform,

as it may differ, in migration motives, specific culture, individual values, desires, and beliefs. All these dimensions translate into differences in migrant entrepreneurship.

The objective of the article is to conceptualize and systematize the most relevant dimensions and issues of migrant entrepreneurship based on the literature review. We decided to answer the following research questions:

- RQ1:** What are the features that shape the diversity of migrant entrepreneurship forms (transnational, diaspora, ethnic, refugee, and returnee) discussed in the literature?
- RQ2:** What are the key challenges and opportunities faced by migrant entrepreneurs across various categories (transnational, diaspora, ethnic, refugee, and returnee) discussed in the literature, and how do they navigate these to achieve entrepreneurial success?

We aimed to identify the main themes regarding migrant entrepreneurship already existing in the literature. Thus, we used a narrative literature review, which is a selective review technique intended to identify and summarize prior knowledge. A narrative review of the literature on the dimensions and types of migrant entrepreneurship is important for three main reasons. Firstly, the exponential development of migrant entrepreneurship research observed in recent years makes it an appropriate time to summarize the current state of knowledge on this subject in the context of the identified subcategories developed within the framework of migrant entrepreneurship research. Moreover, there is some blurring and overlapping of terms, *e.g.* ethnic entrepreneurship, diaspora entrepreneurship, and refugee entrepreneurship, which is not entirely correct. In our approach, we make quite precise demarcation, which is intended to enable a better understanding of the theoretical approaches used to study different types of migrant entrepreneurship. Secondly, considering the scale of the migration process and the need to include migrants in the economic life of the hosting countries and returnees in their home countries, it is particularly important to identify important aspects regarding the specificity of individual migrant groups and their entrepreneurial orientation. This is particularly important for decision-makers, who will be more conscious and effective in creating migration and entrepreneurship policies at the same time. Thirdly, the conclusions from the research may also be useful for migrant entrepreneurs themselves, local entrepreneurs who can potentially cooperate and the public authorities aimed at supporting migrant entrepreneurs. By identifying individual migrant groups, it is possible to capture their invaluable specificity, which may facilitate better use of their resources to develop entrepreneurship. Taking all this into account, we would like this study to contribute to the development of research, policy, and economic practice.

The article consists of three sections. Firstly, we will elaborate on the methodological assumptions by explaining how our narrative literature review was prepared. Secondly, we will systematize and discuss the various dimensions of migrant entrepreneurship such as (i) transnational entrepreneurship, (ii) diaspora entrepreneurship, (iii) ethnic entrepreneurship, (iv) refugee entrepreneurship, and (v) returnee entrepreneurship. Thirdly, we will present discussion and conclusions.

MATERIAL AND METHODS

To answer the research questions, we conducted a literature review. Literature reviews are distinct from original articles because they do not present novel facts. Instead, their objective is to assess existing publications and provide the most dependable information presently accessible (Paré *et al.*, 2015).

Among the several types of literature review explored in the entrepreneurship field of research (Wach, 2020; Zadeh, 2022), we used the narrative literature review (Wach & Głodowska, 2022), as we aimed to summarise and synthesise the most relevant topics in the entrepreneurial activities of migrants. The study utilised a methodology of narrative literature review, which assumes the identification of the current knowledge to map the field (Psoinos, 2018) rather than its generalisation (Paré *et al.*, 2015; Juntunen & Lehenkari, 2021; Kafetzopoulos, 2022). A narrative literature review is a comprehensive and impartial analysis of the current knowledge on a specific topic, aimed at building theory, through the iterative and non-structured process of conducting the review with careful consideration

and discernment (Juntunen & Lehenkari, 2021). This research method is used in social sciences, including business and management (Juntunen & Lehenkari, 2021; Kafetzopoulos, 2022; Zonneveld *et al.*, 2021; Mukherji & Bhatnagar, 2022), and migration (Psoinos, 2018; Van Holen *et al.*, 2020). Our choice of the review method followed also the opinion that a narrative review should be used to interpret a large and diverse body of literature with different authors approaching the topic (Zonneveld *et al.*, 2021), as the diverse types of migrant entrepreneurship.

In this study, a thorough examination of existing literature related to migrant entrepreneurship and desk research was undertaken to provide a conceptual framework. The research queries and theoretical framework were developed by a thorough analysis of pertinent literature and desk research, given that the topic is relatively novel in the realm of economics and business. Based on the Scopus database, we identified articles using the following keywords: 'migrant entrepreneurship,' 'transnational entrepreneurship,' 'diaspora entrepreneurship,' 'ethnic entrepreneurship,' 'refugee entrepreneurship,' and 'returnee entrepreneurship.' Each of these keywords was used for independent search. The search was done within articles' titles, abstracts and keywords. The selection criteria were related to three disciplines: (1) social sciences, (2) business, management and accounting, (3) and economics, econometrics and finance. We limited the literature review by selecting only articles published in English in the years 2013-2023.

The choice of Scopus as the database of the articles was motivated by the analysis of the most prestigious journals, instead of investigating the platforms of publishers. As the majority of journals are indexed both in Web of Science and Scopus, we chose only one database. We also limit the years of publications to the last 10 years, to be able to identify the most currently published articles to analyse the state-of-the art in the field of migrant entrepreneurship (Table 1).

Table 1. Results of the search process, articles published in English in the years 2013-2023

Keywords	All disciplines	Social sciences	Business, management and accounting	Economics, econometrics and finance
Migrant entrepreneurship	555	326	219	170
Transnational entrepreneurship	294	198	113	75
Diaspora entrepreneurship	129	60	66	40
Ethnic entrepreneurship	531	270	263	161
Refugee entrepreneurship	159	79	78	45
Returnee entrepreneurship	84	35	46	21

Source: own study.

Having identified the articles, first, we analysed their titles and abstracts. Then, we selected about 60 articles as the most representative ones focusing on core aspects of each of the pathways of migrant entrepreneurship. Next, based on them, we followed with the analytical work to recognise the topics of research on entrepreneurship among migrants.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Migrant Entrepreneurship

Migration (both immigration and emigration) is part of the economy and its history dates back to ancient times. Migration has been present in the history of Europe permanently, especially when we discuss the Old and the New World (van Mol & Valk, 2016). The 20th century has been commonly referred to as 'the age of migration' (Castles & Miller, 2003). Currently, we have been experiencing intensive migrations in Europe.

Considering migrant entrepreneurship in the context of economic theory, we can assume that international migration is an integral part of international economics, and migrant entrepreneurship is a part of entrepreneurship. Going further, we can successfully assume that migrant entrepreneurship, especially its various dimensions, is an integral part of international entrepreneurship research or even international business studies (Sinkovics & Reuber, 2021). Migrant entrepreneurship has become a crucial focus of investigation in the wider field of entrepreneurship studies (Brzozowski, 2019). It ex-

plores the involvement of migrants in entrepreneurial endeavours and the impact of their distinct experiences and backgrounds on these activities. This overview offers a succinct analysis of the theoretical underpinnings and important research discoveries in this field, highlighting the substantial impact of migrant entrepreneurs on global entrepreneurship and economies (Egerova, 2021). Migrant entrepreneurship is a complex and diversified area of inquiry that is supported by strong theoretical frameworks and expanded by a wide range of empirical studies (Sinkovics, & Reuber, 2021).

Migrant entrepreneurs play a crucial role in promoting economic growth by spearheading innovation and facilitating economic integration. To fully use the potential of migrant entrepreneurship and ensure its contribution to equitable and sustainable economic growth, it is crucial to continue conducting research and implementing supportive policies (Bolzani, 2020). Research regularly demonstrates that migrant entrepreneurs make substantial contributions to the economies of host countries (Jones *et al.*, 2019). Entrepreneurs generate employment opportunities, foster creativity, and make significant contributions to the expansion of the economy. Research has indicated that firms owned by migrants frequently bring forth novel products and services, intensify competition, and contribute to the broadening of local economies. In addition, migrant entrepreneurs have a higher probability of hiring other migrants, so promoting the integration and economic progress of their communities.

Migrant entrepreneurs encounter a multitude of obstacles, despite their valuable contributions. These factors encompass restricted availability of funding, cultural and linguistic obstacles, and prejudice. Studies suggest that these barriers can hinder the expansion and long-term viability of businesses. Nevertheless, migrant entrepreneurs frequently demonstrate exceptional tenacity and adaptation, utilising inventive tactics to overcome these obstacles (Berntsen *et al.*, 2022).

Policy interventions are essential for providing significant support to migrant entrepreneurship. Effective policies encompass the provision of financial access, the provision of business training and mentorship programmes, and the facilitation of the recognition of international degrees and abilities (Denney *et al.*, 2023). Research highlights the significance of inclusive policies that specifically target the requirements of migrant entrepreneurs, facilitating their assimilation and achievement within the host economy (Zou *et al.*, 2023).

Table 2. Various types of migrant entrepreneurs and their basic definitions

Type	Definition
Conceptualizations based on the voluntariness of movement and the time horizon of residence in the host country	
Immigrant entrepreneur	A foreign-born individual (and their children) who establishes a business in the host country and is likely to remain in the host country permanently (Brzozowski <i>et al.</i> , 2017).
Migrant entrepreneur	A foreign-born individual who moves to another country for at least 12 months and establishes a business; can include within-country migrants (United Nations, 1998).
Refugee entrepreneur	A foreign-born individual who flees their country under threat moves to another country for at least 12 months and establishes a business there (Christensen <i>et al.</i> , 2020).
Return migrant entrepreneur ('returnee')	A domestic-born individual who lives abroad for a period and then moves back to their home country and establishes a business there (Bai <i>et al.</i> , 2018).
Conceptualizations based on ethnicity and access to co-ethnic networks	
Ethnic entrepreneur	An individual who establishes a business and belongs to an ethnic minority. This category extends beyond first and second-generation to include indigenous minorities (Barrett & Vershinina, 2017; Glinka, 2018).
Diaspora entrepreneur	An individual who establishes a business and has access to a diaspora network across multiple geographies. This category extends beyond the first and second generations (Brzozowski <i>et al.</i> , 2017; Elo <i>et al.</i> , 2019; Kurt <i>et al.</i> , 2020).
Conceptualization based on cross-border ability	
Transnational entrepreneur	An individual who (a) migrated from one country to another, b) can maintain and mobilize social networks and resources in a cross-national space, and (c) is conducting business in a cross-national context (Brzozowski <i>et al.</i> , 2017; Drori <i>et al.</i> , 2009).

Source: (Sinkovics & Reuber, 2021, p. 3).

Migrant entrepreneurship has its own various dimensions based on different classification criteria (Table 2). In this article, we focus, elaborate on and discuss the following five migrant entrepreneurship dimensions (i) transnational entrepreneurship, (ii) diaspora entrepreneurship, (iii) ethnic entrepreneurship, (iv) refugee entrepreneurship and (v) returnee entrepreneurship.

Transnational Entrepreneurship

Transnationalism is associated with cross-border movements and relations, both social, economic or cultural ones, and therefore migrant entrepreneurs conducting international business activities are understood as transnational entrepreneurs (Sommer & Gamper, 2018). Most often, transnational entrepreneurs are those who migrate from their country of origin, run their companies in a country of residence based on business links between both countries (Aluko *et al.*, 2022; Brzozowski *et al.*, 2017), being embedded in multiple socio-economic contexts (Harima & Baron, 2020), at least of two countries (Veréb & Ferreira, 2018). Growing globalisation and international mobility of people contribute to the increase in exchanges between their countries of origin and residence (Von Bloh *et al.*, 2020). The development of digital technologies (Sufyan *et al.*, 2023), digital communication tools and the availability of travelling (Solano *et al.*, 2022) are enablers of cross-countries business operations of transnational entrepreneurs.

The connection between the home and host countries is a fundamental aspect of the business activities of transnational entrepreneurs who act within these dual social realms and multi-layer identification (Kabbara & Zucchella, 2023). Dual affiliation is the core characteristic of transnational entrepreneurs, which differentiates them from ethnic or international entrepreneurs (Sommer & Gamper, 2018). The ability to operate in the multiple embeddedness of countries and societies distinguishes transnational entrepreneurs from ethnic entrepreneurs, while migration experience – from international entrepreneurs (Sandoz *et al.*, 2022). In the narrow meaning, transnational entrepreneurship refers to regular cross-border business operations, while in the broad understanding – to occasional ones (Sommer & Gamper, 2018).

The migration journey enables transnational entrepreneurs to confront diverse institutional environments and develop distinctive human and social capital (Harima & Baron, 2020). Mixed embeddedness is an often-used approach to discuss the business activities of transnational entrepreneurs (Solano *et al.*, 2022) and highlight their experience in acting in a variety of social and institutional contexts (Yamamura & Lassalle, 2022). Dual presence in countries of origin and residence can potentially enable transnational entrepreneurs to benefit from networks and resources in both environments (Von Bloh *et al.*, 2020), contributing to their competitive advantage (Veréb & Ferreira, 2018). The propensity for transnational entrepreneurship is affected by factors such as length of residence, type of transnational ties and network size (Brzozowski *et al.*, 2017). The embeddedness in co-ethnic networks and prior entrepreneurial experience are also significant for transnational migrant entrepreneurs to overcome the liability of being an outsider in a host country (Aluko *et al.*, 2022).

Despite its lack of status as an independent research field (Harima & Baron, 2020; Yamamura & Lassalle, 2022), several research trends have been discovered in the study of transnational entrepreneurship as the identification of advantages and determinants of being a transnational entrepreneur, the role of transnational networks, the impact of transnational entrepreneurship on countries of origin and residence, and factors enabling success (Sandoz *et al.*, 2022).

Diaspora Entrepreneurship

The term diaspora has Greek origin and is applied to migrants and their descendants, who feel strongly and emotionally attached to their country of origin (Stoyanov *et al.*, 2018). Diaspora entrepreneurs are essentially migrants and their descendants who undertake entrepreneurial ventures based on their 'social collectively phenomenon,' *i.e.* the ability to sustain a sense of internal cohesion and relationship with 'a real or imagined homeland' (Adamson & Demetriou, 2007, p. 497). Although the term 'diaspora entrepreneurship' has been often used interchangeably with transnational, ethnic or refugee entrepreneurship, the phenomenon only partially overlaps with them whilst strongly focusing on the diasporan's multiple

affiliations to cultures and places (Syrett & Keles, 2022) often described as ‘multicultural hybridism’ (Shinnie *et al.*, 2021), their collective sense of belonging and timeframe (first and next generation diasporans).

Diasporans operate in a specific transnational space that stretches beyond the home and host country (Elo *et al.*, 2022). This means that they are not cross-border focused but internationally embedded features triggered by decades of migration and globalization effect. At the same time, diaspora entrepreneurship is not defined by the location of activities; entrepreneurs can operate locally but with the support of vast diaspora networks embedding the transnational space in the specificity of activities rather than their geographical scope (Stoyanov *et al.*, 2018). The fact the entrepreneurs stem from the diaspora community facilitates their market entry through networking effect as well as knowledge and resource sharing. Entrepreneurs often signal their multicultural belonging to ensure an identity-driven competitive edge. Communities also hold bridging capacities, *i.e.* they empower entrepreneurial initiatives in the local environments and similarly facilitate such undertakings for transnational entrepreneurs outside their host country.

Diaspora entrepreneurship and especially transnational diaspora entrepreneurship is highly defined by its context: the legal status of the migrants, heritage and diaspora generations, scope of the activities and customer focus (mainstream vs. ethnic customer), location of the business activity (Gurău *et al.*, 2020). With the increasingly volatile geopolitical situation globally, the meaning of the diaspora entrepreneurship with its ‘flows and re-inflows of (...) capital and spatiotemporally connected venturing’ (Elo *et al.*, 2022, p. 9) is bound to gain significance. It has interdisciplinary angles, including international business, migration policies, political economy and regional development elements.

Ethnic Entrepreneurship

Ethnicity is important in immigrant entrepreneurship. It is related to the identity of immigrants, which connects them with the community in similar features of culture, tradition, language, origin, or race. Ethnicity determines the specificity of the group, co-creating strong bonds between its members and, in a way, creating a community of ‘one’s own’ (Orozco, 2021). Ethnic minorities in the host country create market opportunities through the preservation of the culture and traditions of the country of origin, as well as the existing demand for community-specific goods (Moro *et al.*, 2023). It often happens that in many areas of meeting their needs, ethnic communities in the host country are served by representatives of a given ethnic group, which is undoubtedly influenced by the ease of establishing contacts among a given group, knowledge of preferences, and a kind of hermeticity (Jugert *et al.*, 2022). The conceptualization of ethnic entrepreneurship is quite diverse. For example, following Valdez (2016) or Honig (2020), it can be defined very generally as running a business in the host country by a member of the ethnic group or establishing businesses by immigrants in the countries where they settled and introducing their products and services from distant countries. Ethnic entrepreneurship is defined in more detail by Margaça and Rodrigues (2023) as a business activity conducted by people of different ethnic, cultural, and religious origins. The authors point to the unfavourable conditions of the host country from the perspective of the migrating ethnic minority, such as cultural differences, language barriers, discrimination, and social exclusion, as the main concept pushing people to pursue entrepreneurship.

It follows that there are two factors behind ethnic entrepreneurship: 1) necessity-driven, which pushes people to engage in entrepreneurial activities due to discrimination in the labour market, and 2) opportunity-driven, which encourages entrepreneurial activities dedicated to a given ethnic group. Verver *et al.* (2019) characterize ethnic entrepreneurship as dependent and low-value. Ethnic companies have a range of influence on the local minority market, usually defined based on ethnic origin (ethnic enclave). This creates the need to rely on customers and employees from the same ethnic group. The most popular and obvious examples of economic activity of ethnic entrepreneurs are the catering industry, but it can also be the fashion industry, cosmetics industry, etc. An important feature, however, is the direct connection with the country of origin, because ethnic entrepreneurs generate rent based on the knowledge of their tastes and preferences, customers but also access to original products and know-how. Another feature of ethnic entrepreneurship is its hermetic nature, which is manifested, for example, in the fact that they create jobs for themselves and their native population.

Ethnic entrepreneurship is largely based on the foundations of solidarity, loyalty, and trust (Rath & Schutiens, 2019; Margaça & Rodrigues, 2023).

Research on ethnic entrepreneurship is moving toward understanding the context of ethnic entrepreneurship and comparative studies of different ethnic groups. Moreover, attention is focused on creating various types of incentives for entrepreneurial activities among ethnic minorities and the survival mechanisms of the companies they establish (Rath & Schutiens, 2019).

Refugee Entrepreneurship

Refugee entrepreneurship is gaining increasing interest among researchers as a separate research trend alongside immigrant entrepreneurship. This involves escalating forced migration for political reasons. A refugee is a person who is outside their country of nationality or permanent residence and has a reasonable fear of being persecuted on the grounds of race, religion, nationality, membership of a social group, or political opinion in their country of origin (UNHCR, 2024). Therefore, it is clear that refugee migrants differ from voluntary migrants primarily in the motivation behind their mobility to host countries (Bizri, 2017). Voluntary immigrants move to new countries in search of new opportunities and, above all, the desire to improve their standard of living. In turn, refugees forcefully move to new host countries to survive in life-threatening situations, and their main motivation is the life safety of themselves and their families (Zehra & Usmani, 2021). This motivation also differentiates other factors in the mobility of voluntary and involuntary immigrants, such as their legal status. Voluntary immigrants can move to another country or return to their homeland, while refugees most often apply for asylum, and their freedom of movement is limited until their legal status is legalized. The receiving country also takes responsibility for refugees by granting them social rights and benefits, which is not due to voluntary immigrants (Crawley & Skleparis, 2018). The traumatic experiences of refugees are also of fundamental importance, as they constitute an additional challenge for them in integrating with the environment of the host country (Shneikat & Alrawadieh, 2019).

Conceptually, we can explain refugee entrepreneurship as entrepreneurial activities undertaken in a new host country by people who have been forcibly displaced from their country of origin due to war, conflict, or persecution (Khademi *et al.*, 2023). According to Abebe (2022), a refugee entrepreneur is a self-employed person forcibly displaced from their home country who starts or continues entrepreneurial activity in the market of the host country. According to Abebe's (2022) definition, a refugee entrepreneur is a person who has already been an entrepreneur in their home country and continues to operate in the host country. Research by Alexandre *et al.* (2019) also attests that refugees with prior entrepreneurial experience are more likely to become entrepreneurs in the host country. However, the main part of the research focuses on the aspect of refugee entrepreneurship as one of the possibilities of including them in the economic system of the host country and the labour market. Hosting countries face critical challenges in integrating arriving refugee populations, and entrepreneurship may be perceived as an alternative career path for them (Pesch & Ipek, 2023).

In a retrospective approach, Abebe (2022) distinguishes four phases of research on refugee entrepreneurship, reflecting the research context, trends, and studied populations: 1) 1985-1995: defining the specificity of refugee entrepreneurship as a different category from immigrant entrepreneurship, researched refugee processes was related to the Second World War, the war in Vietnam and the collapse of the Soviet Union, 2) 1995-2005: research on ethnic differences in the area of self-employment between groups of refugees from Southeast Asia, 3) 2005-2015: research on multi-faceted constraints standing in the way of entrepreneurial activities of refugees in host countries on the example of refugees from Africa, 4) 2015-present, is a definite intensification of involuntary migration processes, analysis of cultural and structural factors determining the entrepreneurship of refugees mainly from Syria, and more recently also from Afghanistan and Venezuela, Ukraine (Abebe, 2022).

In the latest research, the authors focus on verifying the relationship between personality traits and refugees' entrepreneurial intentions and adaptive abilities in the host country. According to Khademi *et al.* (2023), self-efficacy and resilience are the key factors of entrepreneurial awareness. In turn, Barth and Zalkat (2021) point to factors such as previous experience in entrepreneurship, access

to niche markets, and the availability of support from the family and the government of the host country. It should be noted, however, that the situation of refugees varies greatly in individual host countries and thus determines their entrepreneurship (*e.g.* refugees from Syria versus refugees from Ukraine) and differentiates their entrepreneurship factors. Research provides noticeable differences between refugee entrepreneurs living in and outside refugee camps. Outside the camps, entrepreneurs can use many factors: their identity, multilingualism, and social capital, which are not available to those living in the camps. These differences are important for coping with difficult situations and affect the entrepreneurship of refugees (Khademi *et al.*, 2023).

Returnee Entrepreneurship

There is a growing number of people who come back to their home countries after immigration due to education or work (Lin *et al.*, 2019). The reverse migration, known also as ‘reversed brain drain,’ ‘brain gain’ or ‘reverse flow,’ is investigated in the context of entrepreneurship, as some returnees explore their overseas knowledge and skills in establishing their own companies (Gruenhagen, 2019; Li, 2020).

Returnee entrepreneurs are individuals who establish ventures in their countries of origin after returning following a minimum of two years of work or education abroad (Li, 2020; Lin *et al.*, 2019; Yi *et al.*, 2021). Typically, they migrate from less developed to more developed countries to gain education, training, or work experience, and then, they exploit international experience to start new businesses (Bai *et al.*, 2021). Thus, returnee entrepreneurs are recognized for their contribution to the economic and technological development of their home countries through the transfer of knowledge (Yi *et al.*, 2021). Overseas education of returnees, often in advanced technology, their international business knowledge and experience, and maintaining contact with networks from the countries of education can support bottom-up entrepreneurship in home countries (Hajdari *et al.*, 2023; Li, 2020). Returnee entrepreneurs are more inclined than others to internationalise their ventures, their ethnic and non-ethnic overseas ties influence the speed and the diversity of foreign market entrance (Li, 2020; Li *et al.*, 2022).

The international experience and knowledge gained in advanced economies are the main advantages of returnee entrepreneurs. However, they also encounter the changes in social and institutional changes in their home countries during the time of their migration (Bai *et al.*, 2021). The potential contribution of returnee entrepreneurs to their countries of origin is reduced by returnee liability (Mreji & Barnard, 2021; Yi *et al.*, 2021), occurring during the process of reintegration. The liability of returnees is created due to their absence and is related to the necessity to relearn the new conditions of operating in their countries of origin (Bai *et al.*, 2021). Returnee liability is explained by institutional and interpersonal factors (Mreji & Barnard, 2021). From the institutional perspective, they experience uncertainty due to leaving host countries with more advanced institutions, and coming back to home countries with weaker institutions (Bai *et al.*, 2021). From an interpersonal perspective, they struggle with access to local networks, confusing expectations or cultural friction after returning (Mreji & Barnard, 2021).

One of the key aspects of successful returnee entrepreneurship is the recontextualisation of knowledge gained abroad, as returnees gain knowledge in the context of host countries, they need to adjust it to the context of their home country (Tran & Truong, 2022). The spillover of explicit and tacit knowledge contributes to the innovation performance of returnee ventures (Yi *et al.*, 2021). Next, returnee entrepreneurs also overcome the returnee liability by collaborating with local partners and gaining legitimacy with the support of local business incubators (Gruenhagen, 2019).

Moreover, there is a significant difference between voluntary returnees and forced returnees, who were pushed to return due to changes in the political situation in host countries. Voluntary returnees are typically motivated to pursue entrepreneurship mainly due to nostalgic or altruistic reasons, often with support from migration capital, while, forced returnees are often driven by regrets, limited options, and prejudices, supported by tacit capital (Amare & Honig, 2023).

DISCUSSION

The study at hand has been motivated by an insufficient in-depth review of academic work focusing on migrant entrepreneurs, even though they play a significant role in global business and impact international trade. The goal was to comprehensively review research from different fields related to migrant entrepreneurship to develop a comprehensive guide delineating similarities and differences among the most commonly encountered types of migrants and their entrepreneurial activities.

To answer research question RQ1 about the factors which shape the diversity of migrant entrepreneurship forms (transnational, diaspora, ethnic, refugee, and returnee), we conceptualized them as the matrix of both motivations and embeddedness. The specificity of each group of migrant entrepreneurs lies in the intersection of their motivation to migrate (voluntary, forced, and next-generation migrants), and their self-perception (embeddedness in their home country, host country or international one). An attempt to visualise the findings is presented in Figure 1. Even though to some extent the types of migrant entrepreneurs we have studied overlap, they also vary as far as their antecedents, success factors, and moderators are concerned.

The refugee entrepreneurs are those who experienced forced migration and thus, those experiences shaped their entrepreneurial mindset. They are often driven by the negative push factors that include individual-, institutional- and market-related antecedents. If the migration is voluntary or the entrepreneurs are next-generation migrants, the array of motivators is much wider and can include both push and pull factors. At the same time, the ‘embeddedness’ of the migrant entrepreneurs also differs. Returnee entrepreneurs and partially transnational entrepreneurs tend to be home-country embedded whilst refugee, ethnic, and also some transnational entrepreneurs are more host-country embedded. Both groups – ‘host or home-country embedded’ focus mostly on two countries, emphasizing the relationship between the country of origin of the migrants and the country they reside in now. However, the diaspora entrepreneurs are defined as internationally-embedded which highlights the strength of the networking and ecosystem created by the diasporans. They are not limited to the home and host country but support international expansion. While the migration motivation of returnee and diaspora entrepreneurs might be diversified, their core characteristics are not related to motivation but the embeddedness of their entrepreneurial activities in their home country or internationally. All these characteristics allowed us to answer the research question RQ2 about key challenges and opportunities faced by migrant entrepreneurs across various categories.

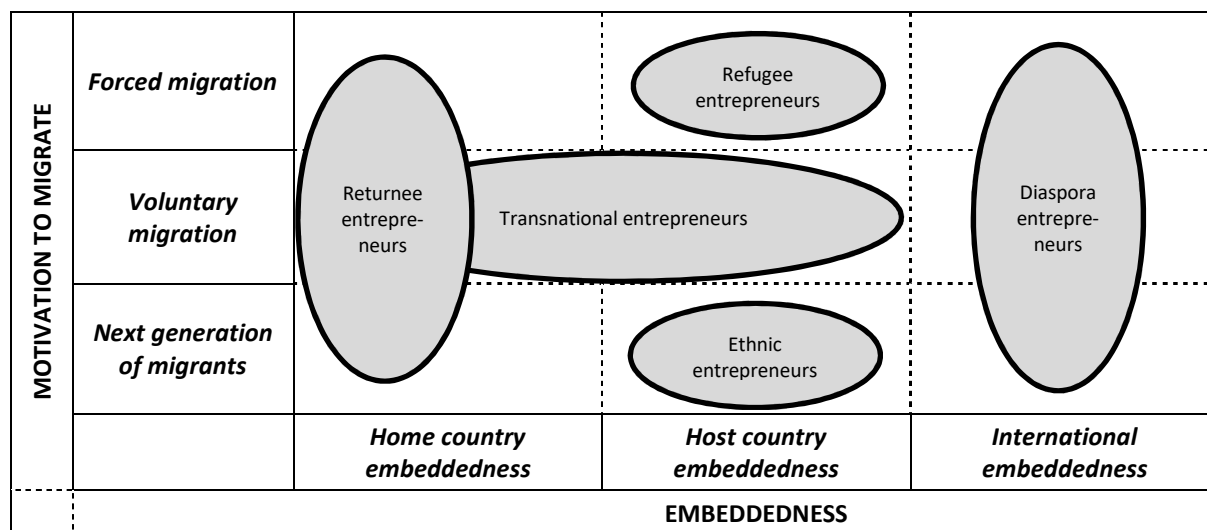


Figure 1. The classification of migrant entrepreneurs based on their migration motivation and dominant embeddedness in entrepreneurial activities

Source: own elaboration.

CONCLUSIONS

Based on the literature review, we recognised the main types of migrant entrepreneurs and their specific contexts. The findings presented in the article underscore the intricate and diverse characteristics of migrant entrepreneurship, emphasising the significance of examining different categories of migrant entrepreneurs and their distinct experiences and circumstances while researching their entrepreneurial endeavours. Based on the economic activities of migrant entrepreneurs, we discussed the differences and similarities among transnational, diaspora, ethnic, refugee, and returnee entrepreneurs. As all of them were migrant entrepreneurs, they shared the experience of living, establishing and running their own company in the multi-country context. However, they also differed in the variety of contexts of entrepreneurial activity, which proves the heterogeneity of migrant entrepreneurship.

The research limitations of this review article encompass potential biases in the selection of studies examined, which may not thoroughly encompass all pertinent aspects of migrant entrepreneurship. Furthermore, the categorization and conclusions are derived from current research, which may not include the latest empirical evidence and nuanced perspectives from the dynamic global migration and entrepreneurial environments.

The novelty of the article and the contribution to the field is the recognition and conceptualisation of the matrix of diverse migrant motivation (forced, voluntary, or next generation), and dominant embeddedness (home country, host country or international embeddedness), which impact the main features of migrant entrepreneurship types. This article's contribution and value are derived from its comprehensive review and classification of migrant entrepreneurial activity. The article gives an advanced assessment of the motivations, success factors, and embeddedness of several categories of migrant entrepreneurs (transnational, diaspora, ethnic, refugee, and returnee). This framework helps to recognise the various entrepreneurial pathways as well as the specific challenges and opportunities that different migrant groups face, providing valuable insights for researchers, policymakers, and practitioners seeking to support and leverage migrant entrepreneurship for economic development.

As for the implications, we argue that specialised assistance policies are critical for various sorts of migrant entrepreneurs, considering their incentives and embeddedness. It advises developing focused programmes that address unique issues experienced by each group, promoting both integration and worldwide commercial expansion.

Further studies in the area of migrant entrepreneurship should prioritise the implementation of contemporary empirical research to accurately capture present trends and dynamics, especially in consideration of recent worldwide developments (war in Ukraine, conflict in Israel and the Gaza Strip). Longitudinal studies are crucial for comprehending the enduring prosperity and viability of firms established by diverse categories of migrant entrepreneurs. Furthermore, it is necessary to conduct comparative evaluations across different nations and regions (e.g. Central Europe) to determine how diverse socioeconomic, cultural, and policy settings impact migrant entrepreneurship. This will aid in the development of more efficient support structures. Moreover, in further studies, scholars can analyse the changes in trends in diverse pathways of migrant entrepreneurship.

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Conflict of Interest

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

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Refugee entrepreneurship: Systematic literature review

Jan Brzozowski, Inna Voznyuk

ABSTRACT

Objective: The objective of this article is to systematically analyse the current academic research on refugee entrepreneurship in Europe and beyond. Refugee entrepreneurship represents a burgeoning area of study that has become increasingly significant following the European migrant crisis in 2015 and the full-scale Russian invasion of Ukraine in 2022. We seek to determine how studies on refugee entrepreneurship differ in their theoretical approaches and methodologies from traditional research on immigrant and ethnic entrepreneurship.

Research Design & Methods: The study adopts a systematic literature review method to identify and analyse key articles which discuss refugee entrepreneurship. We analysed the content of 75 academic publications to get a deeper understating of the research methods, and theoretical approaches, analysed ethnic groups, and destination countries and the key findings. Specifically, we explore how the current literature portrays the latest wave of Ukrainian refugees in the European Union.

Findings: Our study reveals that research on refugee entrepreneurship is still in its early, predominantly exploratory stages. Most of the articles we reviewed were empirical, with a distinct preference for qualitative methods. A significant limitation of existing research is its static analysis; most studies were cross-sectional, which fails to capture the dynamic nature of entrepreneurial activities. Furthermore, our review highlights a clear dichotomy in the circumstances of refugees displaced within Europe – primarily Ukrainians and those from the Balkans – compared to those originating from the Middle East or African countries.

Implications & Recommendations: We advocate for a more comprehensive approach to the study of refugee entrepreneurship, particularly through longitudinal analyses that can track changes within refugee-owned firms and the evolving attitudes of refugees towards entrepreneurship. We also recommend further investigation into the interactions between refugees and economic migrants, especially those from the same country or those who speak a similar language and share cultural ties. Such interactions could influence the evolution of opportunity structures in the destination countries, potentially leading to the creation of ethnic enclaves.

Contribution & Value Added: We contribute to the existing literature on refugee entrepreneurship by identifying key researchers and most cited articles, and by discussing the evolution and adaptation of the most popular theoretical approaches used in these studies.

Article type: research article

Keywords: Immigrants; refugees; entrepreneurship; literature; review

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INTRODUCTION

Despite the massive forced population displacements throughout the twentieth century, only the last two decades have seen a significant rise in academic interest in refugee entrepreneurship. We can attribute this to at least four consecutive, large-scale waves of forced migration worldwide within the last decade. Firstly, the Syrian War, which began in 2011, forced millions of Syrians and other ethnic groups in the region to flee to neighbouring countries such as Turkey, Lebanon, and Jordan. As of April 2024, 90.4% of the 5 million displaced people from Syria live in these three states (UNHCR, 2024). However, it was the so-called European migration crisis of 2015 that brought widespread public atten-

tion to the plight of refugees: within a year, nearly 1.3 million Syrians, Afghans, and Iraqis travelled through the Mediterranean route northwards to seek asylum in EU member states. Many of these refugees turned out to be highly entrepreneurial, leading to increased academic focus on their business activities. The Syrian crisis was swiftly followed by two other refugee waves occurring on two distinct continents: South America and Asia. Firstly, following the marginal victory of populist and authoritarian leader Nicolas Maduro, the Venezuelan economy has greatly deteriorated: since 2015, approximately 7.7 million Venezuelans have emigrated from their home country, including 6.5 million in Latin America and the Caribbean (Bonilla-Mejía *et al.*, 2023). Although most scholars use the term 'immigrants' and add the adjective 'forced' to emphasize the primarily involuntary nature of Venezuelan displacement, international institutions (including UNHCR) advocate for the use of a 'refugee' definition, as per the Cartagena Declaration (Blouin & Borios, 2023).

Another serious refugee crisis began in 2017. The Rohingya, a Muslim ethnic group who had lived for centuries in Myanmar, were forcibly displaced to Bangladesh. Initially, around 700 000 people crossed the border in August 2017, and now approximately one million refugees live in Bangladesh (Hossain *et al.*, 2023), mostly in the Cox's Bazar region in Southeastern Bangladesh and within the Kutupalong refugee camp, the largest contemporary refugee camp in the world.

Finally, in February 2022, Russian President Vladimir Putin launched a full-scale invasion of neighbouring Ukraine. As a result of this aggression, 6.47 million Ukrainians are currently displaced worldwide, with 5.93 million in Europe (UNHCR, 2024). Compared to previous waves of refugees, Ukrainians in most EU countries benefit from temporary protection status, which grants them greater economic freedoms from the moment of their arrival, including the right to start business activities (Kohlenberger *et al.*, 2023).

Consequently, the aforementioned four waves of refugee flows have attracted significant interest in the academic world, resulting in an increased number of publications. Among those, one of the emerging topics is refugee entrepreneurship. We can explain the increased attention to business activities of forced migrants at least by two major factors. Firstly, refugees are known to be more entrepreneurial than natives and even economic immigrants (Collins, 2021). They often exhibit previous entrepreneurial experience acquired in their home country, and want to continue their businessman and businesswoman status in a new location: this is particularly visible in the case of Syrians, a highly entrepreneurial nation (Chang, 2023). Secondly, many host countries perceive entrepreneurship as a way to successfully integrate immigrants and refugees, therefore they create special incentives (business incubators, starting grants, tax reductions) to encourage firm creation (Brzozowski, 2017). Of course, we cannot analyse refugees in the same vein as economic immigrants, as displaced people are a highly vulnerable group, traumatized by war and persecution, who often lost most of their financial assets (Santamaria-Velasco *et al.*, 2021). Nevertheless, the origins of the research on refugee entrepreneurship are located in immigrant and ethnic entrepreneurship studies. This is because until recently, the interest in refugee business activities was marginal, and it has been mostly analyzed 'as an integral part of the immigrant population and not discussed separately' (Wauters & Lambrecht, 2008, p. 897).

For these specific reasons, refugee entrepreneurship plays a pivotal role in public discussions on the reception of forced migrants in host countries. Ventures started and developed by refugees contribute to the growth of the small and medium-sized enterprise sector in major destinations, create job opportunities, introduce new business models and innovative activities, and, importantly, serve as a positive example of the benefits that refugees can bring. This helps to counterbalance the negative narrative towards asylum seekers in developed countries. However, knowledge of how to support refugees who want to establish new firms, and understanding the typical barriers they face in such economic activities, remains very limited.

Consequently, the primary objective of our article is to analyse the recent, dynamic evolution of refugee entrepreneurship research. We seek to understand how this emerging field of study develops its own methodology and theoretical frameworks. To do so, we performed a systematic literature review, a scientific method which enables to map the stock of knowledge in a rigorous, logical and systematic way allowing for further replicability of the scientific exercise. In such a way, the method of systematic literature review enables one to spot the most common research gaps and also propose

further research directions (Czakov *et al.*, 2023). In our case, by reviewing the literature on refugee entrepreneurship, we aimed to answer the following research questions:

RQ1: What are the main theoretical approaches used in the studies on refugee entrepreneurship?

RQ2: What are the most important research gaps in this field of study?

The structure of our article is as follows. In the second section, we will discuss the method of systematic literature review and the criteria imposed on our literature search. The third section will present the results of the literature review, describing the most important publications, authors, journals, trends and theories used. The fourth section will discuss the research gaps, in particular the ones in relation to the most recent inflow of Ukrainian refugees into the EU countries. The final section will conclude the article.

RESEARCH METHODOLOGY

The systematic literature review (SLR) is a method for analysing existing academic work. Unlike traditional literature reviews, SLR allows for a structured and systematic mapping of the knowledge in a specific field of study using transparent criteria (Czakov *et al.*, 2023). These characteristics make it possible to generalize the results and enable other researchers to replicate the SLR.

We start our research exercise by imposing criteria on the literature search. Similarly to previous literature reviews on refugee entrepreneurship (Newman *et al.*, 2023; Abebe, 2019), we restricted our analysis to academic production written in English. However, in contrast to the aforementioned studies, we relied only on the Scopus database. Moreover, we included peer-reviewed articles published in academic journals (also the ones in online first format) and book chapters in edited volumes, as in migration and refugee studies these are the important channels of academic production's dissemination. We fully recognize the importance of alternative databases, particularly the Web of Science. However, we argue that the Scopus database is more comprehensive for studies on refugees, migration, and entrepreneurship, covering more titles than the Web of Science. Furthermore, Web of Science includes a large portion of conference proceedings, which we excluded from our analysis.

Our initial search started with nine combinations of keywords, including: 'refugee entrepreneur,' 'refugee business,' 'refugee firm,' 'displaced person entrepreneur,' 'displaced person business,' 'displaced person firm,' 'forced migrant entrepreneur,' 'forced migrant business,' 'forced migrant firm.' We looked for publications indexed in the Scopus database until 31 December 2023. After excluding overlapping results and articles which were completely irrelevant, the initial sample included 150 publications. The irrelevant articles usually either included the 'refugee effect' – which investigated the linkage between the level of unemployment and self-employment rates (in the same vein these articles were excluded by Newman *et al.* (2023), and the term 'entrepreneur' used in political studies, meaning social activism. Out of these initial 150 articles, after an investigation of the content of abstracts or summaries, we selected 75 publications for more detailed analysis. We selected those articles based on the main research problem – the focus of all studies was refugee entrepreneurship. In many articles, the term 'refugee entrepreneurship' or similar briefly appeared in the article, but was only mentioned marginally. Next, our team read those 75 articles and classified them according to different criteria, namely publication type (empirical, mixed, conceptual or literature review), the method used, the theoretical approach applied, main research problem, and main findings.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The increased magnitude of forced migration flows worldwide has significantly contributed to the rising academic interest in refugee entrepreneurship. Figure 1 presents the articles included in a detailed analysis by year of publication. We can clearly see a dynamic increase in academic output following the European migration crisis in 2015, and again after the Russian full-scale invasion of Ukraine in February 2022. In the following sections, we will discuss the most important publications and findings.

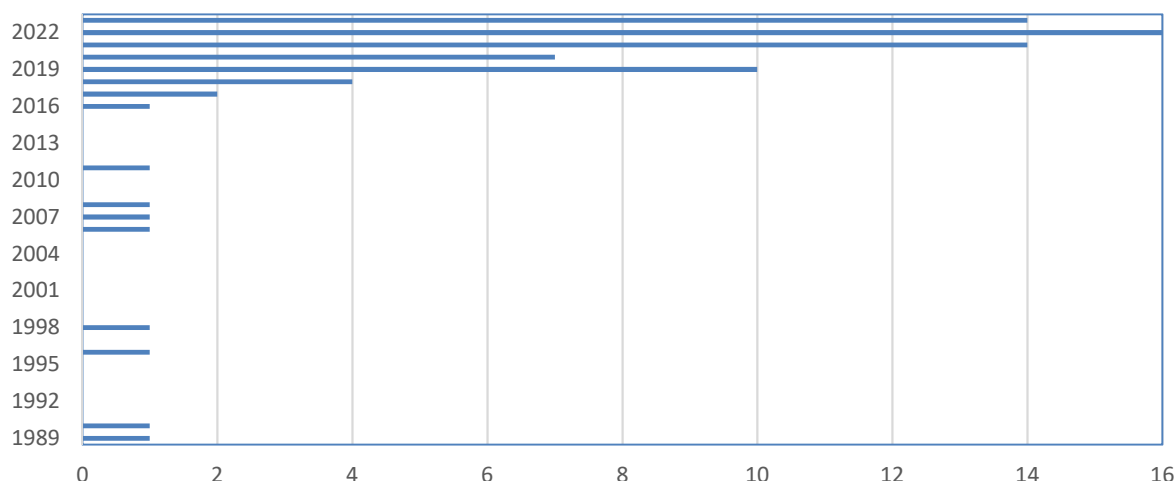


Figure 1. Analysed publications by year of publication

Source: own elaboration.

Our analysis of the publication outlets has shown that refugee entrepreneurship research is mostly published in migration studies and entrepreneurship studies journals. The most popular journal in terms of the number of articles is *Journal of Refugee Studies*, followed by *Journal of Enterprising Communities*, *International Migration*, and *International Journal of Entrepreneurial Behaviour and Research* (Table 1). However, academic production in this area is very much dispersed: the most popular journals hosted less than 50% of the articles included in our review (26).

Table 1. Most important journals with publications on refugee entrepreneurship

Journal	Journal's Impact Factor (2023)	Publications	Number of publications
<i>Journal of Ethnic and Migration Studies</i>	2.8	Wauters & Lambrecht (2008), Thompson (2016)	2
<i>International Migration</i>	1.6	de Lange <i>et al.</i> (2021), Chang (2022), Ranabahu <i>et al.</i> (2023)	3
<i>International Migration Review</i>	2.3	Andersson (2021), Newman <i>et al.</i> (2023)	2
<i>Journal of Refugee Studies</i>	2.2	Harb <i>et al.</i> (2019), Skran & Easton-Calabria (2020), Skran (2020), Embricos (2020), Halilovich & Efendic (2021), Akçali & Görmüş (2021)	6
<i>International Journal of Entrepreneurial Behaviour and Research</i>	4.5	Bagwell (2018), Heilbrunn (2019), Yeröz (2019)	3
<i>Entrepreneurship and Regional Development</i>	3.3	Bizri (2017), Harima (2022)	2
<i>International Journal of Entrepreneurship and Small Business</i>	not listed	Sandberg <i>et al.</i> (2019), Rashid (2023)	2
<i>Journal of Business Venturing</i>	7.7	Shepherd <i>et al.</i> (2020), Jiang <i>et al.</i> (2021)	2
<i>Journal of Enterprising Communities</i>	2.4	Zighan (2020), Abuhusseini (2023), Kazlou & Wennberg (2023), Zehra & Usmani (2023)	4

Source: own study.

The same pattern applies when we investigated the most influential authors in refugee entrepreneurship research. In this case, we combined two criteria: the number of articles and the total number of citations (Table 2). The most productive authors were Ching-An Chang, Aki Harima, and

Alexander Newmann. However, since their articles have been published quite recently, their citation records are still modest. Please note that the articles listed in Table 2 include only those we selected for our analysis. For instance, Aki Harima has also published several articles on the role of incubators in supporting refugee entrepreneurship.

When it comes to the most influential authors based on the number of citations received, Bram Wauters, Johan Lambrecht, and Rima Bizri clearly take the lead. For Wauters and Lambrecht, the high number of citations can also be explained by the earlier publication dates. Notably, only two articles in this field have been cited more than 100 times: Bizri (2017) and Wauters and Lambrecht (2008), highlighting how young this research area is.

Table 2. Most important authors by number of publications and/or citations (as of May 2024)

Author	Publications	Total number of citations
Bram Wauters & Johan Lambrecht	Wauters & Lambrecht (2006), Wauters & Lambrecht (2008)	182
Rima M. Bizri	Bizri (2017)	133
Dean A. Shepherd, Fouad Philippe Saade & Joakim Wincent	Shepherd <i>et al.</i> (2020)	80
Susan Bagwell	Bagwell (2018)	71
Zaid Alrawadieh, Eyup Karayilan & Gurel Cetin	Alrawadieh <i>et al.</i> (2018)	71
Claudena Skran	Skran (2020), Skran & Easton-Calabria (2020)	45
Sibylle Heilbrunn	Heilbrunn (2019), Heilbrunn (2021)	39
Ching-An Chang	Chang (2022(a)), Chang (2022 (b)), Chang (2022c), Chang (2023)	34
Aki Harima	Harima <i>et al.</i> (2021), Yeshe <i>et al.</i> (2022), Harima (2023)	33
Alexander Newman	Christensen & Newman (2023), Newman <i>et al.</i> (2023), Christensen <i>et al.</i> (2020)	18
Nadeera Ranabahu	Ranabahu <i>et al.</i> (2021), Ranabahu <i>et al.</i> (2023)	1

Source: own study.

Types of Publications, Methods Used, and Most Important Theoretical Approaches

In this section, we will analyse the publications on refugee entrepreneurship by type of article. We distinguished a few basic categories, namely: a) empirical research articles, which focus is mostly empirical, b) conceptual & theoretical articles, which usually propose and develop a new theoretical approach to studying refugee business, c) mixed articles, which combine to aforementioned types – *i.e.* include both theoretical propositions complemented by empirical approach, and finally d) literature reviews (see Table 3).

Not surprisingly, the most numerous category consisted of empirical research articles (64 publications). The most typical research approach was qualitative, with the most common method being in-depth, semi-structured interviews (43), followed by case study analyses and biographical narratives. These research methods are also quite typical for immigrant and ethnic entrepreneurship studies. However, it is widely known that using snowball sampling and relatively small sample sizes leads to results that cannot be generalized to entire populations of refugees in a given country.

Moreover, a vast majority of studies (29 articles) focused on the Middle East and North Africa, followed by Western and Northern Europe (27). There were only a few studies on the Balkans (Williams & Krasniqi, 2018; Halilovich & Efendic, 2021), which has been both a significant sending and, more recently, hosting region for forced population movements. However, what is particularly striking is the dominance of studies on Western and Northern Europe over the ‘classical’ destinations for economic migration, *i.e.* Northern America. This outcome is surprising, as both the United States and Canada still accept considerable flows of refugees and have even separate entry programs for such categories of foreigners (the US – Refugee Admissions Program, USRAP and Canada – Refugee and Humanitarian Resettlement Program). Moreover, the new destinations for refugees – Southern and Southeast Asia, Latin America, and the Caribbean are also underrepresented (Table 4). This short geographical overview of destination regions clearly shows the necessity to further investigate refugee entrepreneurship in such areas.

Table 3. Publications by article type

Type of publication	Publications	Number of publications
Empirical re- search articles	Chang (2022a), Thaher & Nor (2022), Collins (2021), Klyver <i>et al.</i> (2022), Nijhoff (2021), Jianget <i>et al.</i> (2021), Halilovich & Efendic (2021), Hartmann & Philipp (2022), Rashid (2023), Paksoy <i>et al.</i> (2023), Adeeko & Treanor (2022), Brown <i>et al.</i> (2022), Kassab <i>et al.</i> (2022), Barth & Zalkat (2021), Schmich & Mitra (2023), Kazlou & Wennberg (2023), Au <i>et al.</i> (2022), Yeshe <i>et al.</i> (2024), Mousa & Abdelgaffar (2023), Aricioğlu (2023), Shepherd <i>et al.</i> (2020), Chang (2023), Kachkar & Djafri (2022), de Lange <i>et al.</i> (2022), Ranabahu <i>et al.</i> (2021), Cetin <i>et al.</i> (2022), Almohammad <i>et al.</i> (2021), Ram <i>et al.</i> (2022), Dagnelie <i>et al.</i> (2019), Wauters & Lambrecht (2006), Wauters & Lambrecht (2008), Atasü-Topcuoğlu (2019), Yeröz (2019), Shneikat & Alrawadieh (2019), Heilbrunn (2019), Bizri (2017), Embiricos (2020), Johnson & Shaw (2020), Bagwell (2018), Alrawadieh <i>et al.</i> (2019), Skran (2020), Sandberg <i>et al.</i> (2019), Eimermann & Karlsson (2018), Mehtap & Al-Saidi (2018), Fong <i>et al.</i> (2007), Zighan (2020), Harb <i>et al.</i> (2019), Moore (1990), Basok (1989), Miyares (1998), Ranabahu <i>et al.</i> (2023), Islam <i>et al.</i> (2022), Chang (2022b), Andersson (2021), Akçali & Görmüş (2021), Thompson (2016), Badalič (2023), Abu-Eljedian & Panayiotopoulos (1996), Holian (2017), Riaño (2023), Nyame-Asiamah <i>et al.</i> (2020), Williams & Krasniqi (2018), Klaesson & Öner (2021), Chang (2022c)	64
Conceptual & theoretical	Christensen & Newman (2023), Skran & Easton-Calabria (2020), Christensen <i>et al.</i> (2020)	3
Mixed (research & conceptual)	Zehra & Usmani (2023), Heilbrunn (2021), Harima (2022), Santamaria-Velasco <i>et al.</i> (2021), Abuhusseini (2023), Harima <i>et al.</i> (2021)	6
Literature re- view	Newman <i>et al.</i> (2023), Abebe (2019)	2

Source: own study.

Table 4. Refugee entrepreneurs by destination country and ethnicity of migrants

Destination re- gions	Publications	Number of publications
Middle East and North Africa	Chang (2022a), Chang (2022b), Chang (2022c), Chang (2023), Zehra & Usmani (2023), Thaher & Nor (2022), Heilbrunn (2021), Paksoy <i>et al.</i> (2023), Kassab <i>et al.</i> (2022), Mousa & Abdelgaffar (2023), Abuhusseini (2023), Aricioğlu (2023), Shepherd <i>et al.</i> (2020), Cetin <i>et al.</i> (2022), Almohammad <i>et al.</i> (2021), Atasü-Topcuoğlu (2019), Shneikat & Alrawadieh (2019), Heilbrunn (2019), Bizri (2017), Alrawadieh <i>et al.</i> (2019), Mehtap & Al-Saidi (2018), Zighan (2020), Harb <i>et al.</i> (2019), Akgündüz <i>et al.</i> (2018), Akçali & Görmüş (2021), Badalič (2023), Abu-Eljedian & Panayiotopoulos (1996), Joseph <i>et al.</i> (2021)	29
Western and Northern Europe	Klyver <i>et al.</i> (2022), Harima (2022), Nijhoff (2021), Jiang <i>et al.</i> (2021), Hartmann & Philipp (2022), Rashid (2023), Adeeko & Treanor (2022), Barth & Zalkat (2021), Schmich & Mitra (2023), Kazlou & Wennberg (2023), Yeshe <i>et al.</i> (2022), Kachkar & Djafri (2022), de Lange <i>et al.</i> (2021), Harima <i>et al.</i> (2021), Cetin <i>et al.</i> (2022), Ram <i>et al.</i> (2022), Wauters & Lambrecht (2008), Yeröz (2019), Wauters & Lambrecht (2006), Embiricos (2020), Johnson & Shaw (2019), Sandberg <i>et al.</i> (2019), Eimermann & Karlsson (2018), Moore (1990), Andersson (2021), Holian (2017), Klaesson & Öner (2021)	27
Northern America	Dagnelie <i>et al.</i> (2021), Fong <i>et al.</i> (2007), Miyares (1998)	3
Australia & Oceania	Collins (2021), Ranabahu <i>et al.</i> (2021), Ranabahu <i>et al.</i> (2023)	3
Subsaharan Africa	Brown <i>et al.</i> (2022), Skran (2020), Thompson (2016), Nyame-Asiamah <i>et al.</i> (2023)	4
South & South-East Asia	Au <i>et al.</i> (2022), Islam <i>et al.</i> (2022)	2
Latin America & Caribbean	Santamaria-Velasco <i>et al.</i> (2021), Basok (1989), Riaño (2023)	3

Source: own study.

The most popular ethnic group surveyed were Syrians (28 studies, see Table 6). However, most analyses focused on Syrian business activities in only one country, with only a few studies offering a comparative analysis of more than one destination for Syrian refugees. In this aspect, the study of Ching-An Chang calls for specific attention. Ching-An Chang has conducted 213 in-depth, semi-structured interviews among Syrian entrepreneurs between mid-2014 and the end of 2015 (first round) and then between mid-January and mid-February 2020 (second round). Thus, the study is at least partially longitudinal, as some of the interviewees had been approached more than once. Moreover, Ching-An Chang conducted the study in eight locations in three host countries: Jordan, Turkey, and Egypt. Consequently, this approach enabled Chang to investigate the dynamism of business ventures started by Syrians, and in particular – the role of transnational networks in this aspect. The major contribution to the literature is in our opinion the findings on the role of transnational social capital of refugee entrepreneurs. In former studies, the authors demonstrate that often refugees are cut off from their home countries, thus unable to leverage the transnational ties which are often a key asset for economic/voluntary immigrant businesspeople. In turn, Chang shows that the role of such ties is heterogenous. On the one hand, diasporic ties constituted a factor that constrained the business behaviours of Syrians in host countries. They were afraid to criticize the Assad regime, fearing the persecution of the loved ones who stayed in Syria. They were also afraid that the Syrian's Mukhabarat (state intelligence agency) was monitoring their activities in host countries. On the other hand, Chang stresses the importance of pre-war business ties that acted as 'bridges taking people out of Syria' during the conflict (Chang, 2022a, p. 224). In this way, many Syrian entrepreneurs have relocated to Turkey or Egypt, locations in which they had either friends and relatives before the war, or simply their trusted business partners. Moreover, diasporic business ties constituted a vital asset in establishing new businesses and investments: for instance, the Syrian entrepreneurs were able to get access to capital through non-interest loans from their former business friends. Finally, diasporic ties were useful in settling business conflicts or disputes among entrepreneurs through the use of traditional informal arbitration practices based on Islamic law (Sharia cf. Chang, 2022b).

Table 5. Refugee entrepreneurs by ethnicity

Ethnicity of refugees	Publications	Number of publications
Syrians	Chang (2022a), Chang (2022b), Chang (2022c), Chang (2023), Nijhoff (2021), Taher & Nor (2022), Jiang <i>et al.</i> (2021), Rashid (2023), Paksoy <i>et al.</i> (2023), Kassab <i>et al.</i> (2022), Barth & Zalkat (2022), Mousa & Abdelgaffar (2023), Abuhusein (2023), Aricioğlu (2023), Kachkar & Djafri (2022), de Lange <i>et al.</i> (2021), Almohammad <i>et al.</i> (2021), Atasü-Topcuoğlu (2019), Shneikat & Alrawadieh (2019), Johnson & Shaw (2019), Alrawadieh <i>et al.</i> (2019), Mehtap & Al-Saidi (2019), Zighan (2020), Harb <i>et al.</i> (2019), Akgündüz <i>et al.</i> (2018), Akçali & Görmüş (2021), Badalič (2023), Bizri (2017)	28
Palestinians	Shepherd <i>et al.</i> (2020), Sandberg <i>et al.</i> (2019)	2
Colombians	Riaño (2023), Ranabahu <i>et al.</i> (2023)	2
Ukrainians	Klyver <i>et al.</i> (2022)	1
Somalis	Thompson (2016)	1
Salvadorans	Barth & Zalkat (2021), Basok (1989)	2
Afghanis	Zehra & Usmani (2023)	1
Rohingyas	Islam <i>et al.</i> (2022)	1

Source: own study.

Other authors have also raised an interesting aspect of the negative role of social capital in refugee entrepreneurship. Firstly, Newman and associates (2023, p. 20) suggest that 'strong ties with more powerful members of the same ethnic group might constrain entrepreneurship,' as the already established businesspeople might not be interested in assisting their co-ethnics, but rather to exploit them as cheap labour. Alternatively, Nijhoff indicates the potential 'burden of solidarity,' as 'solidarity can also be a burden when the new entrepreneur may have to support a large network of dependents' (Nijhoff, 2021, p. 1061).

Turning to a smaller group of quantitative studies, it is worth mentioning the contribution of Kazlou and Wennberg (2023). They investigated the survival of immigrant (2.5 thousand) and refugee entrepreneurs (10.5 thousand), relying on longitudinal, register-based data provided by Statistics Sweden (LISA). They found that entrepreneurial experience within the family and higher family financial capital both decrease the risk of exiting self-employment, both among refugees and immigrants. Surprisingly, the ethnic capital (measured by the proportion of co-ethnic individuals living in the same area) does not play a role in this aspect. The complementary picture to this study comes from the article of Andersson (2021), who investigated the impact of co-ethnic geographical concentration on the probability of starting a business by refugees in Sweden. Moreover, Anderson used the administrative registers, taking advantage of the longitudinal dimension of the data set. His results indicate that actually ethnic enclave supports entrepreneurship only if critical resources in the form of already-existent entrepreneurial skills are available. Consequently, the share of self-employed co-ethnics is positively related to the propensity to start a business by a refugee, but not the sample size of the ethnic market (measured by the share of all co-ethnic population, including also non-entrepreneurs, cf. Andersson, 2021). We may find similar results in Williams and Krasniqi (2018): relying on survey data on the Kosovo diaspora, the individuals who relied on co-ethnic networks were less likely to enter entrepreneurship.

Our analysis of the theoretical model, concepts and approaches used in the refugee entrepreneurship research shows a great heterogeneity, typical for new and emerging fields of study (see Table 6). The most popular concepts were the ones already applied in immigrant and ethnic entrepreneurship. The first one was the concept of opportunity structure developed originally by Waldinger (1989). In this view, immigrant business activities occur within a specific framework, which consists mostly of local markets left by native entrepreneurs and dominated by co-ethnic clients, where the entry to business activity is relatively easy, but the risk hazard is high. This model is then subsequently developed within the mixed embeddedness theory, which offers three layers of analysis for immigrant entrepreneurship (Kloosterman, 2010). The macro level consists of the economic, socio-cultural, and legal factors originating in the host country, with the main focus on the regulations regarding entrepreneurship. The meso level is the markets, resembling the opportunity structure from Waldinger model. Access to the co-ethnic market is relatively easy but offers fewer chances for business development, whereas the mainstream market is difficult to access, yet provides better development prospects. Finally, the microstructures are the individual resources of an entrepreneur, including human, social, and financial capital endowments.

As mentioned earlier, both the concept of opportunity structure and mixed embeddedness theory have been already extensively used in immigrant and ethnic entrepreneurship. However, many authors are fully aware that simple copy-paste of such theoretical approaches into the refugee entrepreneurship field is not appropriate, thus they seek to adapt and develop these concepts to the forced migration framework. For instance, Harima (2022) extends the mixed embeddedness model, adding the process of disembedding from the home country and re-embedding into the host country. This embeddedness transformation both deprives some of the refugee entrepreneurs of key resources, while at the same time enables access to new ones. The model of disembedding and re-embedding offers a very useful explanatory approach to refugees' transnationalism: whereas most of the forcibly displaced persons are unable to access the resources left in their home country, other refugees still can exploit at least some of them (for instance suppliers or business partners).

Another popular theoretical approach is Ajzen's theory of planned behaviour, applied in entrepreneurship studies to understand the motivations to start a business. In this aspect, the concept serves to understand the main driving forces leading refugees to become businesspeople, like in the case of Syrians in Turkey (Kachkar & Djafri, 2022). The transnational paradigm¹ is also quite popular in refugee entrepreneurship: not only in a positive way, where linkages to a home country are beneficial for a current business activity. This is visible not only in Chang's (2022a, 2022b) study on Syrians in Turkey, Jordan, and Egypt, where transnational networks serve both as a key resource and also as a potential

¹ For the sake of simplicity, we considered jointly studies on transnational refugee entrepreneurship and diaspora refugee entrepreneurship, although we are fully aware of the existent academic debate within these two strands of literature.

channel of oppression from secret police in the home country. In her study on Colombian doubly displaced persons, Riaño (2023) found transmobility and illegal circulation through the Venezuelan-Colombian border not as an asset, but as an only way to survive. Most of the refugee entrepreneurs in her study would prefer actually to stay in one location than risk daily crossing of the border controlled by criminal organizations.

Table 6. Publications by theoretical concept used

Theoretical approaches	Publications	Number of Publications
Kloosterman's Mixed embeddedness model	Collins (2021), Harima (2022), Newman <i>et al.</i> (2023), Hartmann & Philipp (2022), Schmich & Mitra (2023), Kazlou & Wennberg (2023), Yeshe <i>et al.</i> (2024), Harima <i>et al.</i> (2021), Ranabahu <i>et al.</i> (2021), Ram <i>et al.</i> (2022), Abebe (2019), Bagwell (2018), Embiricos (2020)	13
Waldinger's Opportunity structure model	Collins (2021), Wauters & Lambrecht (2006), Wauters & Lambrecht (2008), Adebbe (2019), Johnson & Shaw (2019), Cetin <i>et al.</i> (2022), Heilbrunn (2019), Alrawadieh <i>et al.</i> (2019), Zighan (2020), Chang (2022a)	10
Ajzen's Theory of Planned Behavior	Newman <i>et al.</i> (2023), Kassab <i>et al.</i> (2022), Kachkar & Djafri (2022), Almohammad <i>et al.</i> (2021), Christensen <i>et al.</i> (2020)	5
Ethnic enclave	Shneikat & Alrawadieh (2019), Alrawadieh (2019), Andersson (2021), Thompson (2016), Klaesson & Öner (2021)	5
Transnationalism	Chang (2022b), Riaño (2023), Thompson (2016), Akçali & Görmüş (2021), Chang (2022a)	5
Resilience	Klyver <i>et al.</i> (2022), Shepherd <i>et al.</i> (2020), Fong <i>et al.</i> (2007)	3
Berry's framework (integration model)	Zehra & Usmani (2023), Shneikat & Alrawadieh (2019)	2
Bourdieu capital theory	Atasü-Topcuoğlu (2019), Yeröz (2019)	2
Institutional voids	Au <i>et al.</i> (2022), Heilbrunn (2019)	2

Source: own study.

The studies on refugee entrepreneurship also consider the concept of the ethnic enclave (economy), *i.e.* the sector of the economy in the host country with a clear dominance of co-ethnic population. However, the most problematic issue is the unanimous definition of the ethnic enclave. For instance, we have already mentioned the study of Kazlou and Wennberg (2023) who found ethnic enclave support insignificant for supporting refugee self-employment in Sweden. However, the literature on ethnic enclaves does not provide a clear answer to how big the enclave should be. However, we should expect that some level of 'critical mass' should be reached, to reap benefits from the development of a co-ethnic market, institutions (such as informal credit associations) or cooperations of ethnic suppliers, like Cubans in Miami, Turks in Berlin or Pakistanis in Bradford.

Finally, we should stress original and quite promising attempts to use less popular (so far) theoretical approaches in refugee entrepreneurship research. The most interesting approach in our review is the application of challenge-based entrepreneurship by Heilbrunn (2021). Originally, Miller and Le Breton-Miller (2017) were the ones who proposed a challenge-based entrepreneurship model. They argued that entrepreneurship can result from enduring the life hardships of an individual. Such persons are usually 'forced to do things differently during an important part of [their] life ... [and] may encourage regular attempts to invent new ways, be creative, and discover unfamiliar niches' (Miller & Le Breton-Miller, 2017, p. 12). In her study on African refugees in Israel, Heilbrunn shows how former challenges have encouraged these underdog entrepreneurs to pursue business activity and which adaptive mechanisms they have applied.

RESULTS AND DISCUSSION

The results of our literature review indicate that refugee entrepreneurship is still in its nascent (or early) development state. For instance, scholars diverge much in the understanding who the refugee is. In a narrow sense, the individuals who fit 'perfectly' into the Geneva Convention Relating to the Status of Refugees (1951) refugees should in fact not be entitled to any entrepreneurial activities. Such persons are expected to file asylum claims in the first secure country to which they arrive and wait for the administrative decision in a refugee camp or centre. In fact, many scholars indicate a highly heterogeneous institutional framework and economic ecosystem in which many refugee entrepreneurs operate. The most dramatic situation is the one of the refugees living in the refugee camps in developing countries of the global South, where the institutional support and living conditions are poor. One of such recent and most important due to the movement scale is Venezuelans. In their case, the involuntary nature of the displacement is obvious: they are fleeing from a collapsing Venezuelan state, which fails to deliver the minimal standards of public goods including security and political freedoms. Nevertheless, most Venezuelans would not receive asylum, as the exact factors expressed in the Geneva Convention are not met, in particular: 'fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country' (Geneva Convention, 1995: Chapter 1, Article 1, point A). Some authors call for using the term refugee towards Venezuelans (Blouin & Borios, 2023), as their case can meet the criteria of the Cartagena Declaration (1984) which is much broader: 'persons who have fled their country because their lives, safety or freedom have been threatened by generalized violence, foreign aggression, internal conflicts, massive violation of human rights or other circumstances which have seriously disturbed public order' (Cartagena Declaration on Refugees, 1984, p. 36). However, most Venezuelans do not even file asylum claims, therefore most of the receiving countries treat them as economic migrants.

The macro level of the mixed embeddedness model drives the attention of researchers to the regulations regarding entrepreneurship. These regulations differ a lot between various groups of entrepreneurs in different countries, just to compare the aforementioned Venezuelans with Rohingyas or Palestinians residing in different destinations in Latin America, South-East Asia, or the Middle East. However, even in cases of the same ethnic groups of displaced persons coming from the same country into a relatively homogenous institutional surrounding, there are important differences. This is the case of the most recent inflows of Ukrainian refugees who entered the European Union. Already on 4 March 2022, the Council of the European Union activated the Temporary Protection Directive (TPD), granting temporary protection to all Ukrainians leaving the country after February 24. In principle, this implied full access to the labour market in all member states. However, while for instance in two major destination countries – Germany and Poland – Ukrainians are both fully entitled to work (with restrictions to certain professions which require official recognition of diplomas, such as medical staff) and to do business, in the Netherlands, the self-employment of Ukrainians is possible only after applying successfully for special work permit (TWV- *tewerkstellingsvergunning*). Such flexibility and economic freedom are crucial for the business creation, as refugees often are disincentivised to pursue entrepreneurial paths if the bureaucratic constraints are too difficult to overcome. In Poland, the amendment of regulations allowing Ukrainians to open single proprietorship enterprises has led to the creation of 44.5 thousand such entities in 2022 and 2023, compared to 24 thousand existing at the end of 2021 (ZUS, 2023). Therefore, Ukrainians created 9.4% of the new firms in Poland in 2023 (Świder, 2024). Research on the legal factors affecting business activity shows clearly that not only formal rules, but also their enforcement is crucial for the development of refugee entrepreneurship. For instance, Badalič (2023) shows that the change of the legal framework in Turkey, allowing Syrian refugees to work and do business from 2016 under Temporary Protection status, did not result in positive changes as Syrian entrepreneurs were still in difficulty coping with bureaucratic obstacles, including numerous controls from public administration. Consequently, despite the theoretically favourable legal framework, many of the entrepreneurs decided to keep their businesses unregistered.

This finding just demonstrates that refugees function in highly heterogenous ecosystems and socio-economic circumstances. To better understand the motives of their entrepreneurial activity, strategies applied in their businesses, sustainability and development perspective of their firms, researchers should recur to a set of different theories developed both in the field of immigrant and ethnic entrepreneurship as in entrepreneurship studies. Currently, there exists no single most popular theory that would enable to provide the theoretical framework for the analysis of such a heterogenous population of business individuals.

CONCLUSIONS

In this article, we have systematically analysed the literature on refugee entrepreneurship. Our review clearly shows that refugee entrepreneurship is a relatively novel, yet rapidly developing field of study. Regarding the theoretical foundations for studying the origins, occurrence, and development of businesses started by forced migrants, the existing studies do not differ much from immigrant and ethnic entrepreneurship research. Most authors rely on well-known theoretical concepts such as the mixed embeddedness model, the model of opportunity structure, the transnational paradigm, or the theory of planned behaviour from entrepreneurship studies.

As for the methods used, a vast majority of studies rely on qualitative approaches based on sociological and ethnographic methods such as in-depth interviews. Such studies usually provide very interesting insights into the micro-level of refugee entrepreneurial activity. However, their main limitation is the relative difficulty in generalising the results due to a method of reaching the respondent, which is usually the snowballing approach. Surveys on refugee populations are extremely rare: the few studies which apply a quantitative approach take advantage of administrative registers. The administrative datasets are of course extremely valuable information sources and usually include the entire population of interest. However, they have also serious limitations. The most obvious one is the operationalization of key variables: in most surveys the researchers can precisely frame their questions directed to respondents, whereas in registers we have to rely on pre-defined administrative categories, some of which are of limited use. Therefore, there is a clear need for more surveys on refugee populations, and on refugee entrepreneurs in particular. In this aspect, it is particularly interesting why the aforementioned studies do not take advantage of the sampling method, which is widely used for surveying hidden populations, including migrants – namely respondent-driven sampling (RDS) (Gorny & Napierata, 2016). Adopting RDS is rather an obvious choice to recruit respondents for surveys on refugees and this sampling method should be exploited in forthcoming studies.

Another important issue is the selection of ethnic groups to be analysed. In our literature review, we have clearly identified the dominance of research on Syrian refugees. However, there is a surprisingly low number of analyses of other ethnic groups. This is true not only for 'old' forced migrants such as Palestinians, Salvadorans, Afghans, and Colombians, but also for more recent ones such as Rohingyas and Ukrainians. This represents a significant research gap that awaits attention in future studies.

Most research on refugee entrepreneurship is currently static, meaning refugees are typically studied at just one point in time, whether in qualitative or quantitative research. Such a strategy has clear limitations. We do not know how the refugee enterprises evolve and which role they play in refugee adaptation or even integration in a host country. Consequently, there is an obvious need to plan research projects which would adopt a dynamic framework. This can be done both in the case of qualitative panel surveys (interviewing the same respondents within regular time intervals using in-depth semi-structured interviews) or traditional, although more ambitious longitudinal surveys (surveying larger samples of refugees in two or more waves).

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Conflict of Interest

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

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How it started, how it evolved: Ukrainian entrepreneurship in Poland

Konrad Pędziwiatr, Hanna Smaliichuk, Inna Voznyuk, Jan Brzozowski

ABSTRACT

Objective: This exploratory article analyses the entrepreneurial activities of Ukrainian immigrants in Poland from 2018 to the present. We examine immigrant and refugee entrepreneurship as part of socio-economic adaptation. Despite being the largest immigrant group, Ukrainian entrepreneurship remained limited until 2022. The article highlights three key events—the Revolution of Dignity, the COVID-19 pandemic, and the Russian invasion—and their effects on entrepreneurial activity.

Research Design & Methods: We used a mixed methods approach, focusing on three waves of qualitative surveys with Ukrainian entrepreneurs in Małopolska, Southern Poland. The first round (April–August 2018) included 32 interviews. The second round (May–August 2021) during the COVID-19 pandemic involved 20 immigrant entrepreneurs, including seven Ukrainians. The third round (May–October 2023) focused on 10 Ukrainian refugees. This qualitative data is supplemented by two large-scale surveys: one with 607 respondents (November 2021–January 2022) and another with 500 Ukrainian refugees (May–June 2022), both in Małopolska.

Findings: Initially, Ukrainian entrepreneurs in Poland focused on mainstream businesses with limited use of ethnic or transnational networks. The COVID-19 pandemic disrupted business but prompted proactive measures. Paradoxically, border closures increased demand for ethnic goods and services. Businesses established by refugees after 2022 now mainly cater to ethnic customers, marking the rise of an ethnic enclave economy.

Implications & Recommendations: Our study shows that refugees benefit from an expanded ethnic market and ethnic solidarity when settling in areas with established immigrants from the same background. However, the key factor is Poland’s favourable entrepreneurial environment, with ease of starting a business. Poland’s laissez-faire approach, marked by limited social benefits, can support socio-economic integration, especially when refugees have immediate access to the labor market and the ability to start businesses.

Contribution & Value Added: This study contributes to the literature on immigrant and refugee entrepreneurship in several ways. First, it highlights the unique dynamic between economic immigrants and war refugees in the Ukrainian diaspora in Poland, where refugees leverage existing ethnic networks for socio-economic adaptation. Second, the cultural and linguistic proximity between Poles and Ukrainians aids smoother integration. Third, despite the war, many Ukrainian entrepreneurs maintain transnational networks with clients and partners in Ukraine.

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INTRODUCTION

The influx of Ukrainian refugees following the full-scale Russian invasion in 2022 stands as one of the most significant refugee crises in the contemporary world. As of April 15, 2024, approximately 6.5 million Ukrainian refugees are dispersed globally, with an estimated 6 million residing in Europe and 960 thousand in Poland alone. However, the emergence of the Ukrainian diaspora in Europe, particularly

in Poland, is a complex outcome shaped by political and economic dynamics. Since the Revolution of Dignity in 2014, a multitude of Ukrainians have departed their homeland, driven by both voluntary migration and internal displacement stemming from the Russian-invaded Donbas and Crimea regions. By February 2020 (*i.e.* before the lockdown due to the COVID-19 pandemic) Poland alone hosted about 1.3 million Ukrainian citizens, while their number before the full scale-invasion on 24 February 2022 was estimated around 1.1-1.2 million (Duszczuk *et al.*, 2023).

As a result of the aforementioned processes, Poland hosts a composition of both (mostly) economic immigrants and refugees from the same country, which is a relatively unique situation in contemporary migration dynamics in Europe. Understanding the interplay and differences between these two distinct groups of migrants is essential for designing sound migrant and integration policies in major host countries. In this aspect, the Polish case is extremely interesting as the country adopted a rather liberal regime towards the forced migrants arriving after February 2022: instead of granting them asylum, the Ukrainians received temporary protection, which enabled immediate and full access to the labour market, but also to entrepreneurial activities (Kohlenberger *et al.*, 2023).

This article primarily focuses on a specific aspect of the socio-economic adaptation of immigrants in a host country, particularly on their entrepreneurial activities. It contributes to the extensive literature on ethnic, immigrant, and refugee entrepreneurship in several ways. Firstly, it offers a dynamic perspective on the rapidly evolving Ukrainian community in Poland by examining the entrepreneurial endeavours of migrants and refugees in 2018, during the COVID-19 pandemic in 2021, and following the full-scale war in 2023. Secondly, it compares the entrepreneurial activities of forced and voluntary migrants. Existing literature suggests that refugees are typically more entrepreneurial than economic immigrants, although their motivations for starting their own businesses are not always positive, as they may seek to escape discrimination or challenging labour market conditions (Newman *et al.*, 2023). However, in the Polish context, both types of migrants originating from the same home country – forced and voluntary – are concurrently visible. Understanding the motivations, opportunity structures, and enterprise development strategies of such individuals constitutes an original contribution to both entrepreneurship and migration studies, particularly as an increasing number of scholars advocate for a more inclusive and flexible examination of forced and voluntary migrants (Erdal & Oeppen, 2020). Lastly, the qualitative analysis is complemented by quantitative data from two original surveys conducted by the authors. The incorporation of a mixed-methods approach remains relatively novel in entrepreneurship studies.

The primary objective of our article is to analyse the dynamics of entrepreneurial activities carried out by Ukrainian immigrants in Poland from 2018 to the present day. Specifically, we investigate the entrepreneurship of immigrants and refugees as part of their socio-economic adaptation process in the host country. In doing so, we aim to address the following research questions:

- RQ1:** What are the primary motivations for entrepreneurship among Ukrainians in Poland? Are there systematic differences between economic and forced migrants in this regard?
- RQ2:** How has the COVID-19 pandemic affected the entrepreneurial activities of Ukrainians?
- RQ3:** What role does entrepreneurship play in the socio-economic activities of Ukrainians? Is it a means of economic integration in the host country, or is it a short-term survival tactic?

The structure of our article is as follows. In the second section, we will discuss the literature on immigrant and refugee entrepreneurship, linking the entrepreneurship with socio-economic adaptation of foreigners in a host country. Next, we will discuss the recent literature to provide a logical framework for our research questions. The third section will present the research methodology. It will show how we collected and analysed our data. The fourth section is the core of the article: this empirical section will discuss the survey results in three distinctive periods (2018, 2021, and 2023) and outline the major differences between those periods and two groups of respondents immigrant entrepreneurs and refugee entrepreneurs. Finally, we will present conclusions.

LITERATURE REVIEW

The discussion on immigrant and refugee entrepreneurship is problematic, as those two types of business people resemble two 'perfect' types of mobility: voluntary and involuntary. It is expected that immigrant entrepreneurs were economic migrants, who have cautiously planned their migration strategy and have selected the right destination based on clear and logical criteria. As migration is a form of investment, the future migrants possess some assets – financial, cultural, social and human capital, which can then yield a higher return on their investments in a different destination than their home country. Moreover, immigrant entrepreneurs are also expected to foresee business activity in the host country from the very beginning, being intentional entrepreneurs who moved internationally to start a business or transfer a currently existing one. On the other hand, refugees are those vulnerable movers who had no comfort in planning: they were caught by surprise and had to depart abruptly from their homes, fleeing war or persecution. Consequently, they possess little or no financial capital, and much of their wealth has been destroyed or taken over by aggressors. Moreover, their social networks became disrupted by the military conflict, and in many cases, they did not even have a chance to secure proper documents, which would assert their formal qualifications (like a university diploma).

This initial dichotomy is of course very naïve and in the real world, the motivations for international movement are mixed. Many individuals consider international migration within the bounded rationality framework, taking suboptimal migration decisions: either because they do not have complete information on the socio-economic reality in the host country, or because they do not have proper resources. Moreover, the voluntary nature of international mobility can be problematic: many economic migrants were forced to move to repay their debts or to escape from difficult family situation at home. Moreover, not all refugees are the same: while most of them are escaping with bare hands and almost no resources, there are still some who can prepare for further migration and secure considerable assets. For instance, in his study on Syrian refugee entrepreneurs, Chang (2023) presents some respondents as very affluent persons, who openly question the stereotype of 'poor refugee.'

Consequently, contemporary migration studies call for a more inclusive and flexible examination of forced and voluntary migrants (Erdal & Oeppen, 2018), and encourage researchers to analyse both of these groups together, in comparative perspective (Newman *et al.*, 2023). This is exactly taking place in the current research on refugee entrepreneurship, which – as an emerging field of study – relies mostly on theoretical concepts developed in the area of immigrant and entrepreneurship studies (see the review of Voznyuk and Brzozowski (2024) in this issue for more details). The traditional approach proposed by Waldinger (1989) discussed the opportunity structure, which was available to immigrants coming to a new host country. Those of them who were willing to start a business activity were usually short of financial capital and had limited networks embedded in the receiving society. Consequently, the opportunity structure which was available for them was usually the least attractive markets that were left over by native entrepreneurs – for instance, liquor stores in poorer neighbourhoods, opened 24 hours per day, seven days a week. Such markets were often dominated additionally by co-ethnic clients. The entry into such markets was relatively easy, as it did not require substantial financial capital. However, such businesses offered long and hard-working hours, little profit margin and a high risk of defaulting. Moreover, refugees and other forced migrants are pushed to such forms of entrepreneurship. A typical example of such a business is Spaza grocery shops run by Somalis in poor neighbourhoods in South Africa (Thompson, 2016). Please note that in our article, we are treating refugees in a wider sense, equating it with forced migration.

The opportunity structure concept is linked to the ethnic enclave theory, developed by Light *et al.* (1994). In this view, the economy of the host country is comprised of two sectors: the dominant economy and the migrant and minority economy. Within the second one, most migrants either find employment or create businesses. An ethnic enclave is a sub-sector of migrant & minority economy with a geographical concentration of one or few similar ethnic groups in one location. In the ethnic enclave, most businesses are controlled by one ethnic group, which also relies on the employment of co-ethnic individuals. The benefits of the ethnic enclave are numerous: first, the clustering effect enables further

specialization through the learning-by-doing effect. This means that a member of a family can first work in the ethnic family enterprise, and then – with the financial help of the relatives and additional business knowledge – can start a similar firm. Second, the firms located in the enclave can rely on vertical integration: most of the suppliers are co-ethnic firms, which implies that the business owners can often rely on trade credit. Moreover, a vast majority of clients are members of the same ethnic community. Third, there are horizontal integration benefits: informal institutions which provide business consultancy services or access to financial capital (Light *et al.*, 1994). Of course, the ethnic enclave does not arise with each immigration inflow. It requires a certain degree of ethnic concentration in one location to reach the critical mass of efficiency. Such massive inflow and a high degree of ethnic concentration is yet more likely with refugee inflow, as it is less planned and refugees prefer to cluster in the same locations, often close to their home countries.

An extension of the aforementioned theories is the mixed embeddedness approach. The mixed embeddedness model looks at immigrant entrepreneurship from 3 distinct levels of analysis (Kloosterman, 2010). The macro level is the regulatory framework and economic conditions of the host country. The meso-level links the model to opportunity structure, in line with Waldinger's (1989) approach. The immigrant entrepreneurs can choose between the co-ethnic market and the mainstream one. Access to the co-ethnic market is relatively easy but offers fewer chances for business development, whereas the mainstream market is difficult to access, yet provides better development prospects. The last level of analysis is the micro one, consisting of the individual characteristics and resources of an immigrant (human, social, and financial capital). Curci and Mackoy (2010) extend this market framework available to immigrant entrepreneurs, by classifying them along two axes: the ethnic and non-ethnic customers and the ethnic and non-ethnic products and services. They distinguish highly segmented businesses offering ethnic goods and services to ethnic customers, product-integrated firms providing non-ethnic goods and services to ethnic customers, market-integrated ventures that sell ethnic goods and services to non-ethnic clients and the highly integrated firms that act on the mainstream market with non-ethnic, general products and services offered to the general public.

During our research approach, the opportunity structures available for Ukrainian entrepreneurs in Poland have evolved. Initially, with the first wave (mostly voluntary) economic migration after the revolution of the dignity of 2014 most Ukrainians sought employment in Poland. The entrepreneurial activities were less popular, which we can explain both by the increased demand for workers in the Polish economy and the relatively unfriendly legal framework (*i.e.* macro layer of mixed embeddedness concept). For instance, Ukrainians as third-world country citizens were mostly deprived of the possibility to open a single proprietorship enterprise. Moreover, the COVID-19 pandemic period was particularly difficult for immigrants: the anti-covid support measures provided by the Polish government favoured long-established businesses, consequently, many recent firms created by immigrants were not entitled to public support. The full-scale Russian aggression on Ukraine was a major game-changer in this aspect. Firstly, the Ukrainian diaspora in Poland nearly doubled within the following two years, with a vast concentration of both economic immigrants and war refugees in the biggest Polish cities. This created favourable conditions for the creation of ethnic enclaves in major agglomerations such as Warsaw, Kraków, Gdańsk, Poznań or Wrocław. Secondly, the regulatory system has been changed into a more friendly to small-scale entrepreneurship and Ukrainian citizens have been granted a right to open single proprietorship enterprises.

Within such an institutional framework, our study strived to answer the following research questions. Firstly, we look for entrepreneurial motivations among Ukrainian economic migrants and refugees. Consequently, our first research question is formulated as follows:

RQ1: What are the primary motivations for entrepreneurship among Ukrainians in Poland? Are there systematic differences between economic and forced migrants in this regard?

Secondly, we tried to get a deeper understanding of how the COVID-19 pandemic has affected Ukrainian entrepreneurship. In particular, we wanted to learn whether the Ukrainians adopted a more proactive or rather conservative strategy to cope with such an external shock to their business activity. Therefore, we formulated our second research question in the following way:

RQ2: How has the COVID-19 pandemic affected the entrepreneurial activities of Ukrainians?

Finally, turning to the most recent wave of war refugees from Ukraine, we would like to better understand why does entrepreneurial activity emerge and what are the plans and their sustainability prospects. Consequently, we formulated our last research question as follows:

RQ3: What role does entrepreneurship play in the socio-economic activities of Ukrainians? Is it a means of economic integration in the host country, or is it a short-term survival tactic?

RESEARCH METHODOLOGY

We adopted a mixed methods approach, primarily relying on three waves of qualitative surveys conducted among Ukrainian entrepreneurs in the Małopolska region of Southern Poland. The initial round, conducted between April and August 2018, comprised 32 semi-structured in-depth interviews, conducted face-to-face. In this phase, we were mostly interested in the motivations of starting a business in Poland, adopted approaches to opportunity structured in the host country and market orientation. In this period, the inflow of Ukrainians into Poland was mostly guided by economic motives, although some of our respondents turned out to be internally displaced persons, forced to flee from Eastern Ukraine due to military intervention of Russian separatist movements. We conducted the second round of qualitative survey during the COVID-19 pandemic. We did it mostly online. The period of data collection spanned from May to August 2021 and involved 20 immigrant entrepreneurs, including seven Ukrainians. We conducted the third survey wave already after the full-scale Russian invasion of Ukraine, between May and October 2023, focusing on 10 Ukrainian refugees in Poland. All the interviews have been recorded, transcribed and translated into English for further analysis. The interviews lasted from 30 to 90 minutes.

Qualitative data from in-depth interviews is complemented with quantitative data derived from two large-scale surveys conducted by the authors. The first survey, conducted by the Centre for Advanced Studies of Population and Religion (CASPAR at Krakow University between November 2021 and January 2022, involved 607 respondents, including Ukrainian immigrants, within the Małopolska region. This survey was conducted within a project Future Migration Scenarios for Europe (FUME), funded from the European Union's Horizon 2020 research and innovation programme under Grant ID 870649. The second survey, also conducted by the CASPAR team between May and June 2022, targeted 500 Ukrainian refugees in the same region. This survey was carried out within the project Migration and Multicultural Observatory, financed by the municipality of Kraków in 2022. Quantitative data is utilized to provide insights into the broader context of labour market integration in Poland and the prior entrepreneurial experiences of the respondents.

RESULTS AND DISCUSSION

In what follows, we will provide the overview of our empirical analysis, describing the results separately for each period. Then we will discuss the evolution of entrepreneurial activities among Ukrainian economic migrants and refugees for the entire respondents sample.

Early Phase of Entrepreneurial Activity (2018)

Migrants in this surveyed period (*i.e.* 2018) can traditionally be defined as economic migrants. However, among the common reasons for leaving, Ukrainians mentioned not only economic reasons, namely, improving their financial situation or possibilities for further business development. Respondents often mentioned political reasons and the internal political situation in Ukraine as a result of the annexation of Crimea and the Maidan events ('Because I was simply not feeling secure (...) I did not feel safe after the annexation of Crimea' [30.05_18, J]). Besides, the interviewees also indicated the high level of corruption in Ukraine as a reason to migrate ('The main point is that there is less or no corruption here in the 3 years I have lived in Poland.' [18.05_18, A], 'There is good order, there is no corruption and there are lots of opportunities to achieve your goals.' [06.06_18_2, A]), the

presence of a sense of security in Poland ('It's hard to do business in Ukraine now, because you don't have the same security as in Poland. In Poland, there is everything in order. You have a business, you sign articles at the office, you are an entrepreneur and that's it. You have security. There is no quality in Ukraine. In some moments you can do it yourself. There are no rules. You can do more and more. There is no such thing in Poland, I like that.' [18.06_18, W]) and confidence in the future, as opposed to the situation in this aspect in Ukraine ('Then there is the peace of mind. You come home from work and you know that tomorrow will be the same as it was today. Because in Ukraine it looks a little different. Every day you leave home with the thought of what tomorrow will be. There will be a tomorrow at all. You can do that. Stability.' [18.05_18, A]). The lack of trust towards Ukrainian institutions and relative pessimism about the entrepreneurial ecosystem at home was therefore the main reason for a relatively modest of transnational business involvement of respondents in Ukraine. Only 12 out of 32 respondents conducted at least some of their businesses in connection with their home country, despite relative geographical proximity. Regarding the maintenance of business ties with Ukraine, most parts of the respondents stated that such ties are either not critical for their business or they do not have any at all and emphasised that most or the vast majority of contacts are in Poland: 'All business contacts are concentrated only in Poland. It does not even maintain partnership contacts with Ukrainians who have moved here' (13.05_14, I).

Some migrants specifically mentioned macro-level opportunity structure from the mixed embeddedness model as a motivation to move to Poland. This was, for instance, the general openness of Poland as a country to entrepreneurs ('Poland is very open to small and medium-sized entrepreneurship and it doesn't take that much big money to get started.' [30.05_18, J]), public support for entrepreneurs in their activities ('Poland is very open to entrepreneurs, Poland understands that if I want taxes, I have to help, yet the Polish market is growing because we still want more.' [30.05_18, J]), Poland's favourable geographical location ('Good location and good contacts with European countries. And at the same time, the cost of doing business is lower than in Western countries' [09.05_7, I,S]) and country's cultural similarity to Ukraine ('Poland is mentally close' [08.05_O], 'Poland is a country close to Ukraine. And the language is similar' [09.05_7, S,R]).

It is important to consider the main characteristics of migrants as respondents to our research, as they, being subjective factors, can have a significant impact on the decision to start a business and influence the effectiveness of adaptation in the host country. As for the region of origin, the vast majority of the 29 respondents lived in Kyiv before leaving for Poland (some of them had previously lived in Donetsk and moved to Kyiv after the outbreak of hostilities as a result of Russian aggression), a smaller number came from Dnipro (five respondents), Kharkiv and Kremenchuk (six respondents), and there were also representatives from Kherson, Donetsk, Odesa, Zaporizhzhia, as well as Rivne and Lviv.

In terms of education, all the respondents had a tertiary education, some also had an MBA degree, and there were also cases when the respondent had a PhD degree. As for the specialisations of higher education, these were: IT, psychology, law, philology, economics, and medicine. The age characteristics of migrants are notable for the fact that all migrants were of active and productive age – the minimum age was 23 years and the maximum age was 53 years. In terms of gender, the vast majority were men (19 out of 29 respondents). In this context, it is relevant to note that this gender gap may affect the entrepreneurial activity of migrants, as Brieger and Gielnik found in their study that male refugees (defined as forced migrants in this study) are more likely to start an entrepreneurial activity than female refugees (Brieger & Gielnik, 2021).

As for the former entrepreneurial experience, the overwhelming majority of respondents (20) had been doing business in Ukraine before migration. These were business activities in the following formats: providing business advice, business partnerships with colleagues, and participation in family businesses. There was even a case of a large-scale business when a migrant had 650 employees under his control in Ukraine. Such a factor may also influence migrants' motivation to start their own businesses and their further entrepreneurial activity. Indeed, according to human capital theory, researches show that those who have entrepreneurial experience in their home country are more likely to become entrepreneurs after arriving in a host country (Wauters & Lambrecht, 2006).

As for the areas of business activity in Poland, we can find: the provision of employment services for Ukrainians in Poland and other European countries (employment agencies with branches in Ukraine), IT businesses, foreign language schools, trade businesses selling parts for electric cars, culinary business (cafes, pubs, pizzerias, confectionery), provision of beauty services (beauty salons), sale of printing products, sale of polypropylene products and sale of protective masks, providing cleaning services, providing marketing services, passenger transportation services (in particular, sale of electronic tickets).

When it comes to the opportunity structure, the newly arrived immigrant entrepreneurs are expected to be mostly active in the markets left over by natives and orient themselves to ethnic clientele (Kloosterman, 2010). Consequently, such businesses should be either highly segmented or product – or market-integrated (Curci & Mackoy, 2010). However, our study exhibited rather surprising results: most of the respondents (14) had a highly integrated business, which in turn requires a high level of business relations specifically with Polish partners. Among these firms which offered non-ethnic goods or services to the general public were a confectionery, cafe, pizzeria, construction company, firms from the ICT sector and two manufacturing companies. The second category was the product-integrated firms, offering general goods and services (mostly) to ethnic clients. However, this tendency to orient a business towards co-ethnic customers was highly diversified when it came to the motivations of the entrepreneurs. In particular, respondents who run gastronomy-related businesses (*e.g.* coffee shops) indicate that their clients are Poles and tourists, as well as Ukrainians. Those providing employment consultancy services also indicated that their clients are Ukrainians and Poles. Of course, there is another specificity in this regard among representatives providing Polish language learning services – in this case, the clients are Ukrainians (*i.e.* product-integrated businesses).

Among the respondents, there are just a few examples when the services were used exclusively by immigrants: ‘Mainly immigrants (Ukraine, Belarus, Russia) and employees of large IT companies.’ [24_04, I]. However, this cannot be attributed to the fact that the business was initially focused on providing services to immigrants. Rather, this situation is because the services are used by a specific group of migrants (representatives of the IT sector) who need space to conduct their work processes. It is important to note that in this perspective, some respondents indicated that they would like to avoid the ethnic orientation of their business and planned to develop their business, on the contrary, in the direction of avoiding the above-mentioned process and moving towards internationalisation of clients to avoid the emergence of so-called migrant enclaves (‘To make it not a centre for immigrants, but a business hub.’ [30.05_18, J]) and the maximum involvement of Polish clients (‘I think the way I think about this is that you open a business in Poland, you have to rely on the fact that... you have to make it so that Poles go to you.’ [22.06_18, A]).

Thus, in the context of the issue of forming a target audience and client base among Ukrainian migrants, no tendencies can be observed among respondents that would indicate that the business they created was focused exclusively on representatives of a particular and specific ethnic group: ‘And Poles, and tourists, and Ukrainians also stop by sometimes. We didn’t show anywhere that we were Ukrainian and we opened our café’ [17.05_16, A].

When it comes to civic participation and political integration, the respondents identified obtaining citizenship or a permanent residence permit as a key factor that would facilitate their business activities and further development. In the context of Polish legal and regulatory realities regarding business opportunities for migrants, as of 2018, they had difficulties obtaining loans (‘Access to credit, access to the possibility of buying land, to so I could buy some local, some piece of land. It would be better.’ [20.06_18, I]). The most serious obstacle was the restrictions on business registration, as immigrants from outside of the EU could open a private enterprise only in the form of a limited liability company. Such legal arrangement in turn made access to residence permits more difficult, as it required higher income thresholds and higher taxes to be paid: ‘I think that’s how it can affect you. I have heard that you pay the only tax and it is easier to carry out your business. It is not compulsory to set up a partnership. Because foreigners can only set up partnerships [13.05_14, I].

That is why, in the context of the above-mentioned obtaining of Polish citizenship, respondents identified this factor as one that would facilitate business development (‘...<...>Now I think if I have a passport, that it won’t change much, but it will be a bit easier.’ [06.06_18, A]; ‘<...>.. and will have the

same rights as Polish citizens, will have access to credits, leases and loans.' [06.06_18_2, A]; 'So just life itself is easier, there are no different problems.' [09.06_18, S]).

Thus, acquiring citizenship is not the only condition for legal residence in Poland, but, in the context of our research, it also becomes a condition for the development and facilitation of business activities by Ukrainian migrants. Still, acquiring such citizenship is problematic from a Ukrainian point of view, as Ukrainian law does not allow for double citizenship (while Polish does so).

Certainly, the change of social space and the change of occupation as a result of migration has an impact on the perception of a person by the society of the host country and their immediate environment. Regarding the impact of starting a business on their status among relatives and friends, the prevailing number of respondents noted that it had not changed categorically and strongly ('The only thing is that it didn't affect. I have friends, I have family, everything is fine we are always in contact.' [22.06_18, Y]). Some respondents mentioned that they had changed for the worse as a result of psychological factors such as envy from friends, acquaintances, and family.

However, there was also a proportion of respondents who noted that the perception of their close environment had changed in the direction of raising their status, and some even specifically mentioned that this was influenced by the foreign location of their business: 'I think so, because the company is abroad it is always more interesting.' [22.06_18, Y]. Turning to the perception of a migrant as an entrepreneur in Poland by Polish society, respondents rarely noted any particular perception. However, there were cases in which the perception changed towards a more respectful attitude ('Because if I come somewhere and say I have a business, this property and I can present it and so on, they already look at you differently' [22.06_18, A]). But at the same time, there were also cases of negative perceptions of Polish society and breaking off contacts with migrants ('but when it comes to such close friends I have experienced this, even contacts have broken off' [18.08_18, K]) because members of the host society believed that migrants create a shortage of vacant positions on the Polish labour market ('<..> that I occupy a place, which means some Polish woman could work instead of me' [18.08_18, K]).

Some respondents noted that although their perception of society and acquaintances has not changed, it has affected their sense of self-worth and intrinsic value: 'Well, what I feel is the social status hasn't changed, but my sense of value has.' [18.08_18, K].

However, we cannot ignore the examples of losing the social status that a migrant had in Ukraine: 'The status is different in Ukraine and Poland because I have a background as a lawyer. In Ukraine, I worked in state structures, so had a higher social status than in Poland, and here I have my own company, but have to work in it myself, and the attitude to professions like truck driver is different, so I try to adapt to that.' [06.06_18_2, A]. In particular, one of the respondents describes this process of losing social belonging to certain strata of society in Ukraine quite tragically: 'Here I lost my social identity. Here I lost my social status. From CEO of a big, big company to just an immigrant, to zero points, minus ten points. I was happy that I had money. It is very important when you come to a foreign country just to have money, to feel comfortable at least in this field not to be dependent on physical jobs that most immigrants start here. I felt free and I did not lack money, I just, maybe I am so arrogant that I felt this...' [30.05_18, J]. In this aspect, entrepreneurial activity for many highly skilled migrants was a way to prevent them from working below their formal qualifications. Although their original competences were not always fully exploited in business, at least this enabled them to empower themselves and partially regain the social status of the middle class.

Covid Pandemic (2020-2021)

For all entrepreneurs, immigrants included, the COVID-19 pandemic was the most severe external shock in recent years. Many countries adopted drastic measures to prevent the rapid spreading of infections fearing that the medical sector might be overrun. These included the closure of borders and passenger movement between countries, as well as temporary lockdowns. In Poland, these policies started to be introduced from 14 March 2020 onwards so 10 days after the Ministry of Health's announcement of the first official case of a person infected with COVID-19 and the moment when 'the state of epidemiological threat' was announced. Along with it, control was temporarily restored on Poland's border with Germany, Lithuania, the Czech Republic and Slovakia, as well as in seaports and airports. Most importantly

from the perspective of over 1 million Ukrainian immigrants living in Poland at that time, restrictions were introduced at the external border European Union (border crossings with Belarus, Russia and Ukraine) for all foreigners (RCB 14/03/2020). Polish citizens, Polish Card holders and persons holding Polish residence cards were able to return to Poland but had to undergo 14-days of obligatory quarantine. From mid-March 2020 also increasing number of restrictions were being introduced in different sectors of the economy. For example, state closures severely affected the functioning of shops, fitness clubs, museums, libraries, cinemas and theatres. Restrictions have also been introduced on the operations of restaurants, cafes and bars which meant that they could only provide takeaway and delivery services. Very severe restrictions were also introduced concerning public gatherings (both indoor and outdoor meetings – including those of a religious nature). In the second half of March 2020, forced closures affected numerous other sectors of the economy (Brzozowski *et al.*, 2020, pp. 13-15).

Being aware of the critical condition of the economy, the government began to introduce from the beginning of April 2020 a number of solutions aimed at supporting various types of enterprises and people employed in them. These solutions, called the anti-crisis shields, included, among other things: more flexibility in employment conditions, co-financing by the state of the salaries of employees affected by reduced working hours, support for micro – small and medium-sized enterprises that have experienced a high decline in turnover, co-financing costs of business activity of self-employed persons, subsidizing salaries of persons employed in non-governmental organizations and other business entities of public benefit, exemption of private business entities from paying contributions to ZUS for the period from March to May 2020. Very importantly, the anti-crisis shields measures also took into account entrepreneurs' appeals for the automatic extension of visas and work permits for employees from Ukraine. Such simplified procedures in hiring foreign workers responded to employers' concerns about finding new employees if those who were in the country would have to leave due to lack of residence permits. They also argued that in a situation where it is very difficult to obtain legal arrivals employees from Ukraine, we must try to keep those who are already here and want to come to Poland to work. Moreover, the critical condition of the healthcare sector meant that many people could not access compulsory medical examinations before starting formal employment. From 20 April 2020 onwards restrictions began to be lifted and the country's economy – initially in the new sanitary regime stipulating for example how many persons there can be in a given place (*e.g.* one person per 15 m²) – started to slowly return to the pre-pandemic mode (Brzozowski *et al.*, 2020, pp. 13-15).

Various measures introduced by the government within the anti-Covid shields had a diversified impact on immigrant entrepreneurs. This is because the level of support significantly depended for example on the revenues obtained (and taxes paid) by them in the years before the pandemic. Those immigrants who had just started a company had limited access to these instruments. Many of these persons – for example in the restaurant/café sector kept generating significant costs without being able to operate normally. For many companies from these sectors, it meant that they had to close their business causing significant losses and even debts.

Our research has shown that Ukrainian entrepreneurs (depending on the sector of the economy and the stage of development of their business) have adopted both a proactive strategy – trying to use the crisis to their advantage and slightly or significantly changing the character of their business model – as well as reactive one – using all the available tools to survive in new hostile conditions. One of our interviewees who proactively responded to new COVID-19 conditions was the owner of the fitness studio. She said that before the pandemic she had never carried out her training online and the COVID-19 lockdowns have forced her to do so. She has accounted for this situation in the following way: 'I just needed to go online. It was very difficult for me because I really like the human contact. I am, you know, from this age group, just like you, that we appreciate the contact, not only online. I understand that the world is going in that direction so I need to do it anyway... There are many pluses but ... minuses too. During Covid lockdowns and other restrictions, I did all my training – if I only could – online. It was sometimes difficult because not everyone was able to do the training online – not everyone had for example proper conditions to do the training.' [MEP-6, TR_NS4] Despite lack of experience in online training and reservations about carrying out training in this way, our interviewee was able to adapt and fairly smoothly pass through the most difficult periods of the pandemic. She has achieved

relative success as people wanted to do some physical exercise even (or particularly) while being forced to immobility during the lockdown.

Another Ukrainian entrepreneur who was able to very quickly and efficiently change his business model and adapt to the new conditions was active in the education sector. He moved from a traditional recruitment agency for private universities in Poland to a new business – matching universities and recruitment agencies (worldwide). Before the pandemic, he was doing it on-site, in the form of special fairs (usually in conference rooms in large hotels), but with COVID-19 lockdowns and barriers to international mobility, he moved online and organized a matching online platform, which is working well. [MEP-2, MD]

Some of the interviewed entrepreneurs who found the adaptations to the new conditions more challenging were the owners of the newly opened zero waste shop and education centre. The planned launch of their business coincided with the most severe lockdown and freezing of the economy. They described this period in the following ways: ‘We were supposed to open on the 4 April, that’s what we planned. But when the pandemic started, we had to do it later. And we chose the 8 May. It wasn’t the best time to open. If he had known the pandemic would come, he wouldn’t have opened. But we survived, right? It’s fine! We needed a few months to breathe because it was quite hard at the beginning. People were scared of going out, of coming to us. And it was a new shop, you had to trust it, you had to get inside’ [MEP-7, NS5]

Some of our interviewees told us also that they were forced to make very significant adjustments in their business model to be able to survive the pandemic and all the negative economic implications of it. One such person was the owner of the construction and transportation company who had to shift between the two. He explained that ‘I’m in the transport field. Unfortunately, I’m going out of this branch. Unfortunately, and happily because the pay rates decreased significantly on the market because of that virus. We have many contractors who haven’t paid us money. There are many lawsuits right now, you know. For example, one of the companies hasn’t paid us more than 200 000 PLN, just one company (...). And because of that reason, we have to go out of this, there’s no sense in it. We’re giving the cars to other companies. And the construction stays because it’s possible to make money on this.’ [MEP-9, NS-7] As a result of COVID-19-related problems with his businesses, he decided to close one of the branches of his economic activity and concentrate only on the more profitable one – construction.

Finally, some of the entrepreneurs adopted a more reactive – wait-and-see strategy to cope with such a shock for their business activity. One of them was the owner of the café who was very concerned about the lockdown, as the city in which he was running the business – Kraków – is a popular tourist destination. During the pandemic, the city centre was almost deserted, and the business was kept on the surface by regular Polish customers who were dropping in for takeaway coffee: ‘Tourists ... Now, the coronavirus ... Now it’s a problem ... And in general, we have our regular clients in our café.’ Moreover, the business consisted of confectionery with delivery options, so some clients were ordering cakes and sweets to their homes. However, as most of the biggest clients were other businesses who ordered cakes for larger events (conferences, training etc.) the business has suffered during the pandemic ‘Just recently we had a collaboration, a deal with a restaurant in the [Name] Hotel. When they have a wedding, they send the fiancées to us. Such a collaboration. So, we wanted to do that before the coronavirus. They had those big banquets, big orders and it’s all gone.’ He also explained that their business has incurred huge losses: ‘compared to 100% July 2019 and July 2020, our sales dropped (...) by 30-34%. I didn’t get this 30–34% and it’s a big problem already’ [MEP-5, TR_NS3]. As for today, the business is still operating, but the on-site shop and café had to be temporarily closed. On the other hand, the pandemic and lockdowns have forced the business to invest more in online sales and now online delivery of confectionary products consists of an important part of the company’s turnover.

For some of the analysed entrepreneurs, the anti-Covid shields were very important measures which enabled them to maintain their business during the critical time. Some of these persons were the owners of the newly opened shop-education centre. They said ‘it helped us a lot because It was difficult. It was our beginning and such a crisis ... So, it was perfect for the start’ [MEP-7, NS5]. Other interviewees said that they had managed to adjust to new conditions without using anti-COVID shield instruments (e.g. owner of the fitness business – [MEP-6, TR_NS4]). For all interviewed entrepreneurs

the COVID-19 crisis was an important lesson which allowed them to learn new things about their businesses and the larger ramifications of them.

Situation After the Full-scale Invasion (2023)

The full-scale Russian invasion of Ukraine launched on 24 February 2022. It has completely changed the composition of the Ukrainian diaspora in Poland. Just before the eruption of war, in January 2022, the research team of the Centre for Advanced Studies of Population and Religion at Krakow University of Economics has concluded a representative survey of the immigrant population in the Małopolska region. Therefore, this survey presents the most recent picture of the population of economic migrants from Ukraine and other countries prior to this military conflict (Table 1).

Table 1. Personal characteristics of the immigrant population in the Małopolska region (2022)

Characteristics	Ukrainians	EU nationals	All migrants
Number	427	110	607
Female (%)	46%	35.6%	43.9%
Age (mean)	34.7	33.6	34.7
Married or partnership	57.5%	64.2%	58.4%
Having children (%)	50.2%	42.2%	48.2%
Tertiary education	54.1%	57.2%	56%
Employment	78.2%	65.5%	74.5%
Self-employment	3.5%	9.1%	5.3%

Source: own study.

Regarding gender structure, the Ukrainian population was dominated by male individuals (54% of the sample), but this trend was even more pronounced among EU nationals and migrants from other countries. All migrants were relatively young: the average age for Ukrainians was below 35 years, quite similar to other foreigners living in the Małopolska region. Moreover, when it comes to civil status, 57.5% of Ukrainians lived in marriages or long-term relationships, a percentage quite similar for all migrants but slightly less than in the case of EU nationals. When it comes to the share of immigrants who had at least one child and had tertiary education, Ukrainians did not differ much from the average. However, the biggest systematic differences can be found in economic activity. Among Ukrainians, 78.2% of respondents were full-time employed: a very high proportion, higher than the already impressive 74.5% for all migrants. On the other hand, only 3.5% of Ukrainians were self-employed, compared to 5.3% for all migrants and 9.1% among EU nationals. This finding confirms partially the narratives of our respondents from 2018, who complained about administrative barriers to starting a single-proprietorship enterprise, a form of entrepreneurship which at that time was fully available to EU citizens.

After February 2022, the structure of refugee inflow became completely different and the situation changed abruptly. As demonstrated on an international level, refugees who left Ukraine were mostly females with children. Males were only allowed to leave Ukraine under special circumstances (f.i. having more than three children, being a single parent, or having children with disabilities). Consequently, the survey conducted by the CASPAR team in the very early phase of the refugee crisis, between May and June 2022 has demonstrated a completely new composition of new Ukrainian diaspora coming to Poland (Table 2).

Almost all respondents who participated in the survey were females (96%) who came to Poland with their children. Their former economic activity in Ukraine, including labour, was lower than the average, but on the other hand surprisingly high was the share of individuals with entrepreneurial activity in the home country (14.4%). We could observe the same, although less female-dominated flows of Ukrainian refugees in other countries of the region, including for instance Austria (Kohlenberger *et al.*, 2023). As we conducted our survey in the very early phase of the conflict, within the frame of great unpredictability, only 30% of the respondents worked or were economically active, while most of them adopted a wait-and-see strategy, living on social benefits, savings and financial support sent from Ukraine. However, many Ukrainian females started to consider entrepreneurial ac-

tivity shortly after they arrived in Poland. This was the case of our respondent from an explorative survey carried out in 2023 among 10 female Ukrainian entrepreneurs. In spite of the critical situation, she was thinking about bringing her working tools while departing from Ukraine. She basically moved part of her enterprise (a beauty centre with manicure, pedicure, depilation and tattooing services in Eastern Ukraine) with her and transferred it to a new environment: 'Immediately I packed (my laser hair removal machine) to a car. I had not even taken my personal belongings, my suitcase. I took my child, and my equipment and left. I knew this was the only way to earn money. I would not go to some factory. I could not leave my child alone. I knew I would make some money out of it. I just needed my equipment. That's all' [K_6_34P].

Table 2. Personal characteristics of Ukrainian refugees in the Małopolska region (2023)

Characteristics	Refugees
Number	500
Female (%)	96%
Age (mean)	38.9
Married or partnership	59.8%
Having children (%)	81%
Tertiary education	58.8%
Employment in UA	57.1%
Self-employment in UA	14.4%
Currently working	30%

Source: own study.

Many of the refugees who came to Poland never migrated before. In fact, only 4 out of 10 respondents had previous migration experience. However, almost all of them came to Poland because they knew somebody from Ukraine who was living in this country: a close relative, friend or even more distant colleague. The reliance on migrant networks was crucial in the first days of settlement in Poland, as refugees were often offered accommodation and other forms of financial, but also emotional support. However, the family and diaspora resources played an even more important role in the mid-term. One of our respondents, a de-facto refugee herself (who arrived in Poland in 2019, but as a displaced person from Donetsk) has decided to open a small-scale enterprise (bakery and confectionery). One of the main reasons for running this business was the empowerment and employment opportunities for her mother, who recently arrived to Poland as a refugee: 'for years mom has always done this at home (...) mom is a gingerbread cookies specialist' [K_1_37P]. Although the business was in the early phase of development and was not making much of a profit, it already played a very important role in the successful socio-economic adaptation of the members of the family in Poland.

New refugee entrepreneurs can also rely on ethnic clientele and ethnic networks. 'Well and word of mouth also works' [K_2_36P] Ukrainian diaspora, already well-integrated economically in Poland, is an important facilitator for the successful engagement of refugees in social activities at the destination. Thanks to such networking, refugees can spot new business opportunities at a new location. One of the key opportunity structures is the ethnic market for specific products and services. As most of the recent refugees are females, there is a growing demand for beauty services: manicure, pedicure, hair-dressers, hair depilation etc. This sector is much more developed and competitive in Ukraine than in Poland. Consequently, the Ukrainian female refugees are looking for a higher standard of beauty services, that only other Ukrainian entrepreneurs can provide: 'Just we have, ee, we have, well, so to say, in Ukraine, a bit more DEMANDING clients, but we in return, also, so to say, yes, constantly motivate ourselves for some new knowledge to do it even better' [K_4_39P].

This is a surprising finding. We would expect that the refugee entrepreneurs should rather find their competitive advantage in lowering the costs of their services. However, in this case, we observed the opposite: focus on excellence in service delivery as a key factor. Of course, this is because the main customers are from the same ethnic group, but such a strategy has a prospect for expanding the business into a highly integrated one.

The main problem with our respondents was – quite understandable for the early phase of the conflict – their strategy of intentional unpredictability (cf. Drinkwater & Garapich, 2015; Grzymala-Kazłowska, 2018). Most of them had unspecified plans for the future and wanted to return to their home country. Actually, to our knowledge 4 out of 10 respondents had successfully come back to Ukraine. Therefore, their entrepreneurial activity at that time was marketed by temporariness: they were not eager to make long-term planning and commitments. Although Polish regulations were changed already in March 2022, opening a full labour market, but also small-scale entrepreneurial activity to all Ukrainians, only one respondent had registered her firm at the moment of the survey, and the other one was in the process of the business registration.

Despite the very early phase of our investigation and the explorative nature of our study, some emerging patterns call for detailed attention and further, more systematic research. The first one is the relationship between the Ukrainian economic diaspora and the recent refugee population. It is a fact that those Ukrainians who arrived in Poland before 2022 played a key role in supporting their co-nationals who came here involuntarily. They were extremely dedicated to offering them accommodation, financial support and even brokerage in finding employment. This diasporic support is in a way a unique situation for most recent forced migration movements and should be further investigated. Nevertheless, it is interesting to look also for potential tensions between those two groups, especially as the war in Ukraine seems now far from ending. How do economic immigrants from Ukraine perceive now their refugee co-nationals from an economic perspective? As potential employees in their companies? Or rather as a threat and competition?

Another highly interesting topic is the transnational framework for business conducted by Ukrainian migrants and refugees. Whereas in the initial phase of economic migration, Ukrainian entrepreneurs were less inclined to cooperate economically with their home country, the situation – paradoxically – is now changing. Our female respondents often rely on suppliers from Ukraine, despite the ongoing military conflict. It is important to bear in mind that in spite of the dramatic war in the Eastern and Southern parts of the country, Ukrainian territory is quite large. Therefore, business activities in Lviv or even Kyiv are conducted on a normal basis, and many Ukrainian entrepreneurs are willing to extend these business ties – not only for patriotic motivations but simply because they are profitable. This aspect of transnational refugee entrepreneurship is also novel for refugee entrepreneurship research and calls for closer analysis.

Finally, with such a dynamic inflow of refugees from the same ethnic group as the former waves of economic immigrants, the geographical concentration of Ukrainians in the largest Polish cities has visibly increased. Consequently, it would be interesting to learn whether the process of developing an ethnic enclave economy is taking place, and if yes – how it affects the development prospects of heavily segmented immigrant and refugee enterprises.

CONCLUSIONS

This explorative study aimed to present a short overview of the Ukrainian entrepreneurial activities in Poland, starting with the first wave of economic migrants who arrived in Poland after 2014, then the effect of the COVID-19 pandemic on Ukrainians doing business in Poland and the very initial situation of Ukrainian refugee entrepreneurs, who started to run their firms in Poland after 22 February 2022. Our analysis demonstrated that initially most of the Ukrainians who arrived in Poland were mostly interested in taking the waged employment, and the share of entrepreneurs among economic migrants was relatively small. This could be partially explained by the legal framework. As third-country citizens, Ukrainians were not allowed to become self-employed (*i.e.* open single proprietorship enterprises) and the reliance on the public limited companies created additional hurdles in access to residence permits. Before the COVID-19 pandemic, most of the surveyed Ukrainian entrepreneurs were either running product-integrated businesses, aimed at other fellow Ukrainian customers, or operated on a mainstream market. Moreover, these individuals had relatively small transnational involvement

with their home country, in spite of the geographical proximity. This was often explained by a disillusionment with the political situation at home: many respondents complained that it was much easier and safer to conduct business in Poland than at home.

The COVID-19 pandemic was a major external shock for Ukrainian respondents, and many of them incurred substantial losses during the economic lockdown. Some of them had even either to close some of their operations or even shut down their businesses completely. However, for some of the proactive individuals, the pandemic period came as an unexpected opportunity for change and to do their business differently, with positive outcomes for their entrepreneurial profitability and sustainability.

The outbreak of the full-scale Russian invasion of Ukraine marks a completely new chapter for the Ukrainian diaspora in Poland and their business activity. The massive inflow of Ukrainian refugees resulted in a fast amendment of the legal framework, allowing for the liberalization of entrepreneurial activity including its most simple form – single proprietorship entrepreneurship. Moreover, the composition of refugees differed substantially from former economic migrants from Ukraine – most of them were females, but also there was a higher share of persons with former entrepreneurial experience gained in their home country. Consequently, we are now observing a rapid increase in Ukrainian entrepreneurial activity. New refugee entrepreneurs usually focus their activity in beauty sector, and direct their services to co-ethnic customers. A massive inflow of the Ukrainian war refugees results in the development of important ethnic market: as for now, the total number of Ukrainians in Poland surpasses 2.1 million persons. As most of them live in the major cities, ethnic concentration occurs which in turn favours the development of the ethnic enclave economy.

Obviously, our research was just explorative and our three waves of qualitative survey present just a part of the general picture of the economic activity of Ukrainians residing in Poland. We need now more detailed, in depth analyses, in which the qualitative approaches will be supplemented with representative, quantitative surveys with potential to generalize the results. The Ukrainian refugees in Poland are now in a unique position, which is extremely interesting from the perspective of researchers studying immigrant and refugee socio-economic integration and immigrant and refugee entrepreneurship. They can rely on the support and existence of a large, already well-settled community of Ukrainian diasporans already living in the country prior to the full-scale Russian invasion. Consequently, they can potentially capitalize on the ethnic networks, ethnic solidarity and the development of the ethnic enclave economy in some locations. At the same time, paradoxically the increased patriotism among Ukrainians contributes to a higher incidence of transnational practices in diaspora, as compared to the pre-war situation. In this aspect, female refugees are in an advantageous situation, as they can move relatively freely between their home country and Poland. This is a very novel, almost unprecedented situation as in the case of most refugee entrepreneurs: usually, they are deprived of the possibility to interact socio-economically from the home country they have to flee. Consequently, studying the transnational refugee entrepreneurship of Ukrainians is extremely valuable, as it can extend substantially our understanding of the transnational activities of refugees.

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Conflict of Interest

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

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An intersectional perspective on the entrepreneurial intention of female Ukrainian migrants and refugees

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Maciej Filipowicz, Sabina Kubiciel-Lodzińska

ABSTRACT

Objective: The objective of the article is to examine potential variations among migrants from Ukraine concerning their entrepreneurial intention, considering the nature of migration (economic or forced) and their motherhood.

Research Design & Methods: In May 2023, a quantitative study surveyed 404 Ukrainian women in Poland. Utilising a research panel enabled longitudinal analysis, which is particularly valuable in migration studies aiming to grasp the entrepreneurial intentions of female Ukrainian migrants and refugees. The study unveiled demographic disparities between the two groups, encompassing migrant and parental status.

Findings: Pre-war migrant women exhibit higher entrepreneurial intentions compared to female refugees. Motherhood significantly influences the entrepreneurial intentions of both groups, particularly among women with children under 3. We observed correlations between parental status and entrepreneurial intentions. Migration's voluntary or involuntary nature significantly impacts these aspirations.

Implications & Recommendations: There's a need for inclusive startup ecosystems for female migrants, requiring targeted programs to address language barriers and cultural adaptation and improve access to education, employment and childcare. Entrepreneurship support needs to be catered to on demand. An intersectional approach is crucial to address their unique circumstances.

Contribution & Value Added: The intersectional approach, which examines not only the entrepreneurial intentions among women but also their migration status (voluntary/involuntary) and parental status, is novel.

Article type: research article

Keywords: entrepreneurial intention; intersectionality; female migrants; female refugees; motherhood

JEL codes: J15, L26, O15

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INTRODUCTION

In Central and Eastern European countries such as Poland (Okólski, 2021), the Czech Republic (Stojanov *et al.*, 2022), and Slovakia (Benova & Brockova, 2022), migration has gained prominence. Predominantly originating from Ukraine, the current migration wave can be classified into two primary groups. The first group consists of pre-war migrants, typically attracted for economic reasons, who were already part of the labour markets in Central and Eastern European countries before the full-scale Russian aggression against Ukraine. The second group comprises forced migrants (hereafter: refugees) who arrived after February 24, 2022, compelled to leave Ukraine due to the ongoing war. This group consisted mainly of young and middle-aged women with children (Kohlenberger *et al.*, 2023). In the article, by Ukrainian voluntary migrants, we understand people who came to Poland before February 24, 2022, mainly for economic purposes, which is why we also refer to them as economic or pre-war migrants. On the other hand, we call Ukrainian forced migrants the people,

who came to Poland after February 24, 2022, due to the war. They are also referred to in the article as refugees, although formally they do not have such status in Poland.

The dynamics of migration from Ukraine have been altered by the conflict, with women accompanied by children forming the main group (OECD, 2023). Integrating this specific demographic has become the foremost challenge for countries that have become new homes for both Ukrainian labour migrants and refugees. Poland has been a focal point, currently hosting over 1.2 million migrants from Ukraine including both groups, as estimated from mobile network operators' data on active SIM cards issued to Ukrainian citizens (CSO, 2023). This particular source has some limitations including multiple ownership, inactive SIM cards, and the method may underrepresent older populations and children. Estimating the population of Ukrainian migrants in Poland is quite difficult due to the poor quality of the data. In June 2024, there were just over 995 000 Ukrainian refugees in Poland (The Republic of Poland's Open Data Platform, 2024). This sizable population not only constitutes an integral part of Polish society but also represents a group with significant potential for entrepreneurial development, given the scale of their influx. However, there are meaningful differences between voluntary and forced migrants (refugees). The number of migrants residing in Poland in 2024 is estimated at 2.5 million (Dębkowska *et al.*, 2024).

Forced migration encompasses refugees and forcibly displaced populations resulting from war, conflict, political, religious, or other persecution, as well as natural or man-made disasters, development-induced displacement, smuggling, human trafficking, and environmental factors (Reed, 2018). Declared one of the most urgent issues today (Salehyan, 2019), forced migration distinguishes itself from voluntary migration as refugees are compelled to leave their homes. Often grappling with trauma, PTSD, major depression, anxiety, and emotional-related issues (Fazel *et al.*, 2005; Kien *et al.*, 2019; Schlechter *et al.*, 2021), refugees aspire to work, establish normalcy, and contribute to their host countries (Wassenhove & Boufaied, 2015). Despite high qualifications, refugees face obstacles in credential recognition and language proficiency, hindering employment (Wassenhove & Boufaied, 2015). Compared to voluntary migrants, refugees lack preparedness, increasing susceptibility to cultural shock and limited networks in the new environment (David & Terstriep, 2023; Bernard, 1976; Un *et al.*, 2022). When starting a business, refugees often have fewer resources than migrants (David & Zaghow, forthcoming). Newman *et al.* (2018) suggested greater obstacles for female refugees in developing psychological resilience. In addition, gender issues also matter. Motivations for employment vary between male and female migrants (Kubiciel-Lodzińska, 2021). These are some of the complexities that call for an intersectional analysis to understand this population's experiences comprehensively.

This article examines the intention towards entrepreneurship among Ukrainian female migrants and refugees living in Poland. McMullen *et al.* (2021) describe entrepreneurial intention as a significant predictor of entrepreneurial activity (Obschonka *et al.*, 2010). This concept refers to the deliberate mindset directing actions towards planned entrepreneurial endeavours in the future, which could be imminent, indefinite, or never materialise (Thompson, 2009).

In 2022, Ukrainians played a noteworthy role in the Polish business landscape by founding almost 16 000 individual companies, representing 6% of all new businesses established that year. The trend continued in the first half of 2023, with nearly 14 000 additional Ukrainian entrepreneurs entering the scene, nearly matching the total for the previous year. Impressively, around one in every ten newly established companies in Poland during this period had Ukrainian origins. From the commencement of the Ukrainian conflict until June 2023, a total of 29 400 Ukrainian sole proprietorships were officially registered in the CEIDG database (PIE, 2023).

The presented research adopts a quantitative approach, surveying 404 female respondents. Notably, the analysis distinguishes itself by comparing the entrepreneurial intentions of two distinct groups: pre-war migrant women and refugee women, as defined above.

Moreover, the study incorporates an examination of the parental status of migrant women, considering their motherhood. We acknowledged the factors of being a migrant, a refugee, and a mother as potential influences on the intention to start a business and call for an intersectionality perspective adopted in the analyses.

The article's objective is to examine potential variations among migrants from Ukraine concerning their entrepreneurial intention, considering the nature of migration (economic or forced) and their motherhood. It aims to address the following questions:

- RQ1:** Are there differences in the entrepreneurial intention between female pre-war migrants and female refugees?
- RQ2:** Are there differences in the intention to start a business between groups with and without children?

We will depart from the theoretical discourse on intersectionality in section 2. Following this, we will outline our chosen research methodology (section 3). In section 4, we will present and discuss the study's findings. Finally, we will conclude by acknowledging specific limitations and delving into the implications (section 5).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Intersectionality: Migrant Background, Gender, Motherhood

Intersectionality theory, introduced in the mid-1980s (Calas *et al.*, 2013), has become pivotal in management and organisational studies, shedding light on the intricate dynamics of inequality, oppression, and exclusion within specific demographic groups (Rodriguez & Scurry, 2019). Intersectionality is a vital framework for understanding the complex interplay of factors, situations, and structures that shape entrepreneurship (Grandy *et al.*, 2020; Scott & Hussain, 2019). Originally coined by Crenshaw, intersectionality significantly impacts the experiences of entrepreneurs (Bond, 2021). This concept acknowledges the cumulative effects of various forms of discrimination, highlighting how race, class, gender, sexuality, religion, and other personal characteristics intersect to shape individual experiences of both discrimination and privilege (Bond, 2021; Carastathis, 2016). It also addresses systemic inequalities within entrepreneurial ecosystems, driven by existing power dynamics (Acker, 2012).

Initially grounded in gender science, intersectionality has been examined alongside other diversity dimensions, including foreigner status (Rodriguez & Scurry, 2019), migrant background, and family circumstances (Maj *et al.*, 2024). Researchers have explored the intersection of gender and migrant background (Lassalle & Shaw, 2021) and the intersection of gender and ethnicity (David *et al.*, 2024). For instance, the intersectional perspective in entrepreneurship provides examples of female migrant entrepreneurs as inspiring role models for future generations (Bullough *et al.*, 2022), highlighting both oppressive structures and opportunities (Vorobeva, 2022). Thus, female entrepreneurs face ongoing obstacles such as financial limitations and gender bias, impacting perceptions of their abilities (Martínez-Zaroso, 2017). They often receive less venture capital funding than male entrepreneurs, hindering resource acquisition and credibility establishment in male-dominated sectors (David & Terstriep, 2023).

In addition to lacking financial capital, the challenges of accessing social capital through networks, mentorship, and balancing entrepreneurial endeavours with family responsibilities persist. For female migrant entrepreneurs, factors like ethnicity and migrant status exacerbate even more financial constraints due to restrictions on seeking bank loans (David *et al.*, 2023) and financial institutions' unconscious biases. Moreover, many migrant women face increased burdens overseeing extended family households, straining their mental well-being compared to native-born women (Lassalle & Shaw, 2021).

Entrepreneurial intention refers to an individual's conscious state of mind that directs their attention and actions towards starting a new business or venture (Refaat, 2009; Bird, 1988). It represents a commitment to engage in entrepreneurial behaviour and is influenced by various personal and environmental factors, such as attitudes towards entrepreneurship, perceived behavioural control, and subjective norms (Heydari *et al.*, 2020; Zhang *et al.*, 2014). This process includes the recognition of opportunities and the identification of gaps in the market. It involves evaluating the feasibility of the business idea by considering market demand, available resources, and personal skills (Jarvis, 2016). Following this evaluation, the individual commits to pursuing the business idea, developing a business plan, and seeking advice from mentors and networks. Finally, the decision to act involves taking concrete steps towards launching the business, such as securing funding and starting

the development or marketing of the product. This deliberate and planned approach to venture creation is shaped by a complex interplay of individual attitudes, perceived control over entrepreneurial outcomes, and social influences (Bird & Jelinek, 1989).

Employing an intersectional approach for the described target groups of migrant women being mothers with entrepreneurial intentions is crucial as it acknowledges that considering multiple dimensions simultaneously provides a more nuanced understanding of the group's inequalities (Acker, 2006). In this vein, Collins (1990) stresses the importance of shifting focus from singular categories of oppression to examining how various categories interact, resulting in unequal power dynamics. Using intersectionality as a theoretical framework is essential for understanding the subjectivity-identity approach (Holvino, 2010; Rodriguez *et al.*, 2016), particularly concerning identity changes within specific temporal and spatial contexts (Calás *et al.*, 2013).

Furthermore, intersectionality delves into the impact of sociocultural identities, such as racism, on power and privilege fluctuations in mothers' lives (Garland McKinney & Meinersmann, 2022). Analysing the concept of motherhood reveals its role in reproducing social inequalities and developing capital for children (Grant & Guerin, 2019). Utilising the concept of 'intensive mothering,' Garland McKinney and Meinersmann (2022) discuss the challenges black underrepresented mothers face as they navigate motherhood and work. Notably, in Poland, women are considered primary caregivers (Kość-Ryżko, 2022). Given this societal perspective, also female migrants and refugees being mothers are expected to meet the standards of intensive mothering while facing economic and social challenges, such as low socioeconomic status, limited career opportunities, language literacy, and healthcare access (Pangas *et al.*, 2019). For instance, refugee mothers, considered a 'vulnerable group,' are more commonly exposed to discrimination and racism (Pangas *et al.*, 2019). Refugee mothers from former Soviet republics in Poland may encounter additional challenges in terms of socialisation and enculturation, complicating their ethical and cultural identities (Kość-Ryżko, 2022). How gender, motherhood, refugee status, and other differences define female employees' or entrepreneurs' experiences remains understudied (Özbilgin *et al.*, 2011). An intersectional approach is vital to recognising the interface between micro-level subjectivities and broader structures and institutions, particularly for refugee mothers with problematic political status and social membership (Holvino, 2010).

To the best of our knowledge, the differences in entrepreneurial intention of voluntary women migrants and refugee mothers have not yet been studied. Women in the migrant economy have already been studied through the intersectional perspective (Crenshaw, 1991; Holvino, 2010; Clarke & McCall, 2014) to demonstrate how the multiplicity of diversity dimensions like ethnicity, race, and religion influence how women set up their businesses. Current research, albeit limited, has taken an interest in migrant mothers who are already entrepreneurs, focusing on the analysis of work-life balance strategies of self-employed parents in Norway (Munkejord, 2017) or as a response mechanism to discrimination (Andrejuk, 2018). Andrejuk (2018) found that for self-employed migrant mothers, the decision to set up a business resulted from necessity rather than opportunity, as it was mostly aimed at modifying working hours to combine work and motherhood. Andrejuk (2018) defined it as the 'family defender strategy.' The results of her research also indicate the many difficulties connected with combining the roles of caregiver and primary breadwinner. However, she also pointed out that by adopting the 'family-defender' strategy, migrant mothers gain legitimacy and stability as members of society.

As stated by García and Villares-Varela (2023), literature on migrant entrepreneurship still rarely includes women's experiences and perspectives. One of the strategies for analysing the intersectionality of migrant status, gender and motherhood is adopting a limited intersectionality approach by analysing motherhood as one of the life stages of a female migrant entrepreneur (Andrejuk, 2018). Feminist scholarly efforts have sought to address the gap in entrepreneurial literature by examining various aspects, ranging from the invisibility of women in migrant-led enterprises to interpreting business ownership as a pathway to independence and self-realization (Morokvasic, 1999; Apitzsch & Kontos, 2003; Carter *et al.*, 2015; Vershinina *et al.*, 2019). Central to these analyses is the role of migrant women as the backbone of family businesses in labour-intensive sectors typical of the ethnic economy. These sectors often exhibit a significant reliance on a flexible and cheap labour force, with blurred boundaries between work and household dynamics (Ram, 1994; Dang & Harima, 2020). There is also

literature that shows that some migrant women use entrepreneurship as an emancipation strategy (Apitzsch & Kontos, 2003; Morokvasic, 1999; De Luca & Ambrosini, 2019). While focusing on migrant women-mothers' entrepreneurs, the described research did not include an analysis of their entrepreneurial intentions. Here, we identified the theoretical gap. Against this backdrop, we hypothesised:

- H1:** There is a significant difference in the entrepreneurial intention between female pre-war migrants and refugees. Specifically, female pre-war migrants demonstrate a higher propensity towards starting businesses compared to female refugees.

Justification for the H1:

Female pre-war migrants may have better access to social and financial capital compared to refugees, who often face more significant barriers in these areas due to forced displacement and potentially traumatic experiences (David & Terstriep, 2023). The literature highlights that financial constraints and lack of social capital are significant barriers to entrepreneurship, which are more pronounced for refugees (David *et al.*, 2023). Refugees often deal with ongoing trauma, uncertainty, and instability, which can hinder entrepreneurial intentions (Lassalle & Shaw, 2021). On the other hand, pre-war migrants might experience a more stable transition, allowing them to focus on identifying and exploiting business opportunities. Both groups face discrimination, but the nature and extent can differ. Refugees might face more acute forms of racism and xenophobia due to their more vulnerable status (Pangas *et al.*, 2019), which can demotivate entrepreneurial pursuits. Intersectionality theory emphasizes how these intersecting forms of discrimination uniquely affect refugees compared to other migrant groups (Garland McKinney & Meinersmann, 2022).

- H2:** Differences in the intention to start a business exist among female migrants, particularly between those who migrated for economic reasons and those who were forcibly displaced. Moreover, both groups, female migrants and refugees with children are expected to show lower intentions to start a business compared to those without children.

Justification for H2:

The literature suggests that economic migrants, who migrate by choice for better opportunities, often have higher entrepreneurial intentions due to their proactive approach and readiness to capitalise on available opportunities (Holvino, 2010; Rodriguez *et al.*, 2016). In contrast, forced migrants or refugees, who migrate under duress, often lack the initial resources and psychological readiness required for entrepreneurship (Calás *et al.*, 2013). The intersectionality framework highlights how gender and motherhood roles impact entrepreneurial intentions. Female migrants and refugees with children face additional burdens, such as balancing family responsibilities with business activities, which can reduce their entrepreneurial intentions (Grant & Guerin, 2019). The concept of 'intensive mothering' shows that societal expectations place more significant pressure on mothers, particularly in contexts where women are primary caregivers (Kość-Ryżko, 2022). Female migrants and refugees with children often encounter more profound economic and social challenges, including lower socioeconomic status and limited career opportunities (Pangas *et al.*, 2019). These challenges are exacerbated by their caregiving roles, further reducing their ability to pursue entrepreneurial ventures (Lassalle & Shaw, 2021). The intersection of motherhood, migrant status, and other social identities creates unique obstacles that hinder entrepreneurial intentions. In particular, refugee mothers face heightened discrimination and difficulty in social integration, which impacts their ability to start businesses (Özbilgin *et al.*, 2011; Holvino, 2010).

We addressed the gap in the literature by specifically examining the entrepreneurial intentions among female pre-war migrants, female refugees, and those with and without children. Adopting an intersectional approach, it aims to provide a nuanced understanding of how various intersecting identities influence entrepreneurial behaviour. The hypotheses are grounded in the complex interplay of gender, migration status, and family responsibilities, as elucidated by the intersectionality theory and existing empirical evidence.

By identifying and analysing these factors, we sought to contribute to the broader understanding of migrant entrepreneurship and offer insights into how different dimensions of diversity impact en-

entrepreneurial intentions. This approach aligns with feminist scholarly efforts to highlight the experiences of women in the migrant economy and address their unique challenges and opportunities.

RESEARCH METHODOLOGY

The study adopts a quantitative approach and was conducted on a survey panel in May 2023, focusing on a sample size of 404 Ukrainian women – pre-war migrants and refugees – currently living in Poland. Research conducted on a panel involves gathering data from the same group of respondents or participants who have consented to participate in research activities over a defined period. Utilising a research panel offers several advantages, including the possibility to pre-recruit participants, who fit the desired profiles (in the case of this study, female migrants and female refugees). The research panel used for this study included individuals with diverse backgrounds, including hard-to-reach populations like migrants and refugees. Thus, using such panels ensures a more comprehensive understanding of the research problem. Furthermore, panels can significantly reduce the costs and time associated with recruiting participants for a study. Since they are already recruited, they can be quickly accessed, and the response rate is higher compared to other survey methods (*e.g.* Lehtonvirta *et al.*, 2021; Tourangeau, 2014). By employing a quantitative methodology within a panel framework, we aimed to provide a comprehensive understanding of the entrepreneurial intentions of Ukrainian migrant women in Poland, shedding light on potential variations and trends within this demographic group over time. We used frequency analysis and statistical tests to analyse the data. The analyses focused on the status of the respondents, *i.e.* whether the respondent was a pre-war migrant or a refugee, and on whether or not the respondents had children under 18 years, over 7 years and children under 3 years.

Within the cohort of migrant women surveyed, we observed that a significant majority, accounting for over 58%, fell within the age range of 30 to 44 years, indicating a prevalent presence of women in their prime working years. This age distribution was further highlighted when examining the specific cohorts within the migrant population. Among refugee women, approximately 63% fell within the specified age range, suggesting a concentration of individuals amid their professional and personal development. Conversely, among pre-war migrant women, this proportion was around 52%, indicating a slightly lower but still substantial representation within the same age bracket. Notably, the pre-war migrant demographic exhibited a higher representation, exceeding 37%, within the youngest age bracket, suggesting a relatively youthful profile within this subgroup.

Moreover, discernible differences emerged between the two cohorts concerning educational attainment within the surveyed populace. Specifically, nearly 70% of refugee women possessed tertiary education qualifications, reflecting a commendable level of educational achievement within this group. In contrast, a minority, approximately 12%, attained secondary-level education, indicating a smaller proportion of individuals with lower educational qualifications. This discrepancy in educational attainment underscores the diverse backgrounds and experiences within the refugee population, with a significant proportion benefiting from higher education opportunities.

In the sample population, it was notable that approximately three-quarters reported having children under the age of 18, highlighting the prevalence of motherhood within the migrant community. This observation was further accentuated when comparing the incidence of motherhood between the different migrant cohorts. For named reasons explained by the war conflict, a greater proportion of refugee women identified as mothers. They comprised nearly 75% of the cohort. In contrast, this proportion was slightly lower among pre-war migrant women, with approximately 58% reporting motherhood status. This disparity suggests varying family compositions and responsibilities within the different migrant subgroups, with implications for their entrepreneurial intentions and pursuits.

We conducted the analysis using frequency analysis, which allows us to understand the distribution of responses and identify trends and patterns within the data. We also used several statistical tests (like the chi-square test and V-Cramer test) to establish, whether there are statistically significant relationships and differences between the variables in the study. The article adopts two levels of statistical significance: ≤ 0.05 and < 0.1 . All results with a p-value > 0.1 were considered statistically insignificant.

Table 1. Sample structure

Characteristics			Pre-war migrants	Refugees	Total
Age	18-29	Number	58	65	123
		%	37.4	26.1	30.4
	30-44	Number	80	156	236
		%	51.6	62.7	58.4
	Over 45	Number	17	28	45
		%	11.0	11.2	11.1
Education	Higher	Number	93	173	266
		%	60.0	69.5	65.8
	Secondary	Number	37	30	67
		%	23.9	12.0	16.6
	Vocational/primary	Number	25	46	71
		%	16.1	18.5	17.6
Children under 18 years	Yes	Number	89	185	274
		%	58.2	74.6	68.3
	No	Number	64	63	127
		%	41.8	25.4	31.7

Source: own study.

RESULTS AND DISCUSSION

The survey aimed to gather insights into the entrepreneurial intention of female migrants and refugees from Ukraine. The primary objective was to ascertain whether women considered engaging in business as a viable option in the labour market, noting that none of the migrant women surveyed was currently operating their businesses.

Among the respondents, slightly over 15% expressed interest in establishing a business, while nearly half indicated a reluctance to pursue such a path. Notably, a group comprising over 35% of participants remained undecided, representing a potentially intriguing segment with latent potential for entrepreneurship.

The data revealed that in the surveyed group, the proportion of pre-war migrant women willing to set up a business was slightly higher than among refugee women – 23.3% compared to 12.9%. Among refugee women, 54% expressed no interest in establishing their businesses. This disparity suggests varying levels of entrepreneurial intention within the different migrant cohorts with implications for understanding their aspirations and motivations in the labour market (Table 2). This relationship is weak (Cramér's $V = 0.122$) but statistically significant, suggesting that the circumstances of immigration influence the statements made.

Table 2. Intention to entrepreneurial activities of Ukrainian women in Poland [2023]

Characteristics			Pre-war migrants	Refugees	Total
Yes	Number		31	32	63
	%		23.3	12.9	15.7
No	Number		65	134	199
	%		42.5	54	49.6
I don't know	Number		57	82	139
	%		37.3	31.1	34.7

Note: $\chi^2=6.023$, $df=2$, $p<0.05$, V Cramer=0.122.

Source: own study.

The analysis also considered the impact of childcare responsibilities on women's engagement in the labour market (Liu & Marois, 2023), a crucial factor in assessing their intentions towards entrepreneurship. The study examined intentions to venture into business across two key dimensions: migration status and parental status, particularly focusing on individuals with children under 18.

The research findings highlight the role of motherhood in shaping entrepreneurial intention. Surprisingly, within the study cohort, female participants with dependent children (under the age of 18) demonstrated a greater entrepreneurial intention compared to migrant women without children under 18. Remarkably, this pattern persisted across both migrant subgroups, encompassing both pre-war migrants and refugees. Among pre-war migrant women with dependent children, nearly 26% expressed an intention to establish a business, contrasting with 12.5% among those without children. We observed a similar trend among refugee women, with 14% of those with children under 18 indicating a positive response to the question about their consideration of starting their own business (Table 3).

Table 3. Intention to entrepreneurial activities according to the type of migrant and presence of children aged under 18 years

Type of migrant	Intention to entrepreneurial activities		No, I don't have children under 18	Yes, I have children under 18	Total
	Pre-war migrants	Yes	Number	8	23
%			12.5	25.8	20.3
No		Number	27	38	65
		%	42.2	42.7	42.5
I don't know		Number	29	28	57
		%	45.3	31.5	37.3
Refugees	Yes	Number	6	26	32
		%	9.5	14.1	12.9
	No	Number	34	100	134
		%	54.0	54.1	54.0
	I don't know	Number	23	59	82
		%	36.5	31.9	33.1

Note: Pre-war migrants: $\chi^2=5.11$, $df=2$, $p<0.1$, V Cramer=0.184; Refugees: $\chi^2=1.050$, $df=2$, $p>0.1$, V Cramer=0.065.

Source: own study.

The study showed that in the analysed group of Ukrainian migrant women, differences between those with and without children under the age of 18 existed, but only in the case of pre-war migrants is statistically significant. In the case of female refugees, this relationship was minimal, as indicated by the marginal value of V Cramer, and lacks statistical significance.

Considering the results, we conducted additional analyses. We also placed focus on the respondents and their intention to start a business, with particular attention to whether they had children over the age of seven or not (Table 4).

In light of the results, we conducted further analyses. We examined respondents and their entrepreneurial intention, considering whether they had children over the age of seven.

Within the study group, we observed that slightly more pre-war migrant women with children over seven years old (34%) were willing to set up their own businesses compared to refugee women, among whom only 14% responded affirmatively.

We found that, in the case of female pre-war migrants, there was a statistically significant relationship between entrepreneurial intention and having children over the age of seven. This may indicate that the age of the child was a factor considered by these women when deciding to start their own businesses. Conversely, among the refugee women surveyed, there was no statistically significant relationship between the age of their children and their entrepreneurial intention.

Moreover, we used the entrepreneurial intention for comparison, considering whether the respondents had younger children, *i.e.*, up to the age of 3. The age of a child up to three years was the most demanding for parents, particularly mothers. This is primarily because providing institutional care for very young children is more difficult. Furthermore, due to the high incidence of illnesses in early childhood, young children often have high absenteeism from care. Consequently, it becomes challenging for parents to balance work responsibilities with childcare during this period. The results of the analyses are presented in Table 5.

Table 4. Intention to entrepreneurial activities according to the type of migrant and presence of children aged over 7 years

Type of migrant	Intention to entrepreneurial activities		No, I don't have children over 7	Yes, I have children over 7	Total
Pre-war migrants	Yes	Number	13	18	31
		%	12.7%	34.0%	20.0%
	No	Number	43	23	66
		%	42.2%	43.4%	42.6%
	I don't know	Number	46	12	58
		%	45.1%	22.6%	37.4%
Refugees	Yes	Number	13	19	32
		%	11.0%	14.5%	12.9%
	No	Number	64	70	134
		%	54.2%	53.4%	53.8%
	I don't know	Number	41	42	83
		%	34.7%	32.1%	33.3%

Note: Pre-war migrants: $\chi^2=12.563$, $df=2$, $p<0.05$, V Cramer=0.285; Refugees: $\chi^2= 0.054$, $df=2$, $p>0.1$, V Cramer = 0.054. Source: own study.

Table 5. Intention to entrepreneurial activities according to the type of migrant and presence of children aged under 3 years

Type of migrant	Intention to entrepreneurial activities		No, I don't have children under 3	Yes, I have children under 3	Total
Pre-war migrants	Yes	Number	26	5	31
		%	22.6%	12.5%	20.0%
	No	Number	43	23	66
		%	37.4%	57.5%	42.6%
	I don't know	Number	46	12	58
		%	40.0%	30.0%	37.4%
Refugees	Yes	Number	31	1	32
		%	15.2%	2.2%	12.9%
	No	Number	108	26	134
		%	52.9%	57.8%	53.8%
	I don't know	Number	65	18	83
		%	31.9%	40.0%	33.3%

Note: Pre-war migrants: $\chi^2=5,128$, $df=2$, $p=0,05$, V Cramer=0,182; Refugees: $\chi^2=5,721$, $df=2$, $p<0,1$ V Cramer=0,152. Source: own study.

Having young children (up to 3 years old) constitutes a barrier to start-up decisions. This trend is evident in the respondents' answers. In both groups – pre-war migrant women and refugee women – those without children under the age of three were more likely to express an intention to set up a business. Among pre-war migrant women without children under three, 22.6% indicated an entrepreneurial intention, compared to only 12.5% of those with children under three.

The difference was even more pronounced among refugee women. Here, 15.2% of respondents without young children expressed an intention to set up a business, whereas only 2.2% (one respondent) of those with children under three did so. This data highlights the significant impact that the presence of very young children has on the propensity of women to engage in entrepreneurial activities. In both cases, having the youngest children exerts a limiting effect on business start-up declarations. These differences were statistically significant.

The data suggests that pre-war migrants with children under 18 were more inclined towards embarking on entrepreneurial ventures, possibly motivated by the need to support their families financially. Interestingly, this demographic tends to be younger than their childless counterparts, with the latter likely representing the youngest segment within the sample.

Moreover, analyses stratified by migrant type failed to produce statistically significant findings. These outcomes indicate that, within the surveyed population, the nature of migration did not significantly impact the expression of entrepreneurial intentions. This is an interesting finding because, as research on Syrian refugees in Turkey shows, the refugee context has a negative emotional impact on entrepreneurship (Almohammad *et al.*, 2021).

The results of the survey provide valuable insights into the entrepreneurial intention of female migrants and refugees from Ukraine living in Poland. They show a slightly different perspective from, for example, the research conducted in Sweden among female refugees (Lazarczyk-Bilal & Glinka, 2020). Notably, while a significant portion of respondents expressed interest in establishing a business, nearly half indicated reluctance, while a substantial percentage remained undecided. This undecided group represents a potentially intriguing segment with latent entrepreneurial potential, suggesting that targeted support and interventions could encourage them to explore entrepreneurial opportunities further. A notable disparity emerged between pre-war migrant women and refugee women regarding their willingness to start a business. Pre-war migrant women exhibited a higher entrepreneurial intention compared to refugees, with a significantly higher proportion expressing interest in establishing a business. This finding suggests that the motivations and barriers to entrepreneurship may differ between the two migrant cohorts, possibly influenced by their respective migration experiences and backgrounds already discussed in the literature (Abebe, 2023).

The analysis also highlighted the significant role of parental status, here motherhood, in shaping entrepreneurial aspirations among female pre-war migrants. Surprisingly, women with dependent children (aged under 18 and the group having children over 7 years) demonstrated a greater propensity towards starting a business compared to those without children. It thus indicated that childcare responsibilities may serve as a motivating factor for entrepreneurship among migrant women to be more independent in terms of work schedules and workplace arrangements. The findings underscore the need for policies and support mechanisms that address the unique challenges and opportunities faced by migrant mothers in the labour market.

In the group of refugee women with children under the age of 18, as well as those with children over the age of 7, there was no statistically significant relationship between having or not having children and the propensity to start a business. It is also important to consider the interaction of factors – refugee women are in a state of ‘limbo.’ They often do not know how long they will remain in their host country. This uncertainty influences their decisions on how to navigate the labour market. Consequently, their decisions may be influenced not only by childcare issues but also by other factors related to their continued stay in the host country.

However, in both groups, having the youngest children exerts a limiting effect on declarations to set up a business. These differences are statistically significant.

Overall, the study’s findings provide valuable insights into the complex interplay of factors influencing entrepreneurial intentions among female migrants and refugees from Ukraine in Poland. They highlight the importance of addressing childcare responsibilities and tailoring support mechanisms to meet the diverse needs of migrant women in pursuing entrepreneurial opportunities. Further research could explore additional factors influencing entrepreneurial intentions and delve deeper into the experiences of specific migrant subgroups to inform targeted policy interventions and support programs.

CONCLUSIONS

Our article extends the theoretical understanding of the factors influencing migrants’ business start-up behaviour, with a particular focus on women, through the lens of intersectionality theory. Our analyses demonstrate that key factors affecting the decision to establish a business include the nature of the migrant’s residence status (whether it involves voluntary or forced migration) and their family circumstances, especially the ages of their children.

The complex landscape of migration from Ukraine to Central and Eastern European countries like Poland (Górny & van der Zwan, 2024), the Czech Republic (Křížková, & Ouředníček, 2020), and Slovakia (Koroutchev, 2020) has seen significant shifts, particularly with recent movements within Europe.

These migrations primarily comprise two groups: pre-war migrants, attracted to economic opportunities before the conflict in Ukraine, and refugees, compelled to leave their homes due to the ongoing war. The integration of these migrants, especially women with children, poses significant challenges for host countries like Poland, which currently hosts a substantial Ukrainian migrant population.

We delved into the entrepreneurial intention of Ukrainian female migrants and refugees in Poland, a demographic with considerable potential for business development, given their significant presence in the country. However, there are notable distinctions between voluntary and forced migrants, particularly refugees, who often face additional barriers to employment and integration (Fasani *et al.*, 2021; Lumley-Sapanski, 2021). Refugees, compelled to leave their homes due to conflict, bring with them experiences of trauma and displacement, which can impact their ability to engage in entrepreneurial activities despite their aspirations for normalcy and contribution to their host countries.

Furthermore, the research findings highlight the influence of parental status, here the motherhood on entrepreneurial aspirations among migrant women of both groups.

Surprisingly, women with dependent children (under the age of 18 and with children over 7) demonstrate a greater entrepreneurial intention compared to those without children, suggesting that childcare responsibilities may serve as a motivator for entrepreneurship. This trend persists across both pre-war migrant and refugee cohorts, indicating the universal significance of motherhood in shaping women's entrepreneurial intentions. However, we noted a statistically significant relationship between having children aged under 18 and over 7 and intention to entrepreneurial activities only in the case of pre-war migrants.

The nature of migration significantly impacts the expression of entrepreneurial intentions within the surveyed population. The study underscores the importance of considering multiple dimensions, including gender, migration status, and parental responsibilities, in understanding migrant experiences comprehensively. An intersectional analysis reveals the nuanced interactions between various identity markers and structural factors, shedding light on the complex dynamics of inequality and exclusion within migrant communities.

Against this background, the implications for policymakers might include an inclusive and sensitive startup ecosystem with support mechanisms for integration and the recognition of the diverse needs of both pre-war migrants and refugees (Simich *et al.*, 2005), especially women with children, as they navigate integration into the host country's society and economy. Targeted support programmes should be implemented to address language barriers, facilitate cultural adaptation, and provide access to education and employment opportunities (Due *et al.*, 2021). In this regard, it is essential to consider the specific challenges faced by refugee populations. Entrepreneurship support is another vital aspect to consider. Tailored entrepreneurship programmes, mainly on demand (wanted and required by these groups) should be developed for Ukrainian female migrants and refugees, acknowledging their potential for business development. These programmes should offer resources such as mentorship, training, and financial assistance to empower migrant and refugee women to start and sustain their businesses. It is important to consider the unique circumstances of refugee entrepreneurs, including trauma-informed support services and assistance with navigating bureaucratic processes.

This knowledge may be particularly valuable for policymakers in Central and Eastern European countries, which have recently transitioned from being countries of emigration to immigration. The rapid pace of these changes, accelerated by the war in Ukraine and the sudden mass influx of refugees, has often left these countries with insufficient time to adapt their policies accordingly. For instance, in Poland, the preparation of a migration strategy did not commence until 2024.

Recognising the role of childcare responsibilities as a motivator for entrepreneurship among those women is also crucial. Investing in affordable and accessible childcare services can enable women with dependent children to pursue entrepreneurial ventures without compromising their caregiving duties. It is essential to ensure that childcare support is inclusive and responsive to the needs of diverse migrant communities.

Adopting intersectional policy approaches was necessary to address the intersecting identities and experiences (Bonjour & Duyvendak, 2020) of migrant women, including their gender, migration status, and parental responsibilities. Policies and programmes should be designed to address the complex

dynamics of inequality and exclusion within migrant communities, considering the diverse needs and aspirations of different migrant groups. Establishing longitudinal monitoring and evaluation mechanisms is essential for tracking the effectiveness of integration and entrepreneurship support initiatives for Ukrainian female migrants over time. Collecting disaggregated data on key indicators such as entrepreneurial intentions, business ownership, and socio-economic outcomes can inform evidence-based policymaking and identify areas for targeted intervention. Finally, fostering collaboration and knowledge sharing among policymakers, researchers, civil society organisations, and migrant communities is crucial. As research shows, it is important to build entrepreneurial intentions (Richey *et al.*, 2022). By working together, stakeholders can co-design and implement effective policies and programmes that are responsive to the diverse needs and experiences of migrant women from Ukraine. Drawing on insights from intersectional research can further inform policy development and ensure that interventions address the complex challenges faced by migrant communities.

However, it is essential to acknowledge the study's limitations. While the survey captured insights from a significant number of female migrants and refugees from Ukraine residing in Poland, the sample may not fully represent the entire population. There could be biases in the selection process, and certain segments of the migrant population may be underrepresented, affecting the generalisability of the findings. The study focused primarily on entrepreneurial intentions among female migrants and refugees from Ukraine in Poland. While it provided valuable insights into this specific demographic, it did not explore other factors that could influence entrepreneurial aspirations, such as prior entrepreneurial experience or access to resources. The study identified correlations between certain variables, such as motherhood and entrepreneurial intentions, but did not establish causality. While the findings suggest potential relationships, further research is needed to determine causative factors that drive entrepreneurial behaviour among migrant women. While the study considered both pre-war migrants and refugees, the analysis did not delve deeply into the diverse experiences within these groups. Variations in migration trajectories, socio-economic backgrounds, and personal circumstances could influence entrepreneurial intentions but were not fully explored. The study focused specifically on female migrants and refugees from Ukraine in Poland, limiting the generalizability of the findings to other migrant populations or host countries. Different contexts may yield different results and researchers should exercise caution when extrapolating the findings to other settings.

Future research could explore the experiences of other migrant groups and consider additional factors influencing entrepreneurial intentions, such as language proficiency and access to financial resources. An important issue for future research is to determine the factors that drive women to start a business. Is it forced entrepreneurship, such as internal pressure and a desire to ensure the well-being of their children or themselves? Or is it external pressure from a potential employer? Despite these limitations, the study contributes valuable insights into the entrepreneurial landscape of migrant women in Poland, highlighting the need for tailored support and policies to address their unique challenges and aspirations.

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Labour market situation of Ukrainian migrants in Wielkopolskie Voivodeship: The skills mismatch perspective

Olena Shelest-Szumilas

ABSTRACT

Objective: The main purpose of the present article is to analyse the situation of Ukrainian migrants in the Greater Poland (Wielkopolskie Voivodeship) labour market with a particular focus on the skills (mis)match and to identify factors contributing to it.

Research Design & Methods: The study focused on the Ukrainian immigrants employed in the Voivodeship of Greater Poland at the time of the survey. The research sample included 429 individuals. I used logistic regression to estimate the impact of selected factors on the occurrence of a skills mismatch.

Findings: The analysis revealed that different factors may contribute to the occurrence of various types of skills mismatch (related to education, occupation, and industry). This means that the skills mismatch is a complex phenomenon and further research is needed to explore its nature and determinants.

Implications & Recommendations: Addressing a skills mismatch among migrant workers requires a multifaceted and tailored approach that takes into account specific factors contributing to different types of skills mismatch and unique needs and profiles of different migrant groups.

Contribution & Value Added: The study adopts a broader approach and distinguishes between three different types of skills mismatch, highlighting the importance of analysing the determinants that contribute to each of these, and proposing some practical implications for local policies and organisations.

Article type: research article

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INTRODUCTION

In the last two decades, labour migration has become a significant issue in Europe and worldwide, with millions of people moving to other countries in search of better job opportunities and/or living conditions. Even before the war in Ukraine started, Poland had already become a popular destination for temporary workers and the most attractive destination for labour migrants from Ukraine. Russia's invasion of Ukraine has forced millions of refugees from Ukraine to move into neighbouring countries. As of 1 March 2023, four million people who escaped the war benefit from the temporary protection mechanism (European Council, 2023).

Poland has received the vast majority of people fleeing the war in Ukraine. With the influx of refugees, the issue of their integration has become a high priority. Although pre-war migration was possible due to very favourable conditions in the Polish labour market and was driven by well-developed migrant networks, as well as the active participation of formal and informal recruiters (Duszczuk & Kaczmarczyk, 2022), the first period of Ukrainian refugees' adaptation was accompanied by information chaos. As a result, many of the refugees experienced a high level of insecurity

accompanied by a strong feeling of being lost, the feeling which was magnified by the unpredictable situation in their hometowns (Shelest-Szumilas, 2022).

This article addresses the labour market situation of Ukrainian migrants in Poland from the perspective of the skills mismatch problem. Several previous studies documented that Ukrainian migrants faced many challenges in recognising¹ and utilising their skills in the host countries, which resulted in performing jobs below their education level and qualifications (Churski *et al.*, 2021; Leontiyeva, 2014; Maruszewski & Kaczmarczyk, 2020; Salariis & Tedesco, 2020). With regard to highly skilled migrants, this issue is often referred to in the literature as deskilling or occupational downward mobility (Cuban, 2013; Kubiciel-Lodzińska & Maj, 2021; Mollard & Umar, 2012; Siar, 2013). However, in a broader context, the above-mentioned problem is usually addressed by researchers as a skills mismatch. Throughout this article, the term 'skills mismatch' will refer to a situation where the skills and qualifications of migrant workers do not align with the requirements of the jobs they can secure in the host country.

The related literature also identifies several challenges associated with the procedural requirements for employing foreigners in Poland (Szaban, 2022). Recent studies that have addressed the situation of war refugees suggest that the problem of skills mismatch may intensify significantly and requires immediate actions (Gromadzki & Lewandowski, 2023). As pointed out by Duszczyk *et al.* (2023), in the face of extended war in Ukraine, significant efforts would be needed to ensure the successful integration of war refugees into Polish society, which would entail creating suitable legal and institutional frameworks from the outset.

Despite the growing number of Ukrainian migrants in Poland, the research addressing the scope and nature of skills mismatch among this group remains scarce. The understanding of the skills mismatch situation of Ukrainian migrants is crucial for policymakers, employers, and civil society to effectively support their integration into the labour market and maximise their potential contributions to the economy. Therefore, the article focuses on the identified research gap which relates to migrant employment in the Polish labour market and addresses the following question:

To what extent and in what manner do the selected predictors explain the migrants' skills mismatch occurrence?

While the problem of a skills mismatch is a well-discussed topic in the literature, the proposed article narrows it to a specific region, thereby allowing for a more in-depth analysis of the issue in a local context. The novelty of the topic also lies in the fact that the skills mismatch is analysed with regard to three dimensions: education, occupation, and industry. This analytical approach allows for a nuanced examination of how incompatibilities in the fields of education, occupational roles, and industry requirements coexist to create distinct challenges in achieving effective migrant integration into the labour market.

To carry out the empirical analysis I rely on the data on Ukrainian migrant workers employed in the Voivodeship of Greater Poland. The data for empirical analysis were collected in May and June 2022. The database is unique as it consists of two different groups of migrant workers: Ukrainian nationals who had come to Poland before the war broke out and those who crossed the Polish border after February 24, 2022.

The article begins by reviewing the relevant literature on the skills mismatch of migrant employees. Consequently, it presents the methodology used for the study and describes the data analysis procedure. The next section presents the results of the study, followed by a discussion of the factors contributing to the skills mismatch and how the situation may be relevant for policymakers and employers in the context of improving the labour market situation of Ukrainian migrants in Poland.

¹ Recognition of qualifications is an essential process that aims to evaluate and validate the educational and professional credentials of individuals who have migrated to a new country. This process plays a crucial role in ensuring that migrants can effectively contribute to the workforce of their host country.

LITERATURE REVIEW

A skills mismatch refers to a situation when there is a difference between the skills and qualifications of employees and the expectations of employers. In practice, this can result in individuals having difficulty finding suitable employment due to a misalignment between their skills and the requirements of certain job roles. A vertical mismatch occurs when an employee's educational level is not appropriate for their job, either exceeding or falling short of the required educational level. A horizontal mismatch, on the other hand, arises when an employee's field of education differs from the one required for their job.

Migrant workers often face challenges in finding suitable employment in destination countries, which can lead to lower wages and a more vulnerable position in the labour market (Banerjee *et al.*, 2019; Falcke *et al.*, 2020; Irastorza & Bevelander, 2021). A skills mismatch has also been identified as a significant factor distinguishing migrants' decisions to return to their home countries or move to another country (Leitner & Landesmann, 2020; Wanner *et al.*, 2021). Several studies have shown that highly skilled immigrants may experience discrimination that impedes their ability to utilise their skills effectively (Abdalhamed, 2021).

Several theories can help explain the skills mismatch among migrant employees. For example, human capital theory suggests that a skills mismatch occurs because skills and knowledge acquired in other countries through education and work experience are not fully transferable. As a result, migrants' human capital (*e.g.* qualifications) may not be recognised or valued in a destination country, leading to limited chances of finding adequate jobs (Chiswick & Miller, 2009; Lancee & Bol, 2017; Piracha & Vadean, 2013). In that sense, the skills mismatch in the initial phase of a career may be a way to compensate for the absence of essential skills, such as experience or job-specific training, thereby indicating that it serves as an adaptation mechanism (Visintin *et al.*, 2015), which is relevant to migrant workers who have recently entered the host country.

Network theory holds that social networks and connections can influence the chances of migrants being (mis)matched to the local labour market. Relying on social networks lowers the cost of finding employment in a host country, making it easier for immigrants to secure jobs and for companies to recruit employees. These networks can also assist new immigrants in settling in the new country. At the same time, resorting to networks to find employment can limit their access to higher-skilled jobs (Wei, 2020). Alaverdyan and Zaharieva (2022) found that social networks are the most common way of obtaining employment through referrals. Moreover, immigrant employees tend to use this approach more frequently than native workers. As was confirmed by Chort (2017), migrants who secured their employment through their migrant network had a reduced chance of experiencing negative vertical mismatch. However, it was observed (Chort, 2017) that using the network did not have a significant impact on horizontal mismatch. Van Wolleghem *et al.* (2023) showed that the use of informal networks increased overeducation (vertical mismatch) among first-generation migrants, while it tended to decrease it for second-generation migrants. The study by Herauld (2020) demonstrates that referrals help immigrants obtain higher-quality employment and reduce the likelihood of being overeducated. However, their impact varies depending on the origin of the immigrants' qualifications. Herauld explains the latter by the structures of social networks. In contrast, Kracke and Klug (2021) reported that migrants were more likely to be overqualified for a job if they relied solely on informal connections such as friends, neighbours, or former colleagues for their job search. Furthermore, having a network of primarily migrant peers (homophilous migrant networks) also raises the risk of overqualification.

According to segmented labour market theory, labour markets are divided into segments based on skill levels, with some segments having higher wages and better working conditions than others. At the same time, a common feature among contemporary developed economies is the existence of a secondary labour market division, which is marked by lower working conditions and the lack of skilled employees. This sector is not appealing to native workers but is usually occupied by temporary migrant workers who have lower minimum wage requirements due to their distinct backgrounds and experiences (Cruz Gómez *et al.*, 2019; Felbo-Kolding *et al.*, 2019; Leschke & Weiss, 2020). Migrant workers may be limited to performing jobs in the lower-skilled segments of the labour market due to factors

such as discrimination, language barriers, lack of social networks, and skill recognition barriers. Migrants may also possess limited negotiation abilities, which leads to unfavourable working agreements that do not align with their skill level and previous working experience (Cruz Gómez *et al.*, 2019). The recent study by Eurofound based on samples collected in France, Germany, and Spain reveals that there is strong statistical evidence that individuals who were born abroad are less likely to have an opportunity to follow traditional career paths compared to those who are nationals (Cruz Gómez *et al.*, 2019). Based on the study of migrants from Central Eastern to Western European countries, Leschke and Weiss (2020) suggest that the connection between using social networks for job searching and being overqualified is particularly evident in economic sectors that exhibit features of secondary labour markets and have a high proportion of migrant workers.

Institutional theory suggests that the institutions and policies of a host country can affect the skills mismatch among migrant workers (Aerne & Trampusch, 2023; Braňka, 2016; García-Serrano & Hernanz, 2023; Guzi *et al.*, 2021). For example, a lack of recognition for foreign qualifications or restrictive immigration policies can limit the ability of migrant workers to fully utilise their skills and education. Based on the data collected in three Nordic capitals, Friberg *et al.* (2014) performed the comparative study and provided evidence on how different institutional configurations may shape labour market outcomes of migrant workers. By drawing on a broader approach, Guzi *et al.* (2021) presented results indicating that the social and governmental frameworks may significantly impact the process of immigrant integration by improving the quality of employment and increasing participation in the labour market.

The level of a skills mismatch among migrants and war refugees can vary for several reasons. Migrants may have much more time to integrate into the host society and to gain work experience, whereas war refugees may have limited opportunities to have access to the labour market or may be forced to work in low- or unskilled jobs. Because of different motives for coming, migrants may have better language skills in the language spoken in their host country, while refugees may struggle with language barriers and psychological problems. Moreover, migrants may have a better understanding of the cultural norms and expectations in their destination country, while refugees may have to adjust to a new cultural environment in a short time, which can impact their ability to find suitable employment. Finally, war refugees may experience trauma and stress, which can affect their ability to learn new skills and adapt to a new work environment.

The problem of migrant workers' skills (mis)match has been also discussed with regard to their employment situation in Poland. The previous research clearly indicates a low level of alignment between the migrants' skills and the needs of the Polish labour market. For instance, several surveys among foreign workers, conducted between 2015 and 2018, revealed that 59.9% of Ukrainian migrants from Warsaw, 55.3% from Wrocław, 50.3% from Lublin, and 48.3% from Bydgoszcz worked below their qualifications (Górny *et al.*, 2019; Górny *et al.*, 2020). The survey conducted by the National Bank of Poland demonstrated that among pre-war Ukrainian migrants, 33% worked below their qualifications, while for refugees the percentage was much higher – 46% (Chmielewska-Kalińska *et al.*, 2023).

The research to date has tended to focus on the issue of deskilling faced by migrant workers in Poland (Górny *et al.*, 2019; Dolińska, 2019; Kubiciel-Lodzińska & Maj, 2021; Kubiciel-Lodzińska *et al.*, 2023) rather than on the application of a broader approach to the problem of skills mismatching. This issue is particularly noticeable in the group of highly skilled migrants. For example, as documented by Górny *et al.* (2019), among foreigners residing in Wrocław, nearly one-third of migrants with higher education were employed in low-skilled jobs, while another 28% from the same group worked as skilled labourers. Moreover, Maruszewski and Kaczmarczyk (2020) empirically demonstrated the lack of a wage premium for Ukrainian migrants with higher education and work experience, which resulted from them being employed below human capital. On the other hand, Kubiciel-Lodzińska *et al.* (2023) showed that such factors as the length of work experience in the country of origin, as well as highly skilled migrants' perceptions of the usability of their qualifications were correlated with the probability of having matched employment.

Thus far, there has been limited focus on other dimensions of migrants' skills mismatch, even though the literature evidences them. For example, according to the study concerning Ukrainian em-

ployees conducted by the Work Service agency in 2019, over 70% of the surveyed migrants were employed in jobs unrelated to their educational background (Work Service, 2019). Also, Chmielewska-Kalińska *et al.* (2023) documented that 38% of Ukrainian prewar migrants and 33% of war refugees performed jobs different from those they had in Ukraine. This suggests that they have very limited opportunities to use previously gained professional experience.

Based on the literature review, I developed the following research question:

RQ: To what extent and in what manner do the selected predictors explain the migrants' skills mismatch occurrence?

The next sections provide information on the adopted research method and the data used, present the main results, and propose some policy implications.

RESEARCH METHODOLOGY

The research conducted was focused on immigrants from Ukraine who were legally employed in the Voivodeship of Greater Poland² at the time of the survey, which was carried out in May and June 2022. The data was collected using various techniques such as PAPI, CAPI, and CAWI. The questionnaire was available in Ukrainian and Russian languages. The selection of participants was purposeful and based on specific socio-demographic characteristics such as age, industry, and the employment subregion (county, in Polish: *powiat*). An external company collected the information and the Greater Poland Voivodeship Labour Office supervised the research within the project 'Situation of Ukrainian citizens in the labour market in the Voivodeship of Greater Poland in 2022.'

Prior to the data collection, a promotional campaign was carried out in social media, targeting people of Ukrainian origin residing in Greater Poland. The information was broadcast on Facebook and Instagram. Finally, at the field research stage a total of 429 complete questionnaires were obtained, out of which 123 were completed online. The final sample consisted of 285 female and 144 male Ukrainian nationals. Of all the participants, 25.2% (108 people) arrived in Poland after the invasion of Ukraine had started. In terms of age distribution, 21.7% were between 18 and 25 years old, 39.2% were between 26 and 35 years old, 31% were between 36 and 50 years old, and 8.1% were over 50. As for the education level, the majority of Ukrainian nationals (56.6%) had vocational education, 27% had secondary education, and 15.9% had a higher education degree.

Out of the total 429 respondents in the study, 130 individuals (30.3%) worked in the manufacturing sector, while the remaining participants were employed in other sectors. Specifically, 33 respondents (7.7%) worked in transport and storage, 32 (7.5%) in the construction industry, and 25 individuals (5.8%) worked in each of the following sectors: generation and supply of electricity, gas, steam, hot water and air; wholesale or retail trade; repair of motor vehicles; hospitality, and gastronomy. The other 24 participants (5.6%) were employed in agriculture, hunting, and forestry and the remaining 85 (19.9%) worked in other sectors, predominantly in services.

The skills mismatch was captured in the questionnaire by three different questions: 'Is your current employment consistent with your education?', 'Is your current employment consistent with your occupation?', and 'Is your current employment consistent with the industry in which you worked in your home country?' The respondents answered on a scale to indicate the level of matches or mismatches in all three dimensions, including education, occupation, and their previous employment in Ukraine. The scale ranged from 'completely compatible' to 'partially compatible' to 'completely incompatible.' I used these types of skills mismatches as dependent variables in three separate regression models. This approach allowed for a more comprehensive analysis of the relationship between the skills mismatch and the independent variables of interest. For empirical analysis, I converted the ordinal dependent variable into a binary variable, as it was found that the definitions 'completely incompatible' and 'partially com-

² The region selection was not arbitrary. Over the last years, the Voivodeship of Greater Poland has been one of the most popular destinations among migrant workers. In 2021, it secured the third position in terms of the number of registered declarations on entrusting work to a foreigner (Ministry of Family and Social Policy RP, 2023). The regional labour market offers significant advantages, such as an exceptionally low unemployment rate and high demand for both high- and low-skilled workers.

patible' are not very precise and respondents might have difficulties recognising the differences. Thus, I decided to treat them as a single option. The new variable had the value of 1, only when the respondent declared having full compatibility with the current employment, and it took the value of 0 otherwise.

I chose independent variables based on the literature review (see previous section) and then grouped them into four categories. The first group of determinants included individual demographic statistics and human capital variables: gender, age, education level, place of residence in the country of origin (city/rural area), and language proficiency. To consider the impact of Polish language proficiency, I included two ordinal variables ranging from 'not at all' to 'very good' based on the respondents' self-assessment of their speaking and writing skills.

The second group of determinants covered employment-related variables, such as industry, and current job position. Moreover, in my model, I included job-specific characteristics, such as a wage discrimination variable and a place of work. The wage discrimination variable captured the subjective respondent's opinion on the adequacy of remuneration for the work performed. The place of work refers to the location of current employment (the city of Poznań or the surrounding subregions).

Table 1. The list of variables and their description

Variables	Description	Type of the variable
Outcome variables		
misedu3	(Mis)match regarding education	Binary
misprof3	(Mis)match regarding profession	Binary
misbra3	(Mis)match regarding the industry in which one was employed in Ukraine	Binary
Independent variables		
<i>Individual demographic statistics and human capital</i>		
gender1	Gender (female)	Binary
age1	Age	Categorical (four age groups)
edlevel	Education level	Ordinal
city	Place of residence in Ukraine (urban/rural area)	Binary
wriptepl1	Language proficiency in terms of writing skills	Ordinal
speakpl1	Language proficiency in terms of speaking skills	Ordinal
Employment-related variables		
ind1, ind2, ... ind10	Industry of current employment (ISIC classification)	Binary (ten industries)
jpos1, jpos2, ... jpos11	Current job position	Binary (eleven job positions)
misexp	The disparity between the job position held in Ukraine and the current job position	Binary
wagejob1	Adequacy of remuneration to work performed	Binary
jlocation	Location of employment (the city of Poznań or surrounding subregions)	Binary
Institutional settings variables		
awar	The moment of coming to Poland (after the war breakout or before)	Binary
disrace1	Racial discrimination	Binary
jobprobl	Number of problems ³ faced while looking for current employment	Numerical
percdif1	Perceived difficulty related to finding current employment	Ordinal
Social capital variables		
netwoem	Using informal job search strategies to find current job	Binary
famsit	Having family members who live in Poland	Binary
prevstay1	Previous stays in Poland for work purposes	Binary

Source: own study.

³ The respondent could choose several options for this question. For each selected variant the score 1 was assigned. The final variable was computed as the sum of the scores corresponding to the number of options selected by the respondent.

The third group of independent variables referred to institutional settings. These included the level of difficulty related to finding employment, the number of problems⁴ faced while looking for a job, and racial discrimination. The moment of coming to Poland (before or after February 24, 2022) was also included in the empirical analysis to control differences in established social networks and gain knowledge related to labour market issues (*e.g.* legalisation matters, access to the labour market, etc.).

The fourth group of determinants included social capital/network variables: whether the respondents used informal strategy (network contacts) to find their current employment, family situation, and individual previous migration experience in Poland. I captured the individual family situation by the presence of the family members in Poland.

I used logistic regression to estimate the impact of selected factors on the occurrence of a skills mismatch. I estimated a separate model for each type of skills mismatch. I performed all calculations using STATA/SE 13. Table 1 provides a brief presentation of all the variables used in the empirical analysis.

RESULTS AND DISCUSSION

I observed the highest degree of skills mismatches in the education dimension, with only 10.49% of Ukrainian nationals performing jobs that were well-matched with their education. In the examined research sample, 15.38% of the participants had jobs in the same industry they worked in Ukraine. In terms of occupation, almost every fifth respondent reported having a job that was completely compatible with their profession. The chart presenting the distribution of the initial variable is presented in Figure 1.

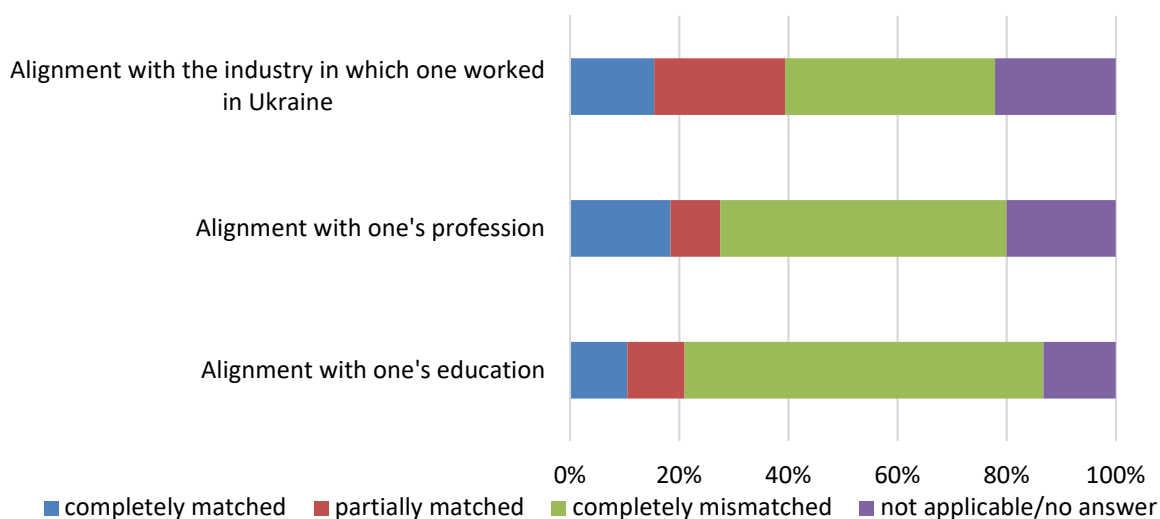


Figure 1. Distribution of education, occupation and industry mismatch

Source: own elaboration.

For the empirical analysis, I recorded variables related to all three skills mismatch dimensions into binary variables. Table 2 presents the descriptive statistics for the final set of dependent and independent variables.

In Model I, the dependent variable refers to the occupation mismatch. In Model II, the outcome variable describes the education mismatch and in Model III, the dependent variable refers to the industry mismatch. As the results of the logistic regression are difficult to interpret, Table 3 summarizes the main outcomes. Odds ratios calculated from variable coefficients and their level of statistical significance were reported. Odds ratios greater than 1 correspond to positive effects (they increase the probability of reporting a matched employment), while those between 0 and 1 correspond to negative effects (they decrease the probability of reporting a matched employment). Odds ratios of exactly 1 mean that no association has been found. Moreover, I marked statistically significant results with colours.

⁴ The respondent could choose several options for this question. For each selected variant score 1 was assigned. The final variable was computed as the sum of the scores corresponding to the number of options selected by the respondent.

Table 2. Basic descriptive statistics of the variables used in the regression analysis

Variables	Categories with frequencies	Percentage of missing values
Dependent variables		
(Mis)match regarding education (misedu3)	1 – completely compatible (10.49%) 0 – partially or completely incompatible (76.22%)	13.29%
(Mis)match regarding profession (misprof3)	1 – completely compatible (18.41%) 0 – partially or completely incompatible (61.54%)	20.05%
(Mis)match regarding the industry in which one was employed in Ukraine (misbra3)	1 – completely compatible (15.38%) 0 – partially or completely incompatible (62.47%)	22.14%
Independent variables		
Gender (gender1)	1 – female (66.43%) 0 – male (33.57%)	0%
Age (age1)	1 – 18-25 (21.68%) 2 – 26-35 (39.16%) 3 – 36-50 (31%) 4 – above 50 (8.16%)	0%
Education level (edlevel)	2 – lower secondary or below (9.32%) 3 – higher secondary (18.18%) 4 – vocational (56.64%) 5 – higher (15.85%)	0%
Place of residence in Ukraine (city)	1 – urban area (53.15%) 0 – rural area (46.85%)	0%
Language writing proficiency (writepl1)	1 – none (6.06%) 2 – poor (58.74%) 3 – fluent/very good (35.2%)	0%
Language speaking proficiency (speakpl1)	1 – none (10.49%) 2 – poor (83.68%) 3 – fluent/very good (5.83%)	0%
Industry of current employment (ind1-ind10)	– Agriculture, forestry, hunting, fishing (5.59%) – Industry, industrial processing (30.3%) – Generation and supply of electricity, gas, steam, hot water and air for air conditioning systems (5.83%) – Construction (7.46%) – Wholesale or retail trade (5.83%) – Repair of motor vehicles, including motorcycles (5.83%) – Transport, logistics, warehouse management (7.69%) – Hospitality (5.83%) – Gastronomy (5.83%) – Other (19.58%)	0.23%
Current job position (jpos1-jpos11)	– Elementary (manual) worker (39.16%) – Production worker (29.84%) – Trade worker (5.13%) – Service worker (5.13%) – Catering worker (3.73%) – Driver (1.4%) – Craftsman/skilled worker (6.53%) – Mid-level employee (e.g. office worker, technician) (1.63%) – Education sector employee (1.4%) – A healthcare sector employee (1.4%) – Other (4.66%)	0%

Variables	Categories with frequencies	Percentage of missing values
The disparity between job position held in Ukraine and current job position (misexp)	1 – yes (91.84%) 0 – no (8.16%)	0%
Adequacy of remuneration to work performed (wagejob1)	1 – yes (80.89%) 0 – no (14.92%)	4.2%
Location of employment (jlocation)	1 – city of Poznań (33.57%) 0 – surrounding counties (66.43%)	0%
Coming to Poland after February 24, 2022 (awar)	0 – no (74.83%) 1 – yes (25.17%)	0%
Racial discrimination (disrace1)	0 – no (50.12%) 1 – yes (23.54%)	26.34%
Number of problems faced while looking for current employment (jobprobl)	Min = 0 Max = 9 Mean = 1.95 Std. Dev. 2.39	0%
Perceived difficulty related to finding current employment (percdif1)	1 – very easy (3.96%) 2 – easy (29.6%) 3 – neither difficult nor easy (44.06%) 4 – difficult (17.02%) 5 – very difficult (5.36%)	0%
Using informal job search strategies to find a current job (netwoem)	1 – yes (14.92%) 0 – no (85.08%)	0%
Having family members who live in Poland (famsit)	1 – yes (32.4%) 0 – no (67.6%)	0%
Previous stays in Poland for work purposes (prevstay1)	1 – one or several previous stays (83.68%) 0 – no previous stays (16.32%)	0%

Source: own study.

In Model I, the dependent variable indicates whether a migrant's job (mis)matched the occupation. The logistic regression results show that being male is associated with a higher probability of having incompatible occupations compared to being female, holding other variables constant. Noteworthy, the effect size was relatively small. Interestingly, the regression results suggest that older migrant workers were less likely to report an occupation mismatch. This is so, because older migrants may have been for longer in Poland and longer overall work experience. However, there was no such information available in the database. This outcome may reflect a greater resistance of older workers to accept jobs in occupations for which they feel overqualified or underqualified. However, this does not support the previous results suggesting that the duration of work experience gained in the home country does not necessarily lead to 'success' in the host country, as was demonstrated by Kubiciel-Lodzińska *et al.* (2023). We may attribute the discussed finding to the fact that older migrant workers were found to have lower skills than younger workers (Markus *et al.*, 2019), for example, in the area of digital competencies, and just do not seek employment in more demanding occupations. Moreover, several job positions (elementary worker, production worker, and catering worker) appear to be significant predictors of occupation mismatches, with odds ratios below 1 indicating that holding those positions is associated with a lower probability of ending in employment that is relevant to the learned profession. The same applies to being employed in the industry of 'repair of motor vehicles, including motorcycles.' Possibly, some job positions require specific skills that are not adequately recognised or valued in the Polish labour market. The p-value associated with the Hosmer-Lemeshow test was 0.4005, which indicates that there was no evidence of a lack of fit in the model. Therefore, Model I ensured a good fit with the data.

Table 3. Odds ratios based on logit regression coefficients

Variables	Model I Occupation (mis)match	Model II Education (mis)match	Model III Industry (mis)match
Gender	3.987**	1.456	1.611
Age	2.063**	1.009	1.326
Education level	0.709	0.87	0.937
Place of residence	2.193	1.345	2.194
Language writing proficiency	0.609	1.001	0.85
Language speaking proficiency	0.785	1.562	1.588
Industry of current employment			
Agriculture, forestry, hunting, fishing	1	0.55	0.612
Industry, industrial processing	0.886	1.983	0.769
Generation and supply of electricity, gas, steam, hot water and air for air conditioning systems	1	1	1.294
Construction	2.517	2.094	2.159
Wholesale or retail trade	4.615	2.183	1.196
Repair of motor vehicles, including motorcycles	13.009**	2.591	10.556**
Transport, logistics, warehouse management	1.689	2.003	1.312
Hospitality	0.876	3.128	0.979
Gastronomy	1.276	0.149	1.667
Other	1	1	1
Current job position			
Elementary (manual) worker	0.024***	0.027***	0.177*
Production worker	0.018***	0.029***	0.184*
Trade worker	0.271	0.337	1.034
Service worker	0.322	0.348	0.901
Catering worker	0.039**	0.091*	0.481
Driver	0.19	0.846	2.823
Craftsman/skilled worker	0.765	0.447	6.235*
Mid-level employee (e.g. office worker, technician)	1	1	2.14
Education sector employee	1	3.24	14.261*
A healthcare sector employee	1	1	1
Other	1	1	1

Variables	Model I Occupation (mis)match	Model II Education (mis)match	Model III Industry (mis)match
The disparity between the job position held in Ukraine and the current job position	0.296	0.09***	0.251*
Adequacy of remuneration for the work performed	0.433	0.85	0.407
Location of employment in the city of Poznan	2.012	1.053	1.828
Coming to Poland after February 24, 2022	2.03	1.048	1.012
Racial discrimination	1.477	0.481	0.886
Number of problems faced while looking for current employment	0.988	1.035	0.857
Perceived difficulty related to finding current employment	0.819	1.257	0.602**
Using informal job search strategies to find current job	1.943	0.769	0.218**
Having family members who live in Poland	0.775	0.775	0.742
Previous stays in Poland for work purposes	2.13	1.919	1.476
Constant	8.323	1.161	2.164
Pseudo R2	0.365	0.330	0.292
Prob > chi2	0.000	0.001	0.000
LR chi2	85.974	62.734	68.590
Hosmer-Lemeshow chi2(8)	8.35 (Prob > chi2 = 0.4005)	4.6 (Prob > chi2 = 0.7997)	2.59 (Prob > chi2 = 0.9576)
Number of observations	211	246	234

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

Source: own study.

In Model II, the dependent variable refers to whether a migrant's job (mis)matched the education level. The logistic regression results show that, similarly to Model I, some job positions (elementary worker, production worker, and catering worker) are significant predictors of reporting the education mismatch. Moreover, those migrants who hold job positions that are different to the ones they held in Ukraine, have a lower probability of ending in employment that is relevant to their education profiles. This is in line with the results presented by Leontiyeva (2014), who observed that the type of job performed by migrant workers had a weaker influence on a mismatch compared to the last type of employment in the home country. The possible explanation may be related to the fact that the education of migrants was not correlated with their last job before migration and was transferred to the destination country. The p-value for the Hosmer-Lemeshow test was 0.7997, which indicated that there was no significant lack of fit for the model at a conventional alpha level of 0.05. The model appears to fit the data well.

In Model III, the outcome variable indicates whether a migrant's current employment was (mis)matched in terms of the industry of the previous employment. The results indicate that those migrants who hold job positions different from the ones they held in Ukraine, have a lower likelihood to report a matched employment. This seems to confirm the limited transferability of the previous work experience gained in the country of origin (Kubiciel-Lodzińska *et al.*, 2023). Being employed in the industry 'repair of motor vehicles, including motorcycles' increases the chances of reporting an industry-matched job. Holding a position of craftsman/skilled worker or working in the education sector is also associated with a higher likelihood of employment aligned with a previous industry, while being employed as an elementary worker or production worker decreases the chances of reporting matched employment. Besides, the individual's perception of having difficulties regarding the job search appears to be a significant predictor of the industry mismatch. The more difficult job search process is associated with a higher probability of having mismatched employment in terms of industry. This may reflect the existing entry barriers to certain industries due to the lack or complexity of qualification validation and recognition procedures. This outcome also suggests the existence of skill-discounting, which occurs when a potential employer evaluates migrants' skills as being less valuable than those of native-born candidates, which forces migrants to look for work in another occupation (Treuren *et al.*, 2021). The fact that informal strategies are used in job searches also increases the probability of obtaining mismatched employment. These findings are consistent with the fact that migrant workers tend to be concentrated in certain sectors and they also partly confirm some previous results presented in several studies (Kracke & Klug, 2021; Van Wolleghem *et al.*, 2023) suggesting that using contacts for securing employment may increase the possibility of the skills mismatch. The p-value of the Hosmer-Lemeshow test was 0.9576, which suggests no evidence of lack of fit and indicates that the model fit the observed data well.

Surprisingly, I did not find language skills (both in terms of writing and speaking) to have a significant impact on the probability of reporting mismatched employment in all three regression models. The same applied to the variable that referred to education level. This is probably so, because migrant workers may suffer from prejudices and discrimination when applying for demanding positions, as was documented by Brzozowska (2023). Her investigation revealed that Ukrainian migrants were dealing not only with bureaucratic barriers and obstacles, but also faced discrimination from employers at the recruitment stage.

In contrast to previous findings (Rafferty, 2020), my study did not confirm the role of discrimination in the occurrence of any type of skills mismatch. This may be partially explained by the fact that a certain percentage of the respondents have stayed in Poland for a short period.

Having family members who live in Poland decreases the chances of reporting a complete match between respondents' skills and their current employment. However, the relationship was statistically insignificant (in all three dimensions). In turn, having previous stays in Poland for work purposes was found to increase the odds of reporting matched employment even though the relationship in all three models was statistically insignificant.

The reader should bear in mind several limitations to this research. The presented study did not account for the duration of stay, which was previously found to be an important factor in migrants'

economic integration. For example, empirical findings suggest that a longer stay in Poland may enhance migrants' prospects of finding employment that is more adequate to the possessed human capital (Górny *et al.*, 2019). However, over time, the reluctance to accept employment below one's qualifications becomes less important for refugees (*Tacy sami czy jednak inni?...*, 2023). Some individuals may have no choice but to accept employment that does not match their work experience, educational background, or qualifications. This means that the duration of stay should be taken into account as an explanatory variable. Another potential limitation relates to the regional labour market specificity, which should be taken into consideration when interpreting the findings. Some jobs and occupations may be just more accessible for migrant employees depending on the regional labour market needs. Furthermore, I based the analysis of the skills mismatch presented here solely on the self-reported data, so it may be subject to biases and may not accurately capture the full extent of the (mis)match level, and the types of mismatch experienced by migrant workers. Finally, investigating pre-war economic migrants and war refugees separately was not possible in this study due to the insufficient research sample. However, this was beyond the scope of this study.

CONCLUSIONS

The presented article focused on investigating the determinants of education, occupation, and industry mismatches among migrants and war refugees from Ukraine. While using a unique regional dataset, the study applied three logistic regression models to analyse the situation of Ukrainian nationals working in the labour market of the Voivodeship of Greater Poland. I put particular emphasis on the probability of employment that does not align with the possessed skills (skills mismatch). The study addresses three types of skills mismatch: occupation, education mismatch, and industry. These three types of skills mismatch are distinct from each other and they appear to have different determinants.

An occupation mismatch occurs when a migrant's job does not match their learned profession. The study has found that being male and holding certain job positions are important factors that affect the probability of occupation mismatch. However, the effect size of gender was relatively small. An education mismatch occurs when a migrant's job does not match their educational profile and/or level. The study found that job positions and holding a job position different from the one held in Ukraine were significant predictors of the education mismatch. This suggests that the work experience acquired in the country of origin may not be recognised or valued in the host country's labour market. It highlights the importance of recognising and validating the skills and qualifications of migrants to facilitate their integration into the Polish labour market. An industry mismatch occurs when a migrant's current job is in a different industry from their previous job. The study found that job search difficulties and using informal job search strategies increase the probability of industry mismatch. This suggests that there are entry barriers to certain industries, such as the complexity of qualification validation and recognition procedures, which contribute to the industry mismatch. Moreover, migrant workers in Poland tend to be concentrated in certain sectors, which could be also conducive to the mismatch in question. I did not find discrimination and language skills to significantly impact skills mismatching.

Policymakers and employers need to recognise that addressing the skills mismatch among migrant workers requires a multifaceted and tailored approach that takes into account the specific needs and challenges of different migrant groups. The presented results provide evidence that migrant workers employed in the Voivodeship of Greater Poland are exposed to different mismatch dimensions, and it seems that selected factors may contribute differently to some of them. As some studies show, the reluctance to accept employment below one's qualifications may be conducive to the professional inactivity of migrant employees (both pre-war migrants and war refugees) (*Tacy sami czy jednak inni?...*, 2023). This implies that policies facilitating labour market integration and better utilisation of migrants' skills have to be implemented as early as possible after newcomers' arrival to Poland. On the regional level, there is a need for courses tailored to the professional aspirations and educational profiles of migrant employees. In this regard, special attention has to be paid to language courses that should be developed and organised according to migrants' career needs, motivations, readiness to participate, and their future plans (Beacco, 2008). Considering the

structure of newly arrived migrants, it seems desirable to develop training programmes for migrant mothers while creating accessible childcare opportunities.

It seems also reasonable to monitor the skills (mis)match indicators which can serve as predictors for possible migrants' transition to self-employment (Albiol-Sánchez *et al.*, 2021). Recent initiatives undertaken in the Voivodeship of Greater Poland to compare professions and qualifications in Poland and Ukraine (IOM, 2023) seem very reasonable and timely. However, it is important to enable the participation of local employers and labour market institutions in this process.

The research findings also have implications for organisational management, revealing that within the Ukrainian migrant workers, there are many individuals whose potential remains underutilised. Firstly, there is a need to identify any skill-discounting practices in organisations and monitor their impact on migrants' labour market activity. Secondly, implementing ways of verification of education credentials and qualifications could facilitate the process of matching migrants' human capital with the local employers' expectations. Establishing collaboration with institutions capable of verifying qualifications may be also helpful. Thirdly, promoting awareness about discrimination can encourage a more inclusive and fair work environment, reducing barriers that prevent migrants from showcasing their skills effectively. Implementing measures to combat discrimination, such as diversity training and anti-bias policies, can enable migrants to fully use their skills and significantly contribute to the development of the host community.

To develop a full picture of the scale and determinants of different types of skills mismatch among migrant workers, additional studies will be needed. They should rely not only on more objective information about skills utilisation in the new country, but also on data prior to migration. Future studies can draw on the presented findings and use a nationwide research sample to explore the scale of the skills mismatch among various migrant groups (pre-war economic migrants vs war refugees, different age groups, migrants with prior experience abroad, etc.). More careful examination is clearly needed on the contribution of explanatory factors to different dimensions of skills (mis)match. There is also little information on their coexistence, interrelation, and impact on future labour market integration. Another area requiring research relates to the individual strategies applied by Ukrainian migrant workers to secure matched employment. This seems to be an especially important issue, since having employment that aligns with one's education was recently found to be one of the main aspirations for this particular group of working migrants in Poland (Brzozowska, 2023).

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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.

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The impact of economic openness on the economic growth of Central and Eastern European countries after the systemic transformation

Jakub Garncarz

ABSTRACT

Objective: The objective of the article is to examine the impact of foreign trade on economic growth in countries opening up their economies as a result of their separation from the blocs of socialist countries.

Research Design & Methods: The study is quantitative. Pearson's linear correlation method and a simple linear regression model were used. The study used macroeconomic data for 1995-2022 for eight countries in Central and Eastern Europe (CEE).

Findings: In most of the studied countries, a strong positive relationship was observed between the volume of foreign trade and the rate of economic growth.

Implications & Recommendations: Restructuring the economy and opening up to international trade were important factors in the dynamic economic growth of the CEE countries studied. The observed strong positive relationship between the volume of foreign trade and the economic growth of the countries studied suggests that to stimulate a country's economic growth, policymakers should pursue policies that support international trade. The findings may also be useful for economic theory, as it has been empirically verified that opening a country to the free flow of goods and services is correlated with its faster economic growth.

Contribution & Value Added: The novelty of the article stems from the fact that it has not yet been examined whether the exit of the Central and Eastern European countries from the bloc of socialist states, which involved the liberalization of trade regulations and opening to international trade, followed by their joining the European Union on May 1, 2004, and becoming part of the single market, significantly affected the economic growth of these countries.

Article type: research article

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INTRODUCTION

In economic theory, the importance of foreign trade for economic growth has undergone numerous investigations. Classical theory pointed to the important role of foreign trade in generating economic growth. In contrast, in neoclassical theory, the role of foreign trade ceased to be important in the context of GDP formation. It was only as a result of the development of endogenous growth models that international trade again became an important factor affecting economic growth (Afonso, 2001). In the academic literature, many works examine foreign trade's impact on economic growth. In his interesting review, Singh (2010) notes that various authors, especially those who based on macroeconomic variables, indicated a significant positive impact of foreign trade on economic growth in the

various analysed countries. At the same time, Singh pointed out that the empirical evidence of a positive relationship between economic growth and foreign trade in some works tends to be inconclusive.

However, there is a shortage of studies in the literature examining the impact of foreign trade on economic growth in European countries that separated from the blocs of socialist states in the late 1980s and early 1990s while simultaneously opening up and liberalizing their economies. Seven of the Central and Eastern European countries analyzed (Poland, the Czech Republic, Slovakia, Hungary, Lithuania, Latvia and Estonia) experienced systemic transformation after the collapse of the Soviet Union. Lithuania, Latvia and Estonia left the USSR, while Poland, the Czech Republic, Slovakia and Hungary were previously socialist countries that gained full independence. On the other hand, Slovenia declared independence on October 7, 1991, leaving the Socialist Federal Republic of Yugoslavia. All eight countries analysed have one thing in common: on May 1, 2004, they joined the European Union, which further opened these countries to the European Union's single market, in which the principles of free movement of people, capital, goods and services prevail.

The article aims to examine the impact of foreign trade on economic growth in countries opening up their economies as a result of their separation from the blocs of socialist countries. The article is divided into three parts. The first section will present a literature review related to the opening of countries to foreign trade. The second section will present the research methodology. The last section will present the results and a discussion based on the impact that opening to foreign trade of CEE countries has had on their economic growth.

This article makes a novel contribution to the existing literature by offering a fresh perspective on the long-term effects of foreign trade on economic growth in Central and Eastern European countries. This region has experienced significant transformation since the 1990s. Unlike prior studies, which often concentrate on shorter timeframes or individual countries, this research provides a comprehensive, cross-country analysis spanning three decades, revealing new insights into the role of economic openness in shaping growth dynamics within transitioning economies.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In the past few years, the impact of countries' openness on foreign trade has been studied in China (Kong *et al.*, 2021), where a stable cointegrating relationship was observed between the openness of the Chinese economy and the country's economic growth dynamics, as well as regional heterogeneity in the impact of trade openness on economic growth. A similar study conducted in India (Reshi & Sudha, 2023) found a strong link between the country's rapid economic growth and the increasing value of the economic openness index. Hobbs *et al.* (2021), while studying the economy of Albania, demonstrated a phenomenon in which the country's economic growth unilaterally drives growth in foreign trade volume. Studies examining the relationship between economic growth and foreign trade have also been conducted on the example of Poland (Machowska-Okrój, 2017), indicating that in the period after Poland acceded to the European Union, a 10% increase in the rate of openness of the economy leads to an increase in GDP per capita of almost 140 monetary units expressed as current international dollars, greater than in the comparable period before accession. This represents a clear benefit to the Polish economy from membership and the consequences of Poland's accession to the EU (Michalak, 2001; Balcerowicz, 2007). Karasiewicz and Nowak (2010) conducted an important study on structural and behavioural changes in Polish retailing since 1989. They analysed the sector's transition in three phases: privatisation and decentralisation, intensive internationalisation and retail concentration and consolidation, with the identification of a fourth phase – innovation and modernisation. Similar conclusions were observed for Slovakia (Križan *et al.*, 2016). Pilinkiene (2016) highlighted that Central and Eastern European countries have experienced varying economic outcomes despite their shared high levels of trade openness. The empirical research demonstrates that economic growth drives improvements in trade openness, while competitiveness in these economies enhances growth, suggesting a mutually reinforcing dynamic. Further supporting this, Rapacki and Prochniak (2019) also investigated the impact of European Union membership on the economic growth of 11 CEE countries, emphasizing the role of EU integration in accelerating growth and convergence with Western Europe.

Their findings show that key drivers, such as increased economic freedom, improved governance, market reforms, and the influx of EU funds, significantly contributed to the GDP growth of CEEs between 1995 and 2015. These factors, coupled with rising foreign direct investment and international trade, underline the positive effects of trade openness within the framework of the EU's economic policies. Moreover, Knežević *et al.* (2011) examined changes in the retail sector across the EU, focusing on how these shifts have influenced economic growth and competitiveness. Their research revealed that the growing dominance of large enterprises, especially in countries like Poland and Croatia, improved productivity and market efficiency. This process of retail consolidation has been instrumental in driving economic modernization in these nations, further demonstrating the link between openness to trade and the broader economic benefits derived from structural changes in various sectors, which is in line with the studies (Knežević & Szarucki, 2012). Kalinkova (2018) highlights that national competitiveness is closely tied to the political system within which a country evolves, making it a crucial factor in understanding economic outcomes. In the context of post-socialist countries, the results of Kalinkova's analysis reveal that despite varying initial conditions, most post-socialist countries have exhibited positive trends in competitiveness over the last decade, largely driven by improvements in institutional frameworks and market efficiency. Analysing the impact of foreign trade on economic growth in Nigeria, Adeleye *et al.* (2015) indicated that foreign exports are a positive factor for economic growth. However, the country's export structure is dominated only by oil and lacks a significant contribution of products from other sectors of the economy, such as industry or agriculture. Moreover, imports are a factor slowing the country's economic development. Lawal and Ezeuchenne (2017) add that Nigeria needs to adapt to modern economic realities, especially in terms of technological development, so that imports also lead to the country's economic growth. Similar conclusions were reached by Nguyen (2020) when analysing the Vietnamese economy, pointing out that only exports positively impact Vietnam's economic growth. Imports had a negative impact on the country's economic growth, but this impact was not statistically significant. Analysing over 20 Asian countries, Trejos and Barboza (2015) found that greater trade openness was not a key factor driving economic growth in Asian countries. At the regional level, however, in the post-financial crisis period, trade openness has shown a significant and positive impact on production growth in the short and long term. The authors also added that the study's results confirm that countries increasing their trade openness can achieve faster growth in per capita output mainly due to productivity gains resulting from capital accumulation rather than the expected technological benefits of trade. In the above-mentioned studies, the authors pointed to the significant positive impact of foreign trade on economic growth in the countries studied.

Currently, in the academic literature, scholars also discuss issues related to new-generation trade agreements (Czermińska, 2022), network relationships (Cappelli *et al.*, 2023), as well as the effects of Russia's isolation from international trade (Mardones, 2023). The impact of the COVID-19 pandemic on international trade has also been widely discussed (Ugurlu & Jindřichovská, 2022). Scholars have also investigated the determinants of export resilience under pandemic conditions (Gorynia *et al.*, 2024) and the impact of anti-crisis measures taken by export companies on their export sales during the pandemic (Daszkiewicz *et al.*, 2023).

These prior empirical results allowed me to assume the following research hypothesis:

- H:** There is a strong, positive relationship between the degree of openness of the economy and Gross Domestic Product in the Central and Eastern European countries after the systemic transformation.

RESEARCH METHODOLOGY

Sample and Data Collection

The study verifies the hypothesis for the following group of Central and Eastern European countries: Poland, The Czech Republic, Slovakia, Hungary, Lithuania, Latvia, Estonia, and Slovenia. These countries joined the European Union in 2004, becoming part of the single European market. Moreover, most analyzed countries made a political transformation in the 1990s, opening up to foreign trade. These

two important changes in the development of the countries opened them to global international trade, making them perfect countries to study the relationship between foreign trade volume and economic growth. Taking this into account, and due to data availability, the study was conducted from 1995 to 2022. The data was taken from the World Bank database.

Variables in the Analysis

Table 1. provides an overview of the key economic variables analyzed in the study, including export and import volumes as a percentage of GDP, and the Gross Domestic Product in current US dollars.

Table 1. List of variables used in the study

Variable	Explanation	Unit	Source of data
<i>Export volume</i>	Exports of goods and services	(% of GDP)	World Bank (NE.EXP.GNFS.ZS)
<i>Import volume</i>	Imports of goods and services	(% of GDP)	World Bank (NE.IMP.GNFS.ZS)
<i>GDP</i>	Gross Domestic Product	(current US\$)	World Bank (NY.GDP.MKTP.CD)

Source: own study based on data from The World Bank.

The volume of foreign trade is often measured by the degree of openness of the economy, which is an indicator of the extent to which a country engages in international trade. We can calculate the degree of openness using the following formula (Rodriguez, 2000):

$$\text{Degree of openness} = \frac{\text{Export volume} + \text{Import volume}}{\text{GDP}} \quad (1)$$

This indicator shows the relative importance of foreign trade to the national economy by comparing the total value of exports and imports with the size of the economy, measured by Gross Domestic Product (GDP). A higher degree of openness indicates a greater integration with global trade networks.

This measure of openness is especially relevant in regions that have undergone significant economic transformations, particularly within the Single European Market, such as Central and Eastern Europe. The Single Market removes many barriers to trade, allowing for the free movement of goods, services, capital, and people between member states. As a result, intra-EU trade accounts for a significant portion of the trade volume in Central and Eastern European countries, leading to higher degrees of openness. This integration has helped these countries to accelerate their economic growth by gaining access to a much larger market and benefiting from economies of scale (Baldwin & Wyplosz, 2015).

Figure 1 shows the degree of openness of the economy of each country in 2022.

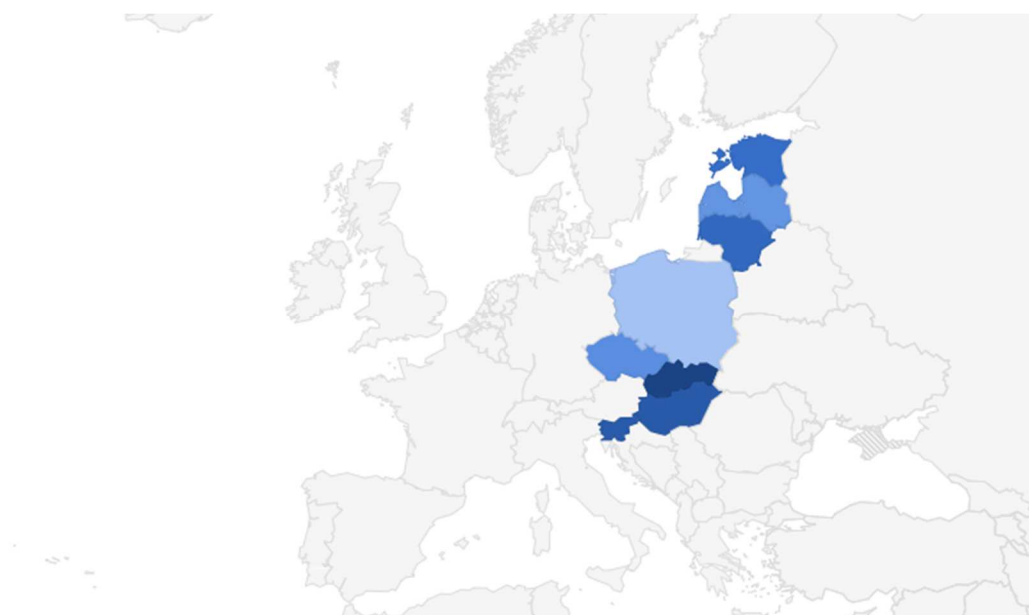


Figure 1. The degree of openness of the economy for analyzed countries in 2022

Source: own elaboration based on data from The World Bank.

As Figure 1 shows, in 2022, Slovakia recorded the highest degree of economic openness, with the sum of exports and imports of goods and services accounting for more than 204% of the country's GDP. In contrast, Poland recorded the lowest value of this indicator, with exports and imports of goods and services accounting for less than 124% of GDP.

Research Model and Statistical Tests

I used two statistical tools, *i.e.* Pearson's linear correlation and multiple regression modelling to verify the research hypothesis set in this study. The study used data from the World Bank's database for 1991-2022 on the volume of GDP and the volume of exports and imports of goods and services in the analysed countries. Based on the acquired data, I created an index of economic openness and developed regression models.

The first method that I used in this study was Pearson's linear correlation coefficient, which is we can measure with the following equation (Schober *et al.*, 2018):

$$r_{xy} = \frac{cov(x, y)}{\sigma_x \sigma_y} \quad (2)$$

in which:

- x, y - random variables;
- $cov(x, y)$ - covariance of random variables;
- $\sigma_x \sigma_y$ - product of standard deviations of random variables.

I used a coefficient of determination to calculate the regression model, expressed with the following formula (Weisberg, 2005):

$$R^2 = \frac{\sum_{i=1}^n (\hat{y}_t - \bar{y})^2}{\sum_{i=1}^n (y_t - \bar{y})^2} \quad (3)$$

in which:

- \hat{y}_t - the predicted value of the dependent variable;
- \bar{y} - the average value of the actual dependent variable;
- y_t - actual value of the dependent variable.

Due to the sensitivity of the R^2 coefficient to the number of variables and the sample size, I also determined the adjusted value of the above parameter (Weisberg, 2005):

$$R_{adj}^2 = R^2 - \frac{k}{n - k} \cdot \varphi^2 \quad (4)$$

in which:

- φ^2 - convergence factor calculated according to the formula: $\varphi^2 = 1 - R^2$;
- n - number of data points;
- k - number of independent variables.

The study of correlations is a simple but very effective way to get an overall picture of the relationship between the variables under study. To conduct the analysis, I used two software tools, *i.e.* Python and Statistica.

RESULTS AND DISCUSSION

The study identified key relationships between the analyzed variables. Figure 2 presents the relationship between GDP and the economic openness index for 1991-2022 in the studied countries. As we can see, in most countries, a strong positive relationship exists between economic growth and increasing values of the economic openness index. Figure 3 shows the exact values of Pearson's linear correlation index.

Figure 3 shows the relationship between the index of economic openness and economic growth in the analyzed countries in 1991-2022 measured with Pearson's linear correlation coefficient. We can observe the highest positive relationship in Poland, where the value of Pearson's linear correlation coefficient was 0.96, which means a very strong relationship between the variables under study.

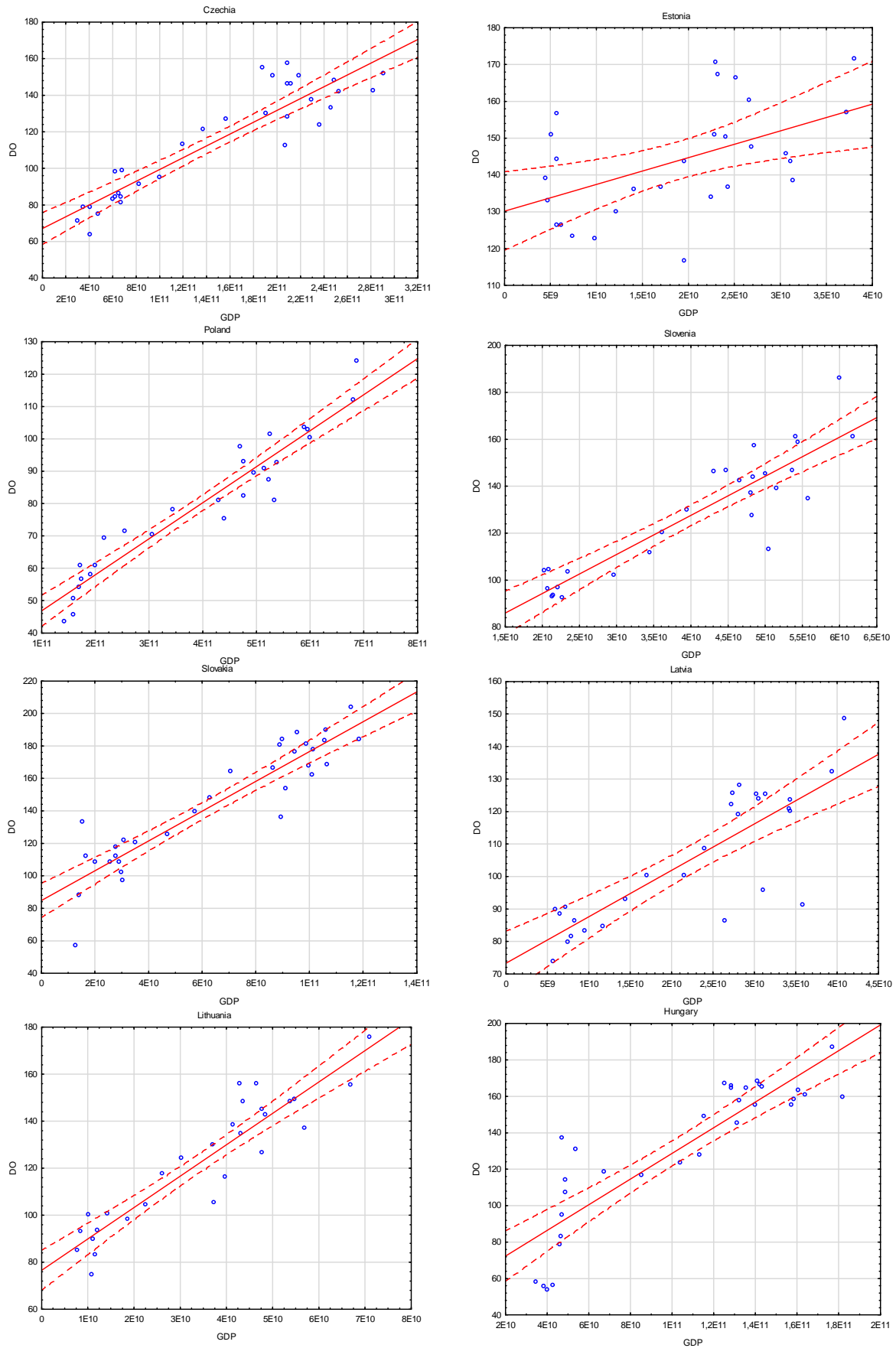


Figure 2. Correlation between GDP and the degree of openness of the economy for analyzed countries from 1991 to 2022
 Source: own elaboration in Statistica.

We observed equally strong correlations in Lithuania (0.93), the Czech Republic (0.92), Slovakia (0.92), and Slovenia (0.9). In contrast, I found no relationship between the economic openness index and economic growth in Estonia, where the value of Pearson's linear correlation coefficient was only 0.51.



Figure 3. Correlation between GDP and the degree of openness of the economy for analyzed countries from 1991 to 2022

Source: own elaboration in Python.

Table 2 shows the results of estimating the regression model for the studied variables. It is assumed that the closer the value of the coefficient of determination is to 1, the better the model fits the data, so values above 0.75 indicate a good fit of the model to the data. I observed the highest value of the coefficient of determination in Poland, and it was 0.909, which means that the variation in GDP was 91% explained by the developed regression model. The developed regression model for Lithuania took the value of (0.853), for Slovakia (0.853), and the Czech Republic (0.836), which means that in these countries, GDP growth was about 85%, explained by the degree of openness of the economies of these countries. The regression models developed for Estonia and Latvia showed little fit, as the economic growth of these countries was explained only 22.8% for Estonia and 67% for Latvia, respectively, by the degree of openness of the economy.

I also verified the statistical significance of the developed regression models. The *p-value* ($P > |t|$) indicates the statistical significance of the correlation coefficient, its value should be less than the significance level, usually taken at 0.05. In the case of the regression models of the countries analysed, this indicator was 0.00, which means that there was a statistically significant relationship between the independent variable, the degree of economic openness, and the dependent variable, which in the developed model was the GDP indicator. The standard error (std. err.) measures the variability of the regression coefficients. The smallest possible value of the standard error is desirable, as it indicates the accuracy of the regression coefficient estimates. This study's standard error values were relatively low, which should be interpreted as a good fit for the regression coefficient estimates. *T-value* tells how many standard deviations the estimated regression coefficient is away from zero. In the study, most of the *t-value* values were high compared to the low standard error values, which indicates the statistical significance of the regression coefficients.

Table 2. The list of estimated regression models

Country	R^2	R^2_{adj}	coef		P> t	Std. err.	t-value
The Czech Republic	0.842	0.836	const	-1.513	0.000	2.41	-6.294
			DO	2.602	0.000	2.03	12.832
Estonia	0.257	0.228	const	-3.206	0.071	1.72	-1.881
			DO	3.531	0.006	1.18	2.996
Poland	0.912	0.909	const	-2.579	0.000	4.11	-6.275
			DO	8.189	0.000	4.99	16.418
Slovenia	0.812	0.805	const	-2.221	0.001	6.02	-3.689
			DO	4.879	0.000	4.60	10.611
Slovakia	0.847	0.843	const	-6.844	0.000	1.05	-6.534
			DO	9.234	0.000	7.04	13.125
Latvia	0.683	0.670	const	-2.792	0.000	6.85	-4.077
			DO	4.780	0.000	6.39	7.479
Lithuania	0.859	0.853	const	-4.439	0.000	6.42	-6.918
			DO	6.432	0.000	5.12	12.569
Hungary	0.772	0.764	const	-4.005	0.012	1.49	-2.687
			DO	1.095	0.000	1.09	10.075

Source: own study in Python.

The survey results indicate a strong positive relationship between foreign trade volume and economic growth in the five countries studied. We can explain the lack of such a correlation in the case of Estonia and Latvia by the neighbourhood of the two countries. Estonia borders only with underdeveloped Russia and Belarus, as well as Latvia, while Latvia, in addition to its neighbourhood of Russia, Belarus, and Estonia, still borders Lithuania. Countries surrounded by slower-growing economies may experience slower growth in aggregate export demand, which may impact their economic growth (Vilarrubia Tapia, 2006). However, I observed no positive relationship with economic growth for export volume alone, which was the result of studies in other countries such as Nigeria (Adeleye *et al.*, 2015), (Lawal & Ezeuchenne, 2017) and Vietnam (Nguyen, 2020). Although I did not study separately the impact of imports and exports, both variables, which are part of the economic openness index, showed a strong positive relationship with the GDP index.

CONCLUSIONS

The study aimed to verify the hypothesis of a strong positive relationship between the degree of openness of the economy and Gross Domestic Product (GDP) in Central and Eastern European countries. The analysis of eight economies revealed that in five of these countries, the hypothesis was confirmed, demonstrating a clear positive relationship between economic openness and GDP growth. However, the results should be interpreted with caution due to study limitations. The research did not verify the causality between economic openness and growth; therefore, we cannot definitively conclude that increasing foreign trade directly causes faster economic development. The correlation observed in this study merely highlights a relationship, but other factors could influence the outcomes, such as domestic policies or structural economic changes.

The recommendations stemming from this research emphasize the need for policies that foster international trade, especially in economies where a positive relationship between openness and growth has been established. In countries where this correlation was not confirmed, further investigation into domestic economic factors is necessary to tailor appropriate trade policies. These findings also have broader theoretical implications, reinforcing the idea that global integration can drive economic performance, though the results caution against making direct causal assumptions without further evidence.

Future research should address these limitations by exploring the causal relationship between trade volumes and economic growth rates more thoroughly, potentially using advanced econometric techniques to establish whether increased openness directly leads to faster growth. Furthermore, ex-

panding the scope of analysis to include the newest EU member states would provide a more comprehensive understanding of the relationship between trade and growth in a broader European context. Finally, further studies should examine the effects of Brexit on trade flows, especially within the Single European Market, where intra-EU trade dynamics may differ from those involving non-EU countries.

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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.

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Indifference in economics: Between praxeology and the neoclassical presentation of a consumer's choice

Wojciech Giza

ABSTRACT

Objective: The objective of the article is to present the differences in the research approach concerning consumer behaviour from the perspective of neoclassical economics and the Austrian school of economics.

Research Design & Methods: The article applies the qualitative approach based on comparative analysis of the subject literature. While selecting research material, the author considered major works presenting the neoclassical theory of a consumer's choice as well as those representing the Austrian school, criticizing neoclassical views.

Findings: The article explains the methodological approaches leading to alternative interpretations of indifference in neoclassical economics and the Austrian school.

Implications & Recommendations: Indifference constitutes the key category that enables readers to understand positions adopted by neoclassical economists and representatives of the Austrian school of economics. The conducted analysis implies that different understanding of indifference constitutes the main source of the dispute regarding the theories of a consumer's behaviour in the analyzed concepts.

Contribution & Value Added: The value added of this article lies in showing the causes of divergence between the theory of a consumer's choice developed in neoclassical economics and its criticism expressed by representatives of the Austrian school of economics.

Article type: research article

Keywords: indifference analysis; praxeology; neoclassical economics; Austrian school of economics; methodology of economics

JEL codes: A12, B41, D11

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INTRODUCTION

When in the 1940s von Mises presented his opus magnum *Human Action: A Treatise on Economics* (Mises, 1998), economists of the Austrian school were explaining the essence of choice emphasized praxeology – a concept deeply rooted in sociology and philosophy. Simultaneously, supporters of neoclassical economics used quantitative analysis to build a model explaining microeconomic consumer behaviour, which is currently part of most academic courses on microeconomics. Both the Austrians and the neoclassic prefer the microeconomic approach, rooted in the analysis of an individual's rational behaviour. In both cases, the economic agents aim at obtaining an arbitrarily defined goal using the most effective means. Constructing their theories, they rely on the induction method. Criticizing neoclassical economists, supporters of the Austrian school of economics point to the principle of indifference as the main weakness of the model explaining the behaviour of an individual in economic space. They emphasize that indifference contradicts the explanation of an individual's behaviour offered on the grounds of praxeology.

This article aims to reconstruct the model of a consumer choice from the methodological perspective. While analyzing the consumer's choice theory in the paradigm of neoclassical economics, I will try

to prove the thesis that the assumption of indifference does not constitute an obstacle in developing an adequate model explaining the behaviour of an entity in the economic dimension. Moreover, indifference is not a factor disturbing the decision-making process, as its essence lies only and exclusively in determining the choice space, within which an individual makes optimal decisions.

To accomplish the research goal, I sought answers to the following questions:

- RQ1:** How do representatives of neoclassical economics and followers of the Austrian school of economics understand indifference?
- RQ2:** Does indifference constitute a convincing argument for weakening the cohesion of the neoclassical theory of rational choice?

RESEARCH METHODOLOGY

The article is a theoretical study that can be classified as primary research. I based the analysis of the development of the economic theory describing the behaviour of a rational consumer on the qualitative comparative method. Within this analysis, I performed a rational reconstruction of the views of representatives of neoclassical economics and the Austrian school of economics. The source materials were articles and books, interpreted chronologically. To explain methodological differences between supporters of neoclassical economics and representatives of the Austrian school of economics, the analytical part devoted to indifference was preceded by the discussion of praxeology and the research approach characterizing neoclassical economics. This discussion aimed to demonstrate methodological differences determining conclusions on indifference within the presented schools of thought.

LITERATURE REVIEW

By adopting the subject criteria, I selected articles and books, which served as the foundation on which the neoclassical theory of a consumer's choice was reconstructed. The theory was criticized by representatives of the Austrian school of economics, who postulated the application of praxeology as a method explaining the motives behind human activity in economic space.

The term 'Austrian school of economics' refers to representatives of the intellectual movement initiated in the late nineteenth century by Menger and subsequently developed by von Wieser and von Böhm-Bawerk. The works of von Mises and Rothbard and those of contemporary economists mainly associated with the Mises Institute are most crucial to understanding the Austrian critique of the principle of indifference. In the context of the discussed issue, it is also worth highlighting the contributions of Czech thinkers Čuhel and Engliš (Doležalová, 2018; Bažantová, 2015). Čuhel criticised the cardinal utility theory, advocating for the ordinal utility theory, which underpins modern welfare economics as Pareto interpreted. Čuhel's work, published in German in 1907, remains a significant study on utility theory and consumer behaviour (Cuhel, [1907]/2017).

The term 'neoclassical economics' used in the text reflects the perspective proposed by Colander (2000). He rightly distinguished the neoclassical school, developed from the 1870s to the 1930s, from neoclassical orthodoxy. The presented interpretation of the indifference principle adopts the standard interpretation of the consumer choice theory in contemporary microeconomics textbooks, *e.g.* Varian (2010).

The model of a rational consumer is the legacy of marginal revolution, within which such economists as Menger (1871), Jevons (1871), and Walras (1874), developed the theory of utility, seeking relations between subjectively interpreted marginal utility and demand for goods and services. The theory of a consumer was largely developed by Marshall (1890). Other economists perfected analytical tools allowing them to formalize the utility theory and budget constraint. Meanwhile, Edgeworth (1881) presented the indifference curve. Axiomatic justification for the indifference curve proposed by him was provided by Johnson (1913). His concept was popularized by Bowley (1924). The analysis of a consumer's choice within budget constraints was presented by Slutsky (1915), and his concept was further developed by Hicks and Allen (1934), Schultz (1935), Allen (1936), and Hicks (1939). In the 1930s, a formalized version of the neoclassical theory of a consumer's choice was established, still

prevailing in microeconomics textbooks (Varian, 2010). After the Second World War, Samuelson (1948) proposed the revealed preference theory (Wong, 2006). An in-depth analysis of Slutsky-Hicks theory, based on the axiomatic approach, was developed by Debreu (1954; 1959). The history of the theory of a consumer's choice was presented by Moscati (2003).

Postulating the recognition of praxeology as a method allowing us to explain human activity, von Mises criticized the views of neoclassical economists. In 1940, he published the German edition, followed by the English edition in 1949, of *Human Action* (Mises, 1998). In the mid-1950s, Rothbard criticized the principle of indifference, basing his reasoning on methodological postulates of the Austrian school of economics (Rothbard, 1956). A detailed analysis of the methodology of the Austrian school of economics in the context of praxeology was presented by Nozick (1977). Supporters of the Austrian school of economics formulated several polemic arguments against indifference interpreted in the spirit of neoclassical economics. The dispute was attended by such scientists as Block (1980; 1999; 2022), Hoppe (2005), O'Neill (2010), Machaj (2007), and Wysocki (2021).

Currently, the academic discourse concerning principles of indifference is characterized by the active participation of the Austrians, who raise a number of arguments critical of the neoclassical orthodoxy. However, neoclassicists hardly notice this criticism.

RESULTS AND DISCUSSION

Praxeology of the Austrian School Versus the Research Approach of Neoclassical Economics

In economics, analyses of indifference are inextricably linked with the theory explaining consumer behaviour. From the philosophical point of view, an individual choosing economic space is driven by motivation rooted in utilitarianism propagated by Bentham in the times when the British Isles witnessed the origin of classical political economics (Stark, 1946). In 1789, Bentham published *Introduction to the Principles of Morals and Legislation* reinforcing the belief that the superior ethical imperative is to seek maximization of pleasure and avoid pain. In the first chapter of *Introduction to the Principles...* titled 'Principle of Utility,' he writes:

Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. They alone point out what we ought to do and determine what we shall do; the standard of right and wrong, and the chain of causes and effects, are both fastened to their throne. They govern us in all we do, all we say, all we think; every effort we can make to throw off our subjection to pain and pleasure will only serve to demonstrate and confirm it. (...) The principle of utility recognizes this subjection, and makes it the basis of a system that aims to have the edifice of happiness built by the hands of reason and of law (Bentham, 1823, p. 6).

The interpretation of utilitarianism presented by Bentham had a wider than economic context. It contained ethical justification for stimuli determining people's behaviour in public space, which is currently analyzed by social philosophy, sociology, political science, and economics. Moreover, Bentham also consolidated the belief shared by most economists that individuals run a benefit and cost account allowing them to choose the best available option. In this sense, humans maximize the function of purpose.

The analysis of the motives for human behaviour constitutes a central point in contemporary microeconomics, but also in other social sciences. The term praxeology and the research field it deals with is owed to the disciple of Comte and Spencer – sociologist Alfred Espinas, who in 1890 published an article titled *Les origines de la technologie* (Espinas, 1890). In the same year, on the other side of the English Channel, an economist from Cambridge, A. Marshall published *Principles of Economics*. His book directed the development of neoclassical economics and set methodological standards for contemporary microeconomics. Concerning the subject of economics, A. Marshall's views reveal some similarities to those of praxeology supporters. Both the former and the latter were inclined to expand the area of economic analysis to include issues that go beyond the maximization of wealth and prosperity. The economist from Cambridge identified economics as not only the science of wealth, which in the British tradition was the legacy of A. Smith. Marshall believed that it covers a wide spectrum of human behaviour (Marshall, 1890).

For representatives of the Austrian school of economics, supporters of individualism and free-market economy, the superior value is to ensure wide autonomy for an individual, thus allowing them to accomplish their arbitrarily determined goals. The method of their accomplishment was determined by imperatives formulated on the grounds of praxeology. The use of praxeology as a research approach in economics was introduced by von Mises.¹ The term praxeology originates from *praxis* – a Greek Word denoting an intentional action. Mises and his followers considered praxeology as a method allowing to provide a reality-adequate explanation of human behaviour determined by both rational and irrational factors. In this way, a holistic concept of human behaviour was presented. In the political sphere, Mises's theory constituted an alternative to the historical materialism of the Marxist style in the 1930s.

Therefore, it seems that the similarities between neoclassical economics and the Austrian school of economics should lead to the convergence of those ways of thinking. In practice, it looks quite different. The Austrian school of economics is a separate entity remaining in the orbit of heterodox schools. This is even though both the Austrian school, the neoclassical school, and also the mathematical (Lausanne) school appeared due to the Marginal Revolution in the 1870s. The views represented by the Austrians are not widely presented in most contemporary textbooks on microeconomics and macroeconomics.² What could have then determined the polarization of the views of neoclassical economics rooted in Marshall's tradition and the views of the Austrian school supporters?

The differences between these two schools of economic thought refer mostly to methodological aspects behind which there are specific epistemological premises. Before becoming an economist, Marshall was a mathematics lecturer in Cambridge. He promoted the formal presentation of economic issues, presenting his views in the form of graphs and formulas, as did Walras and supporters of the mathematical school. The economic narration changed. The relations between economic variables were perceived differently (Vazquez, 1995). The cause-and-effect analysis dominating the Austrian economists group was replaced by neoclassicists with mathematical functions.³ The formalization of the discourse allowed to construct more and more complex models which, over time, were filled with data. The apriorism stressed by Menger yielded to empiricism which, according to the postulates of the German Historical School and then American Institutionalism, emphasized observation and gathering facts that could make a foundation for theoretical generalizations.

To explain the reasons that distinguish the neoclassical economics and the Austrian school of economics research approach, we need to analyze their attitude towards naturalism.⁴ Neoclassicists followed natural science much more than the Austrians, trying to discover the laws determining social behaviour analogically to those formulated in natural science. Physics, with its deeply rooted Newtonian idea of equilibrium, became an economic model (Redman, 1993). Descriptions of how markets operate are full of physics jargon. Markets automatically aim at achieving the equilibrium state and remain in it as long as the supply and demand forces balance each other. von Mises and his supporters questioned this physical interpretation of the market mechanism. They rejected the formalization of economics and placed special emphasis on the deduction method and the description of the economy in natural language. Mises was also sceptical of econometrics – the science that was growing in significance in the first half of the twentieth century.

The evolution of the research approach in economics that took place in the 1930s accounted for the fact that economists used the language of mathematics more frequently. The best example illustrating this process was the interpretation of Keynes' book *The General Theory of Employment, Inter-*

¹ Apart from the economic interpretation of praxeology, a key role in developing this method was played by Polish philosopher Kotarbiński, who established Centre of Praxeology. Since 1962 'Materiały Prakseologiczne' [Praxeology Text] journal has been published (after 4 years it changed its title to 'Praxeologia' [Praxeology]).

² Snowdon and Vane: *Modern Macroeconomic* (2005) is one of few textbooks which, in addition to traditional presentation of macroeconomics in neoclassical economics and Keynesian economics, also includes the presentation of the Austrian school views. See chapter 9 *The Austrian school*.

³ Marshall placed mathematical formulas and graphs in notes to *Principles of economics* rather than in the main text. Currently, especially in advanced papers on economics the formal approach dominates. The notes usually include interpretation of the formal presentation. The way mathematics found its way to economics was aptly presented by Weintraub in his work: *How Economics Became a Mathematical Science* (2002).

⁴ The term naturalism is used in this article in line with the interpretation presented in (Beed & Beed, 2000).

est and Money (1936), by Hicks, conducted in his article: *Mr. Keynes and the 'Classics;' a suggested interpretation* (1937). The narration of Keynes' book was based on verbal description that left a large area for interpretation both for supporters and opponents of Keynes' ideas. With his impressive analytical skills, Hicks needed only 12 pages to provide a brilliant interpretation of Keynes' views, presenting them in the form of an IS-LM model, which still remains the may form of presenting the essence of Keynesian economics. Using mathematical formulas and graphs presenting relations between economic variables, he made the scientific discourse more precise. Since then, economists have frequently resigned from the language of social philosophy and replaced it with mathematics. The formalization of economics only aimed at making the message more unambiguous. In the 1930s, empirical research based on statistics and econometrics gained popularity in an attempt to understand economic processes and to be able to shape them. The economic challenges of the 1930s necessitated the use of quantitative analysis tools. This especially concerned the Great Depression of 1929-1933 and related issues of economic situation and unemployment fluctuations. It was also then that economic data was collected on an unprecedented scale and national accounts were established, which was manifested in the popularity of the GDP ratio.

Along with the collection of economic data, on 29 December 1930, quantity-oriented economists established the Econometric Society in the USA and appointed I. Fisher to be its first president.⁵ The development of the research conducted by members of the Econometric Society led to quick growth in interest in quantitatively oriented empirical research using econometrics. The critical attitude to econometrics presented by Mises (Mises, 1977) and to more broadly interpreted quantitative analyses accounted for the fact that the Austrian school, albeit strongly oriented towards market solutions and methodological individualism started to drift away from neoclassical economics and moved to economic heterodoxy grounds.

Mises' scepticism concerning econometrics also stemmed from the argumentation formulated in the dispute on the possibility of running a rational economic account in a centrally-planned economy. This dispute was the core issue in the socialism versus capitalism debate. It was initiated by Mises' article *Die Wirtschaftsrechnung im sozialistischen Gemeinwesen* (1920). He accused supporters of the socialist centrally-planned economy that by eliminating the market mechanism, in fact, they eliminated the mechanism generating prices understood as parameters allowing rational allocation of resources. Replying to Mises' accusations, Lange formulated the model of quasi-market socialism (Lange, 1936; 1937). According to this model, the central planner used quantitative analysis methods to balance demand-supply transactions so as to establish equilibrium quantities and equilibrium prices in the whole economy. Lange is renowned as one of the pioneers of econometrics. He believed that the quantitative analysis tools would enable us to solve the practical problem related to the allocation of resources. Mises' disciple, von Hayek indicated that the logical cohesion of the model presented by Lange does not determine the feasibility of such a solution (Boettke, 2020).

Pointing at the limitations of knowledge, the Austrians claimed that in practice Lange's solution would not ensure the accomplishment of the set goal, namely the optimum allocation of resources in a socialist economy. The socialism versus capitalism debate was one of the most important debates in the history of Western Europe. To a large extent, it explained the cause of the collapse of the socialist states that started in 1989. The debate was also the only debate in the twentieth-century history of economics in which the precision of economic argumentation supported by quantitative analysis methods yielded to the philosophical argumentation referring to broadly understood freedom and rationality of individuals, on which the market economy system is based.

The Essence of the Principle of Indifference

When in the 1970s Nozick published *On Austrian Methodology*, in the third part titled *Preference, Choice and Action* (Nozick, 1977, pp. 369-378), he presented the interpretation of human behaviour, referring to the axiomatic presentation of consumer rationality. He pointed at the axiomatic nature of

⁵ The history and significance of the Econometric Society was presented in *On the Founding of the Econometric Society* (Bjerkholt, 2017).

weak preference and strong preference (weak axiom of preference and strong axiom of preference), which constitutes the foundation of the theory of consumer behaviour. We can see strong preference when a consumer who can choose two goods: A and B, clearly chooses, for example, good A over good B. Weak preference is when in the consumer's opinion good A is at least as good or even better than good B. This is due to the fact that in *weak preference* we can observe the appearance of indifference (Nozick, 1977, p. 370). Nozick's argumentation started a discussion among supporters of the Austrian school, and arguments in it drew from praxeology.

The Austrians were critical of the principle of indifference, pointing at Rothbard's *dictum*, in which he claimed.

Indifference can never be demonstrated by action. Quite the contrary. Every action necessarily signifies a choice, and every choice signifies a definite preference. Action specifically implies the contrary of indifference. The indifference concept is a particularly unfortunate example of the psychologizing error. Indifference classes are assumed to exist somewhere underlying and apart from action. This assumption is particularly exhibited in those discussions that try to 'map' indifference curves empirically by the use of elaborate questionnaires (Rothbard, 1956, p. 14).

Rothbard developed his critical argumentation in the context of prosperity, basing it on neoclassical economics. Can we therefore consider the statement that 'Indifference can never be demonstrated by action' as justified? And is it really an 'unfortunate example of the psychologizing error?'

Answering the above questions we must observe that neoclassicists did not interpret indifference in psychological criteria but in logical ones. It is an integral part of the presentation of the transitivity axiom, according to which if we prefer A over B, and B over C, then, based on the transitivity axiom, we should prefer A over C. Analogically, if we are indifferent to the choice between A and B, just as we are indifferent to the choice between B and C, the same indifference should be seen in our choice between A and C.

Referring to praxeology, Rothbard negated indifference, claiming that if a consumer is indifferent to the choice between, for example, A and B, there are no stimuli pushing him or her to perform a particular action.⁶ However, are consumer preferences a sufficient premise for economic choice? Consumer preferences are a necessary condition, but insufficient for a rational consumer to make optimal choices on the grounds of economics. We need something more to see the difference between economic choices and choices made in any other sphere of human life. Economic choice consists of the fact that when we satisfy our preferences, we also do so in the context of some limitation (usually – the income-price limitation). Not every choice we make is an economic one. For example, when making ethical decisions we do not necessarily have to take into account the costs of our decision. We can simply adopt a moral imperative and consider it as superior. Similarly, in psychology we can examine particular decisions, justifying them with something else than just the benefit and cost account.

Economic goods are goods of instrumental nature. They are used to accomplish other goals. In the case of non-economic choices, for example, ethical choices, we often pursue autotelic values, not taking into account costs, or, to be more precise, their adequacy concerning the values preferred by us. Undoubtedly, praxeology allows us to understand the motives determining an individual's behaviour in the decision process. However, if we pass over the costs of such decisions – which is the essence of economic analysis, we may have doubts about whether such a description is an adequate description of behaviour in economic space. Or maybe it blurs the border between behaviour analyzed on the grounds of economics and behaviour considered from the perspective of other social sciences.

Contrary to the Austrian school, neoclassical economics uses indifference only to provide a description of a formal structure of preferences of a rational consumer and to determine indifference curves. The concept of indifference curves was first introduced by Edgeworth (1881, p. 28). However, he did not present any deeper justification in the form of axioms determining the shape of such curves. The axioms of rational behaviour were proposed in an article titled *The Pure Theory of Utility Curves* (John-

⁶ Literature devoted to the Austrian school sometimes considers the indifference along with the principle of homogeneity. As rightly observed by O'Neill, goods may not be homogeneous, but they may be perceived as those that provide the same level of satisfaction. Therefore the choice between them may be indifferent to the consumer (O'Neill, 2010).

son, 1913) and constitute the foundations of the contemporary axiom system allowing indifference curve modelling.⁷ The system of indifference curves composes the so-called indifferent map, which, as any other map, does not determine our choices – our destination. It only shows potential options we can choose from. It constitutes a space of freedom, within which individuals make decisions aimed at providing them with maximum satisfaction.

Apart from indifference curves, another integral part of the neoclassical model of consumer behaviour is budget constraint, which demonstrates which of the preferred commodity bundles can be purchased by a consumer, as well as the optimization rule, known as Gossen's second law. According to this rule, a consumer optimizes the structure of consumption, equaling relations of marginal utilities with the price for all purchased goods.⁸ Therefore, the economic choice of a particular commodity is determined not only by our preferences, but also by which potential commodity bundles we can obtain within the existing budget constraint, and what relation to price the commodity bundle we intend to buy has. In other words, the statement that for a consumer two commodity bundles are equally good even though their compositions differ does not constitute an obstacle in making a rational choice. The consumer will pick the commodity bundle which, because of the price they have to pay for it, will bring them greater satisfaction.

The criticism of indifference also contains one more doubt concerning the generalized interpretation of the axiom system. There are two approaches, based on different visions of constructing a scientific theory, in the discussion on axioms of rational behaviour. The first approach assumes that a scientific theory is a result of the deduction method, in which it is vital to adopt particular axioms. Our image of a rational consumer was built a priori. This tradition dates back to Edgeworth and Johnson and we can see it in contemporary neoclassical theories presented in most textbooks on microeconomics.

On the other hand, the second tradition is anchored in a conviction that an adequate image of a rational consumer can only be built by observing their behaviour first and then analyzing the cohesion of their choices. This is known as an empirical approach and a posteriori knowledge. The second approach was proposed in the 1940s by Samuelson (1948). His theory is known as the theory of revealed preferences. Samuelson claimed that what we can observe is not our preferences reflected by the indifference curve, but only commodity bundles we acquire/prefer in a situation when we have to pay a particular price for each such bundle. The manipulation of the budget constraint line and the observation of our choices allow us to build a model of a rational consumer. Currently, in the theory of revealed preference, we also deal with certain postulates determining the rationality of a consumer. These are the Weak Axiom of Revealed Preference (WARP) (Varian, 2010, p. 124) and the Strong Axiom of Revealed Preference (SARP) (Varian, 2010, p. 128).

These two presentations of consumer behaviour differ significantly, as can be seen in Varian's textbook. The former is discussed in chapter 3 titled Preferences (Varian, 2010, pp. 34-53), whereas the latter approach is analyzed in chapter 7: Revealed Preference (Varian, 2010, pp. 119-135). Indifference, though understood differently in those two approaches, does not constitute an obstacle to building a cohesive model of consumer behaviour.

CONCLUSIONS

In the interpretations of indifference proposed by neoclassical economics and the Austrian school of economics, the issue concerns whether a consumer can make a rational choice when two goods have the same utility. Austrians, pointing to Rothbard's dictum, criticize the principle of indifference, referring to the interpretation of human action based on praxeology. In the case of neoclassical economics, indifference is only one of the possible preference arrangements, allowing the construction of an indifference

⁷ The following axioms determine the shape of indifference curves: completeness (individuals can compare all the available alternatives), reflexivity (any bundle is certainly at least as good as an identical bundle), transitivity (If X is preferred to Y and Y is preferred to Z, X is preferred to Z), monotonicity (a rational agent prefers more than less). The Assumption of these axioms provides justification for indifference curve reflecting the so-called well-behaved preferences (Varian, 2010, pp. 44-48).

⁸ The mathematical presentation of this formula is as follows: $MU_X/P_X = MU_Y/P_Y = \dots = MU_Z/P_Z$ where: MU_X denotes marginal utility of good X; P_X is the price of good X. Analogically we can denote marginal utilities and prices for goods Y and Z.

curve (a mathematical image of their preferences). The indifference curve is insufficient for the consumer to choose the most preferred commodity bundle. The information about the price of the preferred goods is still needed to plan. Only the ratio of marginal utility to price is a stimulus determining a rational human choice. Based on neoclassical economics, human action is not interpreted by the postulates of praxeology. It is considered in terms of equilibrium taken from the natural science – physics.

The neoclassical theory of consumer choice is a logically cohesive model rooted in the axiomatic system. It is within the transitivity axiom that we can observe indifference which only shows that a rational consumer may equally value two commodity bundles even though they differ in the structure of the goods composing them. These commodity bundles may have the same level of total utility for the consumer. In this approach, the statement that ‘Indifference can never be demonstrated by action’ cannot be justified. Indifference curves and indifference maps developed based on axioms do not determine the consumer’s choice. They only represent potential states of the world, which, considering particular income and price constraints, can be accomplished. A rational consumer will choose from available options the one that allows them to equal the marginal utility of the last of the used goods with its price. The theory of revealed preferences proposed by Samuelson modifies and widens the above-quoted approach. It lays the foundations for empirical research on consumer behaviour, for example, on the grounds of behavioural economics.

In both cases, the motive behind our action (or decision not to act) is not only consumer preferences but the relation of what we desire to what we can sacrifice to satisfy our desires. This corresponds with the utilitarian philosophy of Bentham, who claims that when taking a decision we always weigh benefits (philosophically – pleasure) and costs (represented by pain). This reasoning is also consistent with Friedman’s economic motto: ‘there’s no such thing as a free lunch.’

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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.

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Gender in acceptance of augmented reality in e-commerce: An international perspective

Małgorzata Bartosik-Purgat, Wiktoria Rakowska

ABSTRACT

Objective: The objective of the article is to answer research questions about the role of gender in the significance of factors (motives and risks) affecting the acceptance of augmented reality (AR) technologies by young international e-commerce consumers.

Research Design & Methods: The primary research method was a qualitative study based on six focus groups conducted in three economically, technologically, and culturally diverse countries: Poland, South Korea, and the United States. For the qualitative analysis, we used MAXQDA software.

Findings: Regarding the role of gender in impacting the motives and risks connected with consumers' use of AR technology in online shopping decisions, gender differentiates both motivation and risks.

Implications & Recommendations: Regarding theoretical application, the findings show the significant role of gender and cultural factors as moderators in models concerning the acceptance of new technologies on the international market. Regarding the practical implications, it should be emphasised that adapting to the preferences of different demographic groups concerning gender can increase the effectiveness of marketing efforts and improve sales performance.

Contribution & Value Added: The study stands out because it analyses a combination of factors that indicate gender, young international consumers, and the acceptance of AR technology.

Article type: research article

Keywords: gender; augmented reality; young consumers; e-commerce; international markets

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INTRODUCTION

New technologies are revolutionising many areas of life, including individual consumer decisions and business strategies (Andrzejewski & Dunal, 2021; Dogra *et al.*, 2023; Korzynski *et al.*, 2023; Wei *et al.*, 2023). They play a significant role in retail, particularly in e-commerce, which is gaining more and more traction with consumers, particularly after the Covid-19 pandemic (Rauschnabel, 2021; Song *et al.*, 2022; Riar *et al.*, 2023; Wei *et al.*, 2023; Borges *et al.*, 2023). The e-commerce industry is constantly looking for solutions to provide customers with experiences we know from traditional shopping, such as the ability to interact directly with a product (Song *et al.*, 2022; Xu *et al.*, 2024). The search for such solutions is unsurprising, given that the most common source of dissatisfaction among e-commerce customers is buying the wrong product (Riar *et al.*, 2023; Zheng & Li, 2023; Qin *et al.*, 2024). Being unable to touch the product physically, try on clothes or shoes or check the material's texture is still a considerable barrier to e-commerce development.

Augmented reality (AR) is a game-changing technology in e-commerce (Rauschnabel, 2021; Jayaswal & Parida, 2023; Chen *et al.*, 2024). It lets consumers preview a product before the purchase

(Poushneh, 2018; Jayaswal & Parida, 2023; Nadeem *et al.*, 2024). This breakthrough not only overcomes the challenge of not interacting with the product physically but also provides a more immersive and engaging online shopping experience (Bonnin, 2020; Çalışkan *et al.*, 2023; Xu *et al.*, 2024).

Furthermore, AR allows for adding computer-generated elements to the image captured by the camera and built into a smartphone, tablet, or laptop. Unlike virtual reality, AR does not create a new world but bridges the gap between the smartphone screen and the real world interactively (Rauschnabel, 2021). It integrates images, animation, or other virtual elements on the screen with real objects in real-time (Javornik, 2016; Poushneh, 2018; Alesanco-Llorente *et al.*, 2023). Moreover, AR can improve consumers' experiences by placing virtual content in a natural environment (Rese *et al.*, 2017; Jayaswal & Parida, 2023; Riar *et al.*, 2023).

In other words, AR has the potential to bridge the gap between physical and online shopping, offering a new and hopeful direction for e-commerce (Rauschnabel, 2021; Chen *et al.*, 2024). One example of the use of AR in e-commerce is virtual fitting rooms, which can also be applied to cosmetic and fashion products, *i.e.* where realism and the ability to visualise one's appearance in new clothes, glasses, jewellery or shoes are essential (Jiang *et al.*, 2023; Wei *et al.*, 2023). Augmented reality is a revolutionary tool in e-commerce. It empowers customers to make informed decisions by providing a better product evaluation before purchase. This reduces returns and complaints and enhances customer satisfaction, as customers can accurately visualise and comprehend their purchases (Iisnawati *et al.*, 2022).

An analysis of the literature on factors influencing consumer acceptance of AR includes various aspects, among others, psychological, *e.g.* perceived performance and enjoyment; demographic, *e.g.* age, gender, education level; technological, *e.g.* usability, ease of use, interactivity, engagement; social, *e.g.* social impact, market trends, *etc.* (Dogra *et al.*, 2023; Huang, 2023; Al Halbusi *et al.*, 2024; Chen *et al.*, 2024). Determinants influencing the acceptance of AR in e-commerce have a positive context and may also be associated with certain risks regarding using this technology (Mombeuil, 2020; Çalışkan *et al.*, 2023; Zheng & Li, 2023; Qin *et al.*, 2024). Even though AR is usually seen as a tool to improve the user experience, it can lead to a lower willingness to complete a purchase. A study by Zheng and Li (2023) shows that AR online shopping reduces consumers' purchase intention. One of the determinants that may impact consumers' positive and negative AR perception and use is gender diversity. Understanding women's and men's needs, expectations, attitudes, and behaviours is crucial for companies and technology designers to effectively introduce AR across different product categories to the market and maximise its adoption.

Moreover, to the best of our knowledge, few studies on the acceptance of AR in e-commerce consider gender differences (*e.g.* Abed, 2021; Iisnawati *et al.*, 2022; Alesanco-Llorente *et al.*, 2023). The article's main objective is to answer research questions (RQs) about the influence of gender on the significance of factors (motives and risks) affecting the acceptance of AR technologies by young international e-commerce consumers. The primary research method was a qualitative study based on focus groups conducted in three economically, technologically and culturally diverse countries: Poland, South Korea, and the United States. Moreover, our study stands out because of its focus on young international consumers. Combining these factors constitutes a novelty and contributes to expanding theoretical concepts in this area.

The article consists of the following parts: first, we present a literature review and theory development concerning the acceptance of new technologies. Next, we describe the materials and methods used for the primary research. The next part of the article is dedicated to the qualitative analysis of the findings. Conclusions and implications are then presented and finally, study limitations and suggestions for future research are explained.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

One of the primary and frequently used tools in empirical research to understand differential characteristics' impact on users' acceptance of new technologies is the technology acceptance model (TAM) by Davis (1985). However, this model was based on Fishbein's (1967) and Fishbein and Ajzen's (1975) models of analysing the determinants of technology acceptance. The author and other researchers

have modified the TAM model several times for empirical measurements (*e.g.* Jiang *et al.*, 2023; Wang *et al.*, 2022; Oyman *et al.*, 2022; Zhang & Yao, 2023; Nadeem *et al.*, 2024). Moreover, Venkatesh and Davis (2000) extended TAM to TAM2, where factors influencing positive or negative user perceptions of technology are presented. Next, there was also an extension to TAM3 (Venkatesh & Bala, 2008; Wang *et al.*, 2022), where factors influencing perceived ease of use are included in addition to determinants influencing user-perceived usefulness.

The unified theory of acceptance and use of technology (UTAUT) was developed to predict the degree to which a user would use a particular technology. This comprehensive model draws from various theories, among others, including TAM (Davis, 1985), the theory of planned behaviour (D'Sousa, 2022), and the innovation diffusion theory (Rogers *et al.*, 2014). Meanwhile, the social cognitive theory (Venkatesh *et al.*, 2003) was the basis for our version of TAM. In the UTAUT, determinants such as performance expectancy, effort expectancy, social influence, and facilitating conditions are further modelled by moderators characterising the user himself, *i.e.* gender, age, experience, and voluntariness of use (Venkatesh *et al.*, 2003). The following extension led to UTAUT2, which added three new factors in addition to the four original factors from UTAUT, *i.e.* hedonic motivation, price value and habit (Venkatesh *et al.*, 2012). Moreover, UTAUT2 retains the same moderators but adds additional ones, such as the context of technology use, which allows for a more detailed understanding of the differences in technology acceptance (Venkatesh *et al.*, 2012; Huang, 2023).

Next, the other authors who used the technologies' acceptance models identified positive determinants impacting the users' attitudes (*e.g.* Sahli & Lichy, 2024; Nadeem *et al.*, 2024) and factors that may influence them negatively (*e.g.* Martins *et al.*, 2013; Yang *et al.*, 2016; Zheng & Li, 2023). One such factor is perceived risks. In the context of AR use in e-commerce, we may connect it with dissatisfaction with the product purchased in an online store evaluated using AR (AR-driven purchase risk) (Bonnin, 2020; Mombeuil, 2020; Kumar, 2022; Qin *et al.*, 2024). Another dimension of perceived risk is vulnerability regarding the possible loss of consumers' personal information (data privacy risk). Other perceived risks are potential threats and vulnerabilities associated with the unauthorised access, misuse, or loss of consumers' personal information when they use a particular technology (data privacy risk) (Gao *et al.*, 2015; Dacko, 2016; Qin *et al.*, 2024).

The determinants (motives and risks) identified in the models described above formed the basis for the research on the acceptance and willingness of young consumers to use AR technology during e-commerce. Within the framework of motives, the following were examined: performance expectancy, effort expectancy, and hedonic motivation (Adeb, 2021; Arghashi, 2022; Kumar, 2022; Dogra *et al.*, 2023; Huang, 2023; Pathak & Prakash, 2023; Xu *et al.*, 2024; Sahli & Lichy, 2024). Within the framework of risks, we examined the following: AR-driven purchase risk and data privacy risk (Mombeuil, 2020; Zheng & Li, 2023; Qin *et al.*, 2024).

One of the moderators considered in the theoretical models highlighted above was gender. However, it is not a common determinant studied by authors concerning AR acceptance in e-commerce. Slyke *et al.* (2010) indicated gender differences concerning the use of e-commerce platforms. At that time, women perceived online shopping as riskier. Women were also more sensitive compared to men to privacy and security issues. Conversely, men focused more on the functional benefits and convenience of online shopping (Slyke *et al.*, 2010). Interestingly, almost 1.5 decades later, some studies show similar results related to the role of gender in the acceptance of AR in online shopping. One of the latest studies in which gender is the primary variable that differentiates consumer attitudes was conducted by Alesanco-Llorente *et al.* (2023). In the study, the authors seek to answer whether men and women differ in their acceptance and use of mobile AR technologies in showrooming (*i.e.* viewing products in physical shops and then purchasing them online with the support of mobile technologies such as AR). The research shows significant differences between the groups of men and women surveyed. Women may be more inclined to use AR in showrooming if the technologies are easy to use and offer clear benefits. On the other hand, men can be more interested in the technological aspects of AR and its innovation (Alesanco-Llorente *et al.*, 2023).

In another study of Indonesian consumers, Iisnawati *et al.* (2022) indicated that men may be more willing to experiment with new technologies and appreciate the innovative aspects of AR. On the other

hand, women may be more focused on the practical benefits of using AR, such as seeing a product in more detail before purchasing. Women may be more interested in using AR to try on clothes or test cosmetics, allowing them to better understand and evaluate products before purchase (Iisnawati *et al.*, 2022).

The author of another study on the effect of gender on Saudis' acceptance of AR technology reached similar conclusions (Abed, 2021). Women are more focused on the practical benefits of using AR, such as trying on clothes or testing cosmetics, which allows them to see more thoroughly, evaluate the product before buying, and decide accordingly. Conversely, men are likelier to experiment with new technologies and appreciate AR's innovative aspects (Abed, 2021). Similarly, a study by Dogra *et al.* (2023) shows that gender has a significant effect on the relationship between technology anxiety and attitudes towards e-commerce sites using AR among consumers in India. Women show more significant technology anxiety, which negatively affects their attitudes towards AR, while this effect is less pronounced in men.

To achieve the purpose of our article and study, we formulated research questions rather than hypotheses, and the theoretical basis was the variables presented in the theoretical models (e.g. UTAUT2) in this article's literature review and theoretical part in the context of gender differentiation.

RQ1: Does gender influence the motives of young consumers' acceptance of AR in e-commerce?

RQ2: Does gender influence the risks of young consumers' acceptance of AR in e-commerce?

RESEARCH METHODOLOGY

We used a qualitative research method, *i.e.* focus group interviews (FGI), to answer the research questions related to theoretical models' variables and gender. We organised six focus groups (two interviews in each country: men and women) with a short experiment in February-April 2024. The participants of the focus groups were young consumers (18-25 years old) from Poland, South Korea, and the United States, whom we selected purposively (Quinlan *et al.*, 2019). We selected the participants with the help of university teachers from particular countries. The selection process did not allow for the results' generalisation. The number of participants within the focus groups was from 4 to 6 people. The tested product was glasses. Both women and men may buy this category of product. The study's authors achieved permission from the Ethical Commission at the university where we conducted the research.

We conducted the focus interviews via Zoom. This allowed us to gather participants from geographically distant countries. After a short introduction, a moderator asked the participants to enter the website where they could try on glasses with AR technology. Then, the attendees started discussing their experiences, feelings, motives, and threats. After completing the interviews, we prepared transcripts and then conducted coding using the MAXQDA qualitative analysis tool, which considered the motives, risks, and gender identified in the theoretical part.

During the coding process, we used the thematic analysis method proposed by Braun and Clarke (2006), which includes six main steps: 1) familiarisation with the data both transcriptions and recordings; 2) initial coding process; using deductive coding approach 3) generating main thematic themes: grouping codes into potential themes based on their interconnection 4) validity & reliability of themes: checking whether the identified themes are coherent and distinct 5) defining and naming themes: precisely describing each theme to clarify what it encompasses and represents; 6) interpreting & reporting. Each author repeated the process, and we compared the coding results to ensure maximum agreement. This iterative approach helped to maintain consistency and reliability in the analysis, ensuring that the findings were robust and credible.

We segmented the transcripts and analysed them based on the interviewees' gender and country of origin and then we appropriately coded them. Ultimately, we created six coding groups, which we further divided into categories and subcategories (Figure 1; Figure 2).



Figure 1. Code Cloud based on Men’s Statements
 Source: own elaboration in MAXQDA software.



Figure 2. Code cloud based on women’s statements
 Source: own elaboration in MAXQDA software.

We coded the transcripts based on six coding groups that defined the interviewees' experience with e-commerce and AR, the main motivations, risks, and benefits of using AR, and the impact of AR on the decision-making process. During the coding process, we established categories and subcategories. The code cloud illustrates the codes used to analyse focus group interviews. The size of each word reflects its frequency of occurrence, with larger words indicating more frequent mentions.

RESULTS AND DISCUSSION

Performance Expectancy

Performance expectancy is perceived as the technology's expected usefulness and benefits (Venkatesh *et al.*, 2003; Paulo *et al.*, 2018; Adeb, 2021). If the user should be convinced of the effectiveness of a particular technology in their operations, then they will be more likely to use it. Performance expectancy is often a factor used concerning user acceptance testing of AR technology, *e.g.* Wu and Lai (2021); Oyman *et al.* (2022); Dogra *et al.* (2023); Ebrahimabad *et al.* (2024).

Polish women participating in the survey said that AR is helpful in online shopping because by trying on products, you can see if a particular colour or cut fits you (Table 1) (similarly to Iisnawati *et al.*, 2022; Abed, 2021; Ebrahimabad *et al.*, 2024). The use of AR among Polish women was also viewed through the prism of saving time. On the other hand, Polish men were more likely to emphasise

Table 1. Performance expectancy and AR's use in online shopping: Study results

Performance expectancy		
Country	Women	Men
Poland	PW5: "I think it's beneficial that we can already, at least virtually, adjust the shape of the frame and answer the question of whether we want one or the other." PW2: "I agree that virtual fitting is helpful in this first choice." PW1: "I agree that it's essential to save time..." PW5: "It was a time-saver. Even if we went to a stationary shop after trying them on virtually, we would already know what kind of glasses we wanted and wouldn't waste time." PW1: "It would be nice if there were such an opportunity to see ourselves if, for example, a certain colour suits us, if it suits our complexion if the colours aren't too strong or too bright, so I think it's a very cool opportunity to try things on online."	PM4: "I think I would probably use it sooner or later because, with glasses, I always have this problem that I have to try on quite a few pairs before I find a good one." PM2: "I think it's important to see how you look in glasses, so this technology is helpful in the decision-making process. However, for me, it will be an add-on. I am unlikely to make a final purchase decision based on the benefit of trying them on."
South Korea	KW2: "...It's not perfect, but it definitely helps me decide. You can see if the frame is the type you want." KW1: "For me, convenience means not having to go out of my way and being able to save time since I don't have to go out." KW3: Yeah, I think it is convenient and doesn't need to be costly.	KM1: "Looks good; I like it. They look like normal sunglasses." KM2: "I'd like to use this tool for sunglasses, clothes, etc. Being able to try them on virtually is really beneficial." KM1: "I find it convenient because instead of going to the shopping mall to try on sunglasses, I can use AR technology at home."
The United States	AW1: "For me, I want to make sure that it's going to match my skin tone and that it's going to fit my face shape." AW3: "Yeah, for me, I would say the benefit of probably using this approach to purchase glasses would be saving time, not having to run to the store to sit there [and] wait..."	AM2: "...it's just that it would save you lots of time from, say, like, going to the store and trying, like, getting things for yourself."

Abbreviations, *e.g.* PW1 – participant no. one in the Polish focus group of women, etc.; KW2 – participant no. two in the Korean focus group of women; AW1 – participant no. one in the American focus group of women; PM4 – participant no. four in the Polish focus group of men; KM1 – participant no. one in the Korean focus group of men; AM2 – participant no. two in the American focus group of men.

Source: own study.

convenience (as Slyke *et al.*, 2010) and the lack of need to leave the house to shop for items that fit their needs (interestingly, Polish women indicated this feature as a concern and a risk that AR would contribute to people stop leaving the house). Polish men also indicated that AR is a useful option, but they would be more likely to make the final decision in a stationary store when searching for products.

Korean women pointed to the convenience of not leaving home (as did Polish men) and the low cost of using AR online (Table 1) (as Slyke *et al.*, 2010). On the other hand, Korean men emphasised that the glasses they tried on look like standard glasses and that AR can benefit clients (Ebrahimabad *et al.*, 2024). Like Polish men, Korean men also indicated that using AR was beneficial because they did not have to leave their homes. American women (like Polish women) emphasised that by using AR, they expected to see if a product (such as glasses) would fit their face, skin colour, etc. (similarly to Iisnawati *et al.*, 2022; Abed, 2021). American men indicated time-saving as one of the motivators for using AR in online shopping.

Effort Expectancy

Effort expectancy refers to the degree of ease of use of a new technology as perceived by users. If a technology is easy to use, customers are more likely to accept and use it more often. In other words, effort expectancy may be perceived as the effort individuals believe they need to expend to use the technology effectively (Venkatesh *et al.*, 2003; Paulo *et al.*, 2018; Zhang & Yao, 2023). Polish women and men emphasised that AR in online stores is easy to use. Similarly, Korean and American women and men indicated the ease of using AR to try on glasses in an online store (Table 2).

Table 2. Effort expectancy and AR's use in online shopping: Study results

Effort expectancy		
Country	Women	Men
Poland	PW1: "Also, it's very easy to use."	PM3: "Nothing is complicated here; it is easy to use." PM1: "Everything was intuitive, easy to find, and no major problems existed." PM2: "I didn't have any problems either. It is a simple, intuitive tool." PM5: "In terms of effort, well, practically none."
South Korea	KW2: "It is quite easy to choose the glasses and try it on..."	KM1: "This saves time and effort. It motivates me to use products from companies that offer this technology."
The United States	AW3: "...Pretty much was very similar to me having to try it in person, looking in the mirror."	AM1: "It activated pretty quickly...I would say that's pretty intuitive." AM2: "...it's extremely easy to use."

Source: own study.

Hedonic Motivation

Hedonic motivation is one motive for using new technology. It is perceived as a pleasure, enjoyment, positive feeling, and satisfaction for users of new technology (Arghashi, 2022; Pathak & Prakash, 2023; Ebrahimabad *et al.*, 2024). Polish women were emphasised that AR does not have a wow-effect on them, as they know and use similar filters on Instagram or Snapchat (Table 3). On the other hand, Polish men showed much more enthusiasm and amusement about using AR. Similarly, Korean women indicated that AR does not bring them much hedonic value, as they are familiar with it from other apps. However, Korean women also showed that AR can be fun with friends. Of all the focus groups, American women were the most enthusiastic about using AR technology. On the other hand, American men appeared to be the most reticent users, which may have been due to familiarity with similar social media filters (e.g. Snapchat).

Table 3. Hedonic motivation and AR's use in online shopping: Study results

Hedonic motivation		
Country	Women	Men
Poland	PW2: "It's less fun because we use filters often, so we're used to it. It doesn't have that wow effect, but it's fun."	PM4: "I have to say that I was generally happy when trying on the glasses because it worked very well." PM2: "I really enjoyed the opportunity to try on different glasses. Furthermore, who knows, maybe I'll get some for a present." PM5: "It was a pleasant emotion, such an element of fun. Very positive feelings."
South Korea	KW1: "I think it's fun. Not very much fun, but when I, you know, it's because I think it's because I am alone now. However, when I try it with my friends or someone more likely to enjoy it, I can enjoy more things from the AR program." KW2: I think I agree. Maybe the first pair was fun because it was like, oh, something new I could do, but then it was just normal that I could try it."	KM2: "I would consider buying a few glasses; it is fun."
The United States	AW1: "I find it fun." AW3: "Yeah, I thought it was fascinating because I've never used this approach before, and I thought it was... It worked. I was surprised by how well the technology actually worked the software." AW2: "I thought it was pretty cool."	AM3: "Yeah, it's kind of interesting, and it's like a novelty to see yourself with these glasses on, but it's not something I would probably voluntarily do." AM2: "I feel pretty normal to something like that now. Like just due to the amount of like filters and everything." AM1: "I think it's interesting. It's one of those things I've seen like going back to like most of us; we grew up around like or experienced with Snapchat when a lot of those filters first really started coming out."

Source: own study.

AR-driven Purchase Risk

We may define AR-driven purchase risk as consumers' concerns about the accuracy, reliability, and authenticity of the information provided through AR that could impact their buying decisions (Mombeuil, 2020; Bonnin, 2020; Qin *et al.*, 2024). Some Polish women stressed that a product tried online may look different than it does in real life, and from this point of view, using AR in online purchasing decisions may be risky (women expressed similar concerns in the Korean and American groups) (Table 4). American men expressed a similar opinion indicating that AR may not be effective because things we like online may not fit in real life. Referring to AR-driven risk, Polish men mainly emphasised the inability to see what the product's material looks like and other technical aspects of the product. Noteworthy, Polish women indicated that using AR in online shopping may be risky in the long run, as we will stop leaving the house and become reluctant to talk to people, make new contacts, etc.

Data Privacy Risk

Scholars perceive data privacy risk as apprehensions about privacy and security, primarily related to personal data collected and used by AR during purchasing (*e.g.* Gao *et al.*, 2015; Bonnin, 2020; Dacko, 2016; Qin *et al.*, 2024). Women in all focus groups indicated the need to share their faces and the environment of their surroundings when using AR in e-commerce (Table 5). They also pointed to a lack of knowledge regarding what happens later with this data, how it is stored, who can use it, and how and in what way. Men in all focus groups represented a similar stance. Polish men indicated the risks of collecting shared data. As part of this risk, Korean men spoke of concern about digital crime and also emphasised the need to pay attention to the various types of consent when using AR.

Table 4. The AR-driven purchase risk and AR's use in online shopping: Study results

AR-driven purchase risk		
Country	Women	Men
Poland	<p>PW1: "I think people will not leave the house using augmented reality. They will sit at home in front of the computer, checking everything and looking for product information. Staying at home and not having to leave the house is a bit of a threat to all of us."</p> <p>PW5: "I think that the one major drawback is the possibility that, for example, we might like something on the internet, and then, in reality, it might look different. And then I would be disappointed."</p>	<p>PM3: "The risk may be how efficient this algorithm of reading facial features is because it determines whether the product will be as it is on the visualisation."</p> <p>PM4: "If I'm trying on glasses, for example, the moment they're going to be the same shape and colour as the ones I'm actually going to buy, it can be a problem to represent how they shine, how the reflections look, or, for example, whether they are wooden, metal, or plastic. As far as I can see, they are not possible with such animations and the use of such computer-generated objects."</p> <p>PM1: "I would be afraid of the colour reproduction because I don't see a problem with white or black; it's with more green or yellow colours that it could get messy."</p>
South Korea	<p>KW1: "I think it's because technology has not developed so much. So there is something like I can try sunglasses on my face, but they don't fit my face at all sometimes, and they're different from reality."</p>	—
The United States	<p>AW1: "I think the glasses could probably make it look better than in reality. When you're looking at glasses in person, you see what you get..."</p>	<p>AM2: "However, it's whether or not those things will be fair or work the way you want them to. The amount of money that you would be spending on it, because if you spent on spending the money on it and you got your product and it doesn't work for fit like the way that you want it to because you, uh, things that it would just because of the image and it just yeah, I don't think it's efficient right now."</p>

Source: own study.

Table 5. Data privacy risk and AR's use in online shopping: Study results

Data privacy risk		
Country	Women	Men
Poland	<p>PW5: "I would like to emphasise the risks mentioned in connection with releasing our image."</p> <p>PW2: "The risk of sharing images from the flat might be important for someone with more valuable things."</p> <p>PW3: "I am at significant risk of creating dip fakes as my image will be shared."</p>	<p>PM4: "There is some risk... there is about the storage of these recordings".</p> <p>PM2: "I would identify the issue of data protection more as a challenge of this technology."</p>
South Korea	<p>KW2: "I think it's like with data storage... Who has access to that?"</p> <p>KW1: "Security things like sharing more data are not necessarily well protected."</p>	<p>KM2: "I think there could be issues with digital crime."</p> <p>KM1: "I do pay attention to the basic agreement or terms of use before agreeing to use such tools."</p>
The United States	<p>AW2: "I immediately thought of the risk of somebody hacking your camera, and that's what I was thinking, being safe online."</p> <p>AW1: "Yeah. How private is AR going to be? How can we ensure that our data, what we have in our home, our face shapes and all that isn't being used?"</p>	<p>AM1: "I have to look at it from more of a cybersecurity risk perspective..."</p> <p>AM2: "You don't know who's getting access to this and what they're doing with this information. Personally, I don't particularly appreciate using or giving access to my data to any online company when I can, so that's my biggest concern. It's just security as well."</p>

Source: own study.

CONCLUSIONS

The AR technology has the potential to transform retail further, offering new ways to attract and engage customers. By facilitating the online shopping experience, AR can stimulate consumption and contribute to retail growth (Dogra *et al.*, 2023; Xu *et al.*, 2024). Companies that successfully integrate these technologies into their business models can gain a competitive advantage in the marketplace. However, the use of AR technology in e-retailing is conditioned by several determinants and also brings with it many questions and concerns related to cyber security (Kumar, 2022; Huang, 2023; Zheng & Li, 2023; Qin *et al.*, 2024). Knowing the elements that positively and negatively impact AR technology's use in online shopping decisions can help companies improve it and conduct an information campaign about its capabilities and advantages among potential customers.

Referring to the main study's objective of gender influence on individual factors of AR technology use in e-commerce and based on MAXQDA and qualitative analysis, we should note that in terms of:

- performance expectancy, both genders indicated it as an essential factor. Male respondents mainly emphasised the advantage of AR: they do not have to leave home, and using AR saves them time (Korean women also indicated this advantage). Women mainly emphasised that they could check if the glasses' colour and shape fit their faces. Matching the colour scheme for women is a plus, while men may find it challenging and indicated AR-driven risks. It is also interesting to note that the lack of need to leave home for male groups is a motivator and advantage of AR use. In contrast, for Polish women, the lack of need to leave home was considered in the area of risks associated with sitting at home and losing the ability to talk and build relationships with others. This is a new aspect that has been indicated in research on the use of AR in online shopping. As part of the similarities, it should be noted that almost all groups indicated that using AR in e-commerce could save time;
- the effort expectancy, all respondents, regardless of gender and background, indicated that using AR in online shopping (using glasses as an example) is very simple and intuitive. However, men emphasised this much more clearly and emphatically;
- hedonic motivation, in the Polish and Korean groups, men generally indicated greater enjoyment from using AR and emphasised the possibility of fun. On the other hand, Polish and Korean women emphasised that they were familiar with this type of filter and that it was not great fun (Korean women emphasised that it could be fun in a group of friends but not alone). Moreover, AR can be fun for women but for the first use. On the other hand, in the American group, the situation was the opposite, with American women showing greater hedonic motivation compared to men. In addition, American women showed the most enthusiasm for AR use in online shopping among all groups, while American men showed the least enthusiasm;
- AR-driven purchase risks, the most common concern within this area was that the product purchased online using AR may, in fact, be different. This opinion was prevalent among both men and women, *i.e.* we may consider that this type of risk does not depend on gender;
- data privacy risks, all people in the surveyed groups, regardless of gender, emphasised concerns about using AR when trying on and shopping online. Nevertheless, women were much more concerned about personal data sharing, their images and photos of their houses than men. Women expressed particular concern about what would happen to the data but paid little attention to the need to read the terms and conditions. Men were more likely to pay more attention and caution to the terms and conditions we agreed to when using AR online as part of this risk.

The above conclusions respond to the research questions formulated before the empirical study. Concerning the role of gender in impacting the motives and risks connected with consumers' use of AR technology in online shopping decisions, it should be mentioned that gender differentiates motivation more than risk.

Interestingly, there was no significant difference among participants from different countries and cultures during the study, possibly due to their age (Bartosik-Purgat *et al.*, 2022). The young consumer segment is often characterized by similar needs and skills regardless of which culture they come from. This is often influenced by access to the internet, social media, and mobility, through which they learn

about other countries, cultures, customs, and behaviour. However, cultural factors can influence hedonic motivation, particularly in groups of women. For example, for the American women who participated in the study, the use of AR was the most enormous fun (they spoke with great enthusiasm and joy about using AR while shopping). On the other hand, Korean women indicated the possibility of fun and positive emotions associated with using AR in a group of friends or acquaintances, not alone. On the other hand, Polish women said that this does not constitute a wow-effect for them, as they know such filters from Instagram. Cultural factors that may influence these differences relate to the indulgence-restrained and individualism-collectivism dimensions and factors, among others (Hofstede *et al.*, 2010). The group and functioning within a group of friends, family, colleagues, etc., plays a particular role in collectivist cultures, of which South Korea is one. Concerning the indulgence-restrained dimension, Poles are the most pessimistic of the countries studied. At the same time, Americans view the world optimistically (Hofstede *et al.*, 2010), which may be reflected in the results obtained and differences in the women focus groups.

Implications

The results obtained in the study have significant theoretical and practical implications. Regarding theoretical application, the findings show the significant role of gender and cultural factors as moderators in models concerning the acceptance of new technologies on the international market. Regarding the practical implications, we should emphasise that adapting to the preferences of different demographic groups concerning gender can increase the effectiveness of marketing efforts and improve sales performance (Alesanco-Llorente *et al.*, 2023). Retailers can use these differences when implementing AR technology and planning their marketing strategies. For example, marketing campaigns targeting women can focus on the practical benefits of AR, such as time savings and shopping confidence, while campaigns targeting men can emphasise the modernity of technology and the convenience of not having to leave home while shopping.

Limitations and Future Research

The study has various limitations related to, among other things, the selection of participants and the language. The selection was purposive, considering the sampling criteria. However, this may have influenced the fact that the selected persons may not have characteristics representative of the segment. That is why the results cannot be generalised to the whole population. Furthermore, in the Korean group, we conducted the discussion in English, which may have affected the freedom of expression of the Korean participants. Moreover, we may also see the study's limitations in the context of an insufficient number of country focus groups (indeed, more interviews should have been conducted with both women and men). Any limitation of a particular study may set the stage for further, in-depth analyses. Certainly, in the case of this study, the challenge of surveying the number of focus groups in each country or expanding the spatial scope of the study to include other culturally diverse countries is worthwhile. It is recommended that random selection be used to obtain representative results that can be generalised to a specific consumer population or segment. Moreover, it would be worthwhile to try to interview each cultural group in the participants' native language, which will undoubtedly impact more detailed statements and greater participation in the discussion. We can also apply the presented research findings to quantitative representative studies in different countries and use them to prepare the research instrument.

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Conflict of Interest

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

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A Silesian perspective on small and medium-sized enterprises facing the challenges of the green economy

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ABSTRACT

Objective: This article aims to identify and analyse the opinions of small and medium-sized enterprises (SME) entrepreneurs operating in the Silesian Voivodeship on the prospects of their companies in relation to the need to implement so-called green solutions. The key aim of the study was to identify differences in assessments of future developments in the labour market of the Silesian Voivodeship between two groups of respondents: SME companies with the potential to create green jobs and SMEs in the green sector.

Research Design & Methods: We based the analysis on empirical data collected during fieldwork, based on a dedicated interview questionnaire. We used stratified-quota sampling. We conducted the entire study in the form of computer-assisted telephone interviews (CATI) with a sample of 635 respondents. Key relationships between nominal variables and their categories were tested using a chi-square test to determine the significance of these relationships. For factors significantly influencing interest in companies' environmental activities, correspondence analysis was additionally applied.

Findings: Most respondents believe employment in SMEs with green job potential will remain stable until 2027. Micro-entrepreneurs tend to foresee unchanged employment, while medium-sized companies plan to increase staff. The study highlights that green jobs are not clearly defined, focusing more on retraining employees to meet new environmental requirements than creating new roles related to green technologies. Entrepreneurs believe that Silesia's socio-economic infrastructure supports green economy initiatives, while companies already engaged in the green sector effectively create green jobs. Notably, 71.4% of these companies' representatives expect strong growth in the sustainable economy by 2027.

Implications & Recommendations: The green economy in Silesia has promising prospects but faces challenges. Supporting access to public funding and offering preferential pricing for eco-friendly technologies could boost interest across businesses. Raising public awareness and environmental education is crucial to prepare workers and the public for upcoming economic shifts. Simplifying subsidy procedures for pro-environmental actions and adjusting legal regulations could accelerate the adoption of green solutions, making them more attractive to regional enterprises.

Contribution & Value Added: This research enriches prior studies on sustainability and entrepreneurship by addressing the perspectives of SMEs in Poland. The analysis highlights how SME entrepreneurs in Silesia view the green economy. Most companies with green job potential (66.2%) found the region's socio-economic infrastructure favourable for green economy adoption. Promising areas included renewable energy, clean technologies, and waste management, with photovoltaics and recycling identified as key. Among established green-sector firms, 71.4% expect strong sector growth by 2027, aligning with the sustainable development goals (SDG).

Article type: research article

Keywords: SME; SDG; Silesia region; green economy; green solution; public management

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INTRODUCTION

Scientific studies confirm the importance of the economic condition of SMEs for the proper functioning of the economy. In the economic structure of both the European Union (EU) and Poland, SMEs are numerically dominant entities, employing more than two-thirds of the workforce (Table 1).

Table 1. Type of enterprises and their number, structure and employees in 2023

Criterion	Type of company	EU		Poland		Silesian Voivodship	
		lb.	%	lb.	%	lb.	%
Number and structure of enterprises by type	Micro	21 851.492	93.5	1 963.893	95.0	515 471	96.2
	Small	1 287.959	5.5	84 353	4.1	16 414	3.1
	Medium	201 000	0.9	14 712	0.7	3 323	0.6
	Large	42 000	0.2	3 251	0.2	531	0.1
	Total	23 382.451	100	2 066.209	100	535 739	100
Number and structure of employees in enterprises by type	Micro	37 204.470	29.2	3 477.828	34.8	421 360	24.9
	Small	24 743.146	19.4	1 664.747	16.7	297 124	17.5
	Medium	20 088.003	15.7	1 519.964	15.2	342 318	20.2
	Large	45 584.293	35.7	3 334.374	33.3	634 738	37.4
	Total	127 619.912	100	9 996.913	100	1 695.540	100

Source: GUS, (2024). Local Data Bank, <https://bdl.stat.gov.pl>

The number of SMEs has been growing steadily in recent years in both Poland and the European Union. Enterprises – operating in Poland – generate almost three-quarters of Poland's Gross Domestic Product (GDP). An analysis of the share of enterprises in the creation of GDP by sector of the economy shows significant differences between large enterprises and SMEs. In the latter's case, the services sector is the most important, with a share of 44.5% in GDP creation, compared to 31.1% for large companies. The second most important is trade (26.1% – SME; 11.2% – large companies). On the other hand, in large companies, industry (55.3% – large companies; 17.4% – SME) has a visibly higher contribution to GDP creation than the SME sector, while construction (2.4% – large companies; 12.0% – SME) is the least important (Zakrzewski *et al.*, 2023).

The particular importance of the SME is evident in the Silesian Voivodeship. In 2023, employment in this sector accounted for 62.4% of the region's total workforce. In comparison, in 1989, large heavy industry was significantly predominant. The Silesian Voivodeship generated 25% of the national income and was home to 65 coal mines, 13 power plants, 19 ironworks, 255 construction companies, 82 agricultural enterprises and almost 35 000 small craft businesses. The excessive industrialisation of the region contributed to high levels of harmful emissions, which led to an ecological emergency at the time and continues to cause numerous problems today (Fic & Krzyżanowski, 2024).

The political and economic transformation initiated in Poland in 1989 changed the economic situation of the Silesian Voivodeship. The long-standing domination of hard coal mining, metallurgy, and energy based on traditional energy generation sources led to the region's economic collapse and mass unemployment. The signing of the Europe Agreement on 16 December 1991 set the framework for Poland's institutional and legal relations with the European Union. It triggered a slow change in the structure of the labour market. This forced entrepreneurs to look for new markets and the employed and jobseekers to acquire new qualifications and competencies. Pre-accession and aid funds supported the initiated transformation process.

Poland's accession to the EU in 2004 opened up the possibility of benefiting from a wide range of financial aid, contributing to the country's dynamic socio-economic development. The success of the decisions taken to stimulate entrepreneurship with aid funds is particularly evident in the Silesian Voivodeship, which, from a region in economic decline, has become one of the regions with the highest potential and GDP dynamics in Poland.

Data for 2021 shows that industry in the region accounts for about 13% of the GDP and about 17% of national industrial production, of which 62% is in the private sector. The region produces most of Po-

land's hard coal (approx. 91%), rolled products (approx. 63%), coke (approx. 42%), crude steel (approx. 68%), electricity (approx. 19%) and passenger cars (approx. 82%). Coal mining, iron, zinc, and lead metallurgy, power generation, the electrical machinery, food and chemical industries and the automotive industry play a vital role in the region's development (Situation in the regional economy of the Silesian Voivodeship May 2021 – monitoring report, 2021). In 2022, the Silesian Voivodeship will generate 12.1% of Poland's GDP, ranking second in Poland after the Capital Region of Warsaw (cf. Table 2).

Table 2. Gross domestic product by region in 2022 (current prices)

Regions	Total			Per capita	
	PLN million	In percentage terms	Previous year=100	In PLN	Poland =100
Poland	3 06 495	100.0	116.6	81 093	100.0
Lower Silesia	263 119	8.6	118.2	90 980	112.2
Kujawsko-pomorskie	133 869	4.4	116.5	66 547	82.1
Lublin	112 047	3.7	114.9	55 182	68.0
Lubuskie	65 163	2.1	116.1	66 131	81.8
Lodz	181 851	5.9	113.9	76 228	94.0
Małopolskie	246 895	8.0	114.4	72 004	88.8
Mazovia regional	168 057	5.5	121.4	74 460	91.8
Opolskie	60 854	2.0	112.7	64 383	79.4
Podkarpackie	114 747	3.7	13.1	55 125	68.0
Podlaskie	68 542	2.2	117.4	59 818	73.8
Pomeranian	191 386	6.2	121.3	81 149	100.1
Silesia	371 166	12.1	118.0	85 131	105.0
Świętokrzyskie	66 800	2.2	110.6	56 507	69.7
Warmińsko-Mazurskie	77 218	2.5	114.0	56 368	69.5
Warsaw capital	536 261	17.5	117.8	164 776	203.2
Wielkopolskie	300 216	9.8	115.5	85 867	105.9
Zachodniopomorskie	109 303	3.6	113.2	66 443	81.9

Source: GUS, (2024), <https://obserwatorgospodarczy.pl>

This article aims to identify the opinions of SME entrepreneurs operating in the Silesian Voivodeship on the prospects for further functioning of their companies, given the need to implement so-called green solutions. The focus was on issues relating to the level of employment as a consequence of implementing so-called green solutions in business models and identifying the opinions of SME entrepreneurs on the opportunities of the green economy in the Silesian Voivodeship.

The novelty of the article lies in filling a research gap regarding the identification of SME entrepreneurs' views on the potential opportunities for implementing green solutions, particularly in the context of public labour market institutions' support for measures to increase the implementation of green solutions funded by the Just Transition Fund (JTF). The article deepens the understanding of the challenges and highlights the need to implement green practices in a region with a traditionally strong industrial focus.

It also highlights the role of the various incentives offered under the JTF to support entrepreneurs in implementing green change.

According to the authors, the study results are an essential addition to previous research on sustainability and entrepreneurship, which has mainly focused on the practices of large corporations, neglecting the perspective of smaller entities such as SMEs in Poland.

The article has a practical dimension. It focuses on analysing the opinions of SME entrepreneurs in the Silesian Voivodeship in the context of implementing green solutions. The main research questions concern the impact of employment level and the local level of green economy development on entrepreneurs' willingness to integrate sustainable practices into their business models.

The article will include the following sections: an introduction, which will explain the context of the changes in the economy and describe the characteristics of SMEs; a literature review, which will

discuss the transformation in the Silesian region and provide a description of the Just Transition Fund; materials and methods, which will explain the research methods used; main results, which will present the findings, discuss their practical implications, and provide recommendations; and conclusions, which will summarize the key points.

LITERATURE REVIEW

The first decade of the 21st century radically changed the outlook on the functioning of the global economy. The financial crisis that began in 2007 in the United States quickly spread to other countries, revealing serious weaknesses in previous economic doctrines. The crisis exposed the unreliability of the liberal economic principle, which assumed that a free, unregulated market, with minimal state interference, would ensure equilibrium and economic growth. These theories assumed that self-regulation would correct any errors in economic processes. However, reality proved otherwise, which led to these beliefs being challenged (Stiglitz, 2010).

The response to the global crisis has become a conviction of the need for international cooperation and the search for global solutions to growing economic problems. The crisis has highlighted that the effects of the existing economy include financial, social, ethical, and environmental problems. Environmental degradation, climate change and overconsumption of natural resources have become clear effects of the production and consumption model, especially in developed countries. Scholars have also identified raw materials and food waste as a consequence of an inappropriate economic model (Jackson, 2009; Roubini & Mihm, 2010; Kołodko, 2011; Goswami, 2018). The direct social cost of the crisis has been the loss of public trust in banks, financial institutions, corporations and public institutions and governments, which have so far tolerated irregularities and risks in the economic system. The crisis has made people and governments realise that a return to previous economic models is impossible and that new solutions must be sought (Antetomaso *et al.*, 2018).

A new economic model that began to gain prominence was sustainable development. Initially defined in the 1987 Brundtland Report as development that does not jeopardise the ability of future generations to meet their needs, sustainable development has evolved and found its place in documents such as Agenda 21, the outcome of the 1992 UN Conference in Rio de Janeiro (World Commission on Environment and Development, 1988; United Nations Conference on Environment and Development, 1992). The European Union's first pro-environmental development strategy, Europe 2020, prepared with the lessons learned from the global financial crisis, brought the idea of the green economy and green growth into the mainstream of EU policy (Dahl, 2021; Sikora, 2021; Eckert & Kovalevska, 2021). It also contributed to the establishment of financial instruments – for cohesion policy, environmental policy, including climate policy, agricultural policy, energy policy, transport policy, research and development policy, as well as humanitarian and development aid towards third countries – that will support decisions to change the business model towards a green economy (European Commission, 2010). Following reflections on the causes and consequences of the 2007 economic crisis, the trend of searching for a new economic model was gradually developed through global and regional arrangements (United Nations General Assembly, 2015; European Commission, 2019) aimed at strengthening reporting obligations and corporate sustainability responsibilities, examples of which include the Corporate Sustainability Reporting Directive (CSRD) (European Parliament and Council of the European Union, 2022) from 2022 and the Corporate Sustainability Due Diligence Directive (CSDD) from 2024 (European Parliament and Council of the European Union, 2024).

Businesses operating within EU member states must conduct their activities in accordance per the EU's legal requirements. One of the dominant changes taking place in the environment of businesses operating within the EU in recent years is the need to meet the Sustainable Development Goals and create a Circular Economy model.¹ Green transformation is therefore becoming the dominant logic

¹ A closed economy is a sustainable, low-carbon, resource-efficient and competitive economy. Products, materials and resources in a closed economy are used and maintained for as long as possible, keeping waste generation to a minimum.

shaping the socio-economic development of the economies of individual countries and is particularly changing the face of SMEs (Tomaszewski, 2020).

Today, management practices that value green transformation are most prevalent in large companies and corporations. Since 2004, they have been obliged to report their activities according to environmental, social and governance (ESG) standards. Ultimately, however, it is assumed that all entities operating within the EU will transform their activities to meet the Sustainable Development Goals. This implies the need to seek and implement various incentives for entrepreneurs to change their business models and introduce green solutions in their businesses. Since, as shown above, the importance of the SME for economic development is high, the European Union, to encourage entrepreneurs to create green jobs, announced and introduced the European Green Deal (European Commission, 2019), a package of policy initiatives aimed at putting the EU on the path of ecological transformation and ultimately achieving climate neutrality by 2050. The various instruments prepared under the European Green Deal support the transformation of the EU into a fair and prosperous society with a modern and competitive economy (Rauh, 2018). However, the success of the green transition will depend not only on the financial, legal and awareness instruments prepared by the EU and individual Member States, but mainly on the attitudes towards green change of entrepreneurs, especially those operating in the SME sector.

For SMEs, which are often less financially flexible, it is crucial to easily obtain financial support instruments that will enable them to transition to the green economy. Companies' financial health and attitudes towards sustainability will determine the effectiveness of implementing the new economic model (Stupik *et al.*, 2021). Adopting a green growth model is particularly important in regions undergoing profound economic change. An example of such a region in the European Union is the Silesian Voivodeship in Poland. For many years, the mining industry (hard coal) and the steel industry dominated this region. Today, the province is undergoing intensive transformation to adapt to modern and sustainable economic models.

The European Green Deal envisages climate neutrality and non-reliance on non-renewable natural resources in the economy. The premise of the European Green Deal is to achieve zero greenhouse gas emissions by 2050 and EU climate neutrality as a consequence of decarbonisation in a fair way (Engel *et al.*, 2020). The European Commission has proposed the creation of a Just Transition Mechanism, which would include a Just Transition Fund (JTF). This mechanism focuses on regions and sectors where transformation has the greatest impact due to their dependence on fossil fuels, including coal, peat and oil shale, and industrial processes with high GHG emissions. The Just Transition Fund is a financial instrument within the framework of the Cohesion Policy to provide support to areas facing significant socio-economic challenges resulting from the transition in the pursuit of climate neutrality. The fund's design facilitates the implementation of the European Green Deal, which aims to achieve EU climate neutrality by 2050 (European Union, 2016; European Parliament and Council of the European Union, 2021).

The JTF is a key tool to support the most transition-affected areas in achieving climate neutrality and preventing the widening of regional disparities. Its main objectives are to mitigate the impacts of the transition by funding the diversification and modernisation of the local economy and to mitigate the negative effects on employment. To achieve these objectives, the fund supports investments in areas such as digital connectivity, clean energy technologies, emission reductions, industrial site regeneration, worker retraining and technical assistance. The fund provides support to all EU Member States. The allocation criteria base on industrial emissions in carbon-intensive regions, industrial employment and coal and lignite extraction, peat and oil shale production, and the level of economic development.

The budget for the Just Transition Fund for 2021-2027 is EUR 17.5 billion, including EUR 3.85 billion for Poland. Member States can supplement their Just Transition Fund allocations with funds allocated under the European Regional Development Fund and the European Social Fund Plus. The funding goes to the regions most affected by social and economic transformation. In Poland, these include the Dolnośląskie, Śląskie, Małopolskie, Łódzkie, Wielkopolskie and Lubelskie regions. Most of this amount, more than EUR 2.22 billion, has been earmarked for the Silesian Voivodeship for measures related to achieving the objectives of enterprise restructuring, including SMEs, and social support for people who may lose their jobs due to economic change. This is more than 72% of the value of the entire fair

transformation programme for Silesia. The remaining 27% is spent on investments related to environmental protection (Board of the Silesian Voivodeship, 2021).

The JTF for the Silesian Voivodeship mainly covers areas affected by the restructuring of the coal sector, such as mines, power plants, metallurgy and related economic and social sectors. The Just Transition Fund allocated to the Silesian Voivodeship has one main task – to mitigate the social, economic and environmental impacts resulting from the transition to a climate-neutral economy. The aim is to support investments that will contribute to the region's sustainable development, considering the needs of the local community, the protection of the environment and the development of innovative and ecological solutions. The Just Transition Plan for the Silesian Voivodeship covers seven sub-regions of the Silesian Voivodeship: Katowice, Bytom, Sosnowiec, Gliwice, Tychy, Rybnik, Bielsko (Board of the Silesian Voivodeship, 2022). JTF in the Silesian Voivodeship is an excellent opportunity for regional SMEs to obtain non-refundable grants for developing their business. Co-financing can aid development projects involving, among other things, the modernisation of existing technological facilities, production automation or improved energy efficiency. Investments carried out under the JTF can contribute to increasing the competitiveness of the local economy and, at the same time, improve the quality of life of the inhabitants of the Silesian Voivodeship, e.g. by generating new jobs for entrepreneurs.

An important factor determining the development of an enterprise is its ability to react to changes in its environment. The entrepreneur should observe the environment carefully and, when changes occur, take immediate action to adapt the enterprise to the environment.

RESEARCH METHODOLOGY

We based the analysis presented in the article on empirical data collected during a field study commissioned by the Voivodeship Labour Office in Katowice and entitled it 'Labour market in the area of green economy in the Silesian Voivodeship.' The BST Group conducted the research between 31 August and 20 December 2023 based on a dedicated interview questionnaire using stratified-quota sampling. The BST Group conducted the entire survey in the form of computer-assisted telephone interviews (CATI) with a sample of 635 respondents, resulting in a 95% confidence level and a maximum error of 4%. The survey aimed to estimate current and potential labour demand in the green economy, including the occupational structure of labour demand.

The study's key objective was to identify differences in assessments of future labour market developments in the Silesian Voivodeship between two groups of respondents: SMEs with the potential to create green jobs and SMEs in the green sector. The study used survey questionnaires containing, respectively, 20 closed questions for companies with the potential to create green jobs and 18 closed questions for companies in the green sector. The metrics section of the questionnaire included questions on company size (number of employees), type of business and location in the sub-regions of the Silesian Voivodeship. We used the data on the number of employees (i.e. the classification of companies into micro, small and medium-sized) for the subsequent correspondence analysis to check whether the opinions of companies with green potential differ from those operating in the green sector.

In the first group of respondents, representing SMEs with the potential to create green jobs, 334 computer-aided telephone interviews (CATI) were conducted. Companies were classified in this group if they indicated that they were undertaking environmental activities in at least two of the specified categories, such as waste segregation, use of low-emission vehicles, recycling, purchase of energy-efficient machinery, use of green materials, thermal insulation of buildings, optimisation of supply chains and other activities that improve the environment. In the second group of respondents, comprising green sector companies, 301 CATI telephone interviews were conducted. These companies had to prove that they were operating in areas related to the green economy, such as renewable energy sources, clean technologies, energy-efficient construction, public transport, waste management, ecotourism, and innovative environmental and natural resource management technologies.

The study used sophisticated analytical tools appropriate to the characteristics of the variables and the complexity of the issues analysed. We examined key correlations between nominal variables and their categories using the chi-square test (Cramér, 1946; Brzezińska, 2013), which made it possible to

determine the significance of these relationships. For factors significantly influencing interest in companies' environmental activities, correspondence analysis was additionally applied (Greenacre, 2021; Hjellbrekke, 2018; Stanimir, 2005).

RESULTS AND DISCUSSION

In line with the aim of the research, the first stage examined which characteristics of the SMEs surveyed influence their interest in implementing pro-environmental solutions. The results of the chi-square tests, presented in Table 3, indicate statistically significant relationships between interest in green measures and company characteristics. The chi-square test enables the examination of the association between two qualitative variables. The relationship is considered statistically significant if the calculated p-value is lower than the accepted significance level.

For companies in the green sector and companies with the potential to create green jobs, the key factor influencing interest in implementing pro-environmental solutions is the projected employment situation and opinions on the future of the green economy in Silesia. Forecasts for future employment and the development of the green economy in the region play an important role in the decisions of both groups of companies to engage in pro-environmental activities.

Table 3. Results of the chi-square tests carried out

Characteristics	In your opinion, are companies in the Silesian Voivodship interested in introducing environmentally friendly measures?			
	Green sector		Companies with green potential	
	chi-square	p-value	chi-square	p-value
Future employment situation of the company	37.174	< 0.001	12.841	0.046
Opinion on the future of the green economy in Silesia	56.651	< 0.001	129.151	< 0.001

Source: own study.

In the next step, the analysis was extended to include a correspondence analysis, which made it possible to identify more precisely which categories of factors are most closely related to respondents' declarations of interest in green solutions. Correspondence analysis is an exploratory technique used to analyse contingency tables, aiming to create a so-called correspondence map. This map illustrates the relationships between the categories of the variables studied – the closer the points representing these categories are to each other, the stronger the association between them. Separate analyses were carried out for the two groups – companies in the green sector and companies with green potential – and the results presented in the correspondence maps made it possible to interpret and compare them in the context of interest in green measures.

(1) The Future Employment Situation of SMEs and Propensity to Implement Green Solutions

Most respondents believe that employment in SMEs with the potential to create green jobs will remain unchanged until 2027 (75.1%). Only one in five entrepreneurs believe it will increase (21.3%), while 3.6% of employers expect it to decrease. Micro entrepreneurs were more likely than other entrepreneurs to say that employment would remain the same. On the other hand, representatives of medium-sized enterprises stated that they would increase employment levels by 2027. Almost half of the employers surveyed said that they did not intend to create any new jobs by 2027 that would involve tasks contributing to the improvement of the environment (48.2%), and one in four could not answer this question (28.4%). One in four employers reported the creation of such jobs (23.4%).

Most SME green sector entrepreneurs believe that employment in their companies will remain at the current level until 2027 (80.1%). Increased employment is expected by 16.6% of entrepreneurs and a decrease by 3.3% of respondents. The distribution of answers according to metric variables makes

little difference to the respondents' opinions. We found the biggest difference among micro entrepreneurs, who are likelier than other entrepreneurs to say that employment will stay the same.

Even among enterprises with the potential to create green jobs, assessing the future employment situation still significantly influences the declaration of interest in green solutions. Figure 1 shows enterprises that intend to increase employment also favour green solutions. Enterprises that expect employment to remain at the same level are more likely to be interested in green measures. However, there is also a sub-group of enterprises that are not interested in such measures. Companies that expect to reduce their workforce are in a clear minority, and their responses are not linked to any declaration of environmental commitment.

For SME green sector entrepreneurs, the assessment of their future employment situation significantly influences the declaration of interest in green solutions. Enterprises that intend to increase employment are strongly in favour of green solutions. Enterprises that expect to maintain employment at the same level are more interested in pro-environmental measures. However, there is also a sub-group with an undefined attitude ('hard to say'). Enterprises that expect to reduce their workforce are most often not interested in pro-environmental solutions.

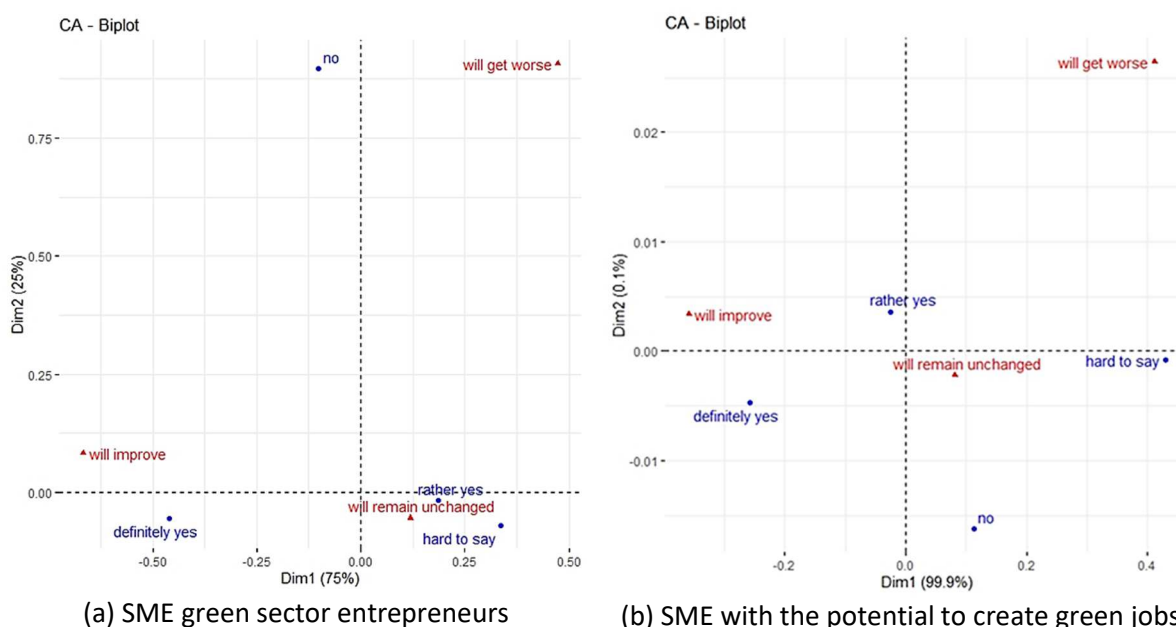


Figure 1. Relationship between interest in green solutions and future employment situation in (a) SME green sector entrepreneurs and (b) SME with the potential to create green jobs(b)

Source: own elaboration.

The EU grants for SMEs are often intended for investments in innovative technological solutions, development of the company's infrastructure or implementation of modernisation to reduce energy consumption or generated pollution in the company.

The results of the study indicate that all analysed areas can contribute to the creation of new jobs. These positions span various business sectors and relate to producing green products or services that positively impact the environment. The study also revealed that green jobs are not yet clearly defined. In the context of green employment, there is a tendency to retrain employees and adapt their skills to meet the new environmental management requirements. Retraining processes are currently more common than creating entirely new roles related to green technologies. However, new jobs will become necessary with the implementation of various green projects and investments in industry, agriculture, and tourism.

One of the key challenges highlighted by respondents is the need for environmental and pro-environmental education to prepare employees for upcoming changes. Awareness of pro-environmental actions and behaviours is becoming increasingly important. At the same time, respondents from green-

sector companies noted that, in the event of workforce reduction, they would not pursue further environmental initiatives. This may indicate that these companies have reached their maximum level of environmental development and that a decrease in employment significantly affects human resource quality, limiting the potential for implementing new solutions.

(2) Relationship Between the Interest in Pro-environmental Solutions in SME Business Models and the Level of Development of the Green Economy in the Silesian Voivodeship

As the correspondence analysis has shown, the respondents' answers concerning their opinions on the perspectives for the development of the green economy in the Silesian Voivodeship and the interest expressed by SMEs in implementing pro-environmental solutions are also significantly related (Figure 2).

Companies where it is believed that the green economy will grow by 2027 mostly declare pro-environmental sentiments ('definitely yes' and 'rather yes'). Companies undecided on the prospects of the green economy have an ambiguous attitude towards introducing environmental solutions in their business models. Companies that believe the green economy will not grow are generally not interested in environmental measures.

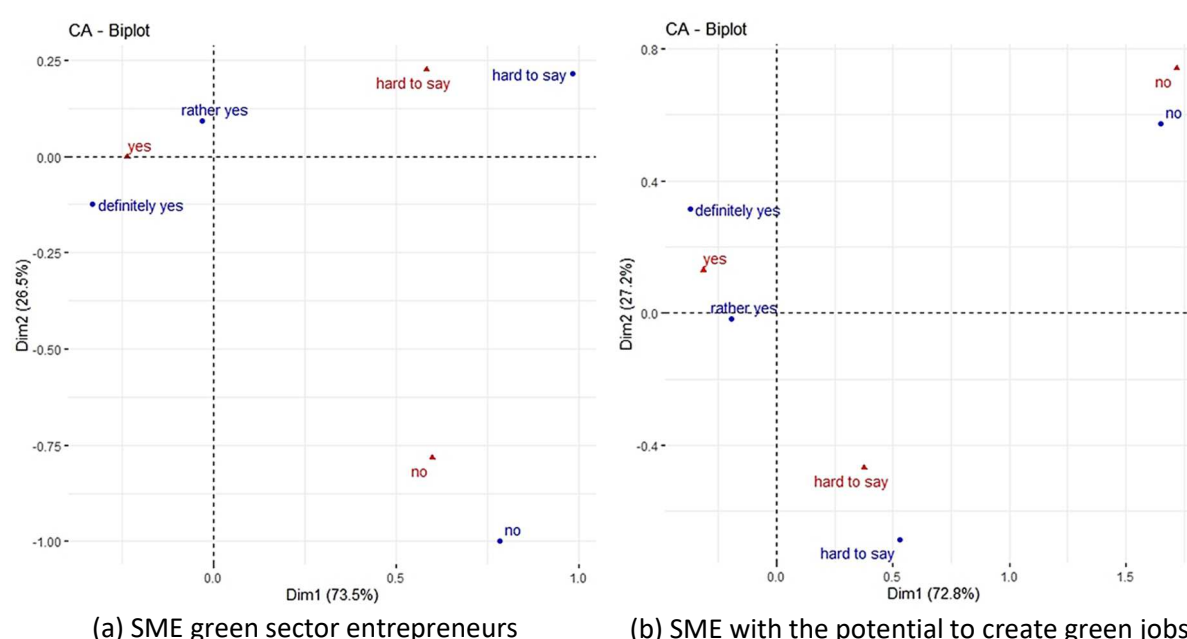


Figure 2. Relationship between interest in pro-environmental solutions and opinions on the green economy in Silesia among green companies (a) and companies with potential (b)

Source: own elaboration.

Entrepreneurs with the potential to create green jobs mostly (66.2%) believe that Silesia's current socio-economic infrastructure allows for the successful implementation of the green economy. In comparison, only 6.0% have the opposite opinion, and the rest have no opinion. These results indicate that positive assessments are more frequent among medium and larger companies in the SME area than among micro and small enterprises. At the same time, location does not significantly affect the differences in responses. We predict the fastest growth in areas such as renewable energy, clean technologies, waste management and recycling, and public transport. In these sectors, entrepreneurs mention specific technologies and solutions such as photovoltaics, electric vehicles, energy-efficient construction and recycling systems that have the potential to support the development of sustainable practices.

In contrast, companies already operating in the green economy have an established approach to this strategy and are successfully creating green jobs. As many as 71.4% of the representatives of these companies believe that the sustainable economy will develop intensively by 2027. Positive views are particularly pronounced in medium-sized and larger companies (82.6%) of the SME sector compared to micro and small companies (64.0%). The greatest enthusiasm is for clean energy and renewable

technologies, as well as innovations in the areas of energy-efficient construction, sustainable transport and industrial technologies with a lower environmental impact.

Both groups of respondents agree that developing the green economy will be supported by simplified procedures for accessing public funding for pro-environmental activities, growing public awareness and preferential prices for environmentally friendly technologies. On the other hand, respondents identified the following elements as obstacles: high costs of pro-environmental solutions, complicated procedures for obtaining funding and laws hampering green economy activities, as well as limited public knowledge and awareness of ecology.

CONCLUSIONS

In recent years, research into the implementation of green solutions in the small and medium-sized enterprise sector has been growing in importance, especially those that relate to local economic and social development conditions. These enterprises are key to the transition to a more sustainable economy, but their potential to implement green practices is often limited by their smaller financial, organisational and human resources. The research findings presented in this article focus on analysing the determinants of green implementation by SMEs, such as employment levels, institutional support and the local level of green economy development. Also new in the literature is an examination of the impact of local and regional policies, which often determine the pace and extent of green transformation among businesses.

Furthermore, researchers have been paying increasing attention to aspects of adapting business models to a green economy's requirements and understanding entrepreneurs' attitudes towards pro-environmental change. In the Silesian Voivodeship, where heavy industry still plays a significant role, the study of SME entrepreneurs' attitudes towards green transformations is a particularly important analysis areas. Integrating factors such as the level of development of the green economy and entrepreneurs' perception of green solutions allows the identification of barriers and opportunities that may support the implementation of green practices in this sector in the selected geographical area.

The analysis of the research results provides valuable information on the perception of the green economy by SME entrepreneurs in Silesia. We conducted the research in two groups, *i.e.*, among companies in the green sector and those with the potential to create green jobs. Most companies with potential (66.2%) felt that the region's current socio-economic infrastructure was conducive to the implementation of the green economy, with medium and large companies expressing higher support. The areas considered most promising were renewable energy, clean technologies, waste management and public transport, where we expect technologies such as photovoltaics, energy-efficient construction and recycling to play a particular role.

Among companies already operating in the green economy, 71.4% are convinced that the sector's development will be dynamic by 2027, linked to achieving the Sustainable Development Goals. Support for the green economy is particularly high among large and medium-sized companies, although smaller entities also express interest in this development direction. However, companies operating in the western regions of the province are more sceptical about the pace of development of the green economy.

Simplified procedures for accessing public subsidies and growing public awareness of environmentalism will significantly influence the further development of the green economy. At the same time, obstacles such as the high cost of environmentally friendly technologies, complicated subsidy procedures and limited public knowledge may slow down the transformation. This trend reflects broader structural changes in the economy, similar to those resulting from the development of the knowledge economy and new technologies. The green economy increasingly contributes to the region's GDP, boosting green jobs and supporting sustainable socio-economic development.

The development of the green economy in Silesia faces both promising prospects and significant challenges. It is worth supporting and simplifying access to public funding and creating preferential pricing conditions for environmentally friendly technologies, which can increase interest among businesses of all sizes. At the same time, the issues require public awareness and environmental education to prepare both employees and the wider public for the coming changes in the economy. We also

recommend to simplify procedures related to obtaining subsidies for pro-environmental activities and adjusting legal regulations, which can significantly accelerate the implementation of green solutions and increase their attractiveness among the region's enterprises.

The survey on the perception of SME development in the context of the implementation of so-called green solutions, faces several important limitations that may affect the depth and generalisability of the results. One of the main limitations is the use of a survey methodology only, which, although it allows for the collection of a broad spectrum of opinions, limits a more in-depth understanding of the complex aspects of the topic under study. The main limitation of this study is the reliance on data from field surveys conducted in the Silesian Voivodeship, which, while providing valuable information, may not cover the full range of factors influencing the implementation of the green economy by SMEs in different regions or industries. The focus on the Silesian context means that the findings may not be fully generalisable to other regions undergoing less intensive economic transition or have different support instruments than the Just Transition Fund. Extending the research to additional regions would provide a more comprehensive view of the impact of the green economy on SMEs and the differentiation of support mechanisms between regions.

Further research could analyse in detail the development of green competencies among SMEs, especially regarding the long-term effects of green initiatives and their economic, environmental, and social impact. It is also worth investigating how the different levels of awareness and preparation of SME managers affect the implementation of green economy technologies and strategies. Future research also recommends extending the analysis to other regions of Poland and including in-depth interviews with managers to better understand the practical application of so-called green solutions in different industries. Furthermore, an analysis of the impact of the changing regulatory landscape, especially in the context of the introduction of due diligence requirements for sustainable business development, could provide valuable information to support policy and business practices.

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Conflict of Interest

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Competitiveness of Polish service exports in the EU: A focus on specialisation in the years 2010-2022

Elżbieta Bombińska

ABSTRACT

Objective: The objective of the article is to assess the competitiveness of Polish service exports to the EU by EBOPS categories and its changes in 2010-2022 and to compare the structure of Poland's competitive advantages in the exchange of services with the main EU trade partners (Germany, France, and the Netherlands).

Research Design & Methods: Research methods include a critical analysis of the subject literature and a ratio analysis of export competitiveness using the RSCA and TBI indices. On their basis, we developed a matrix to allow for a synthetic assessment of the competitiveness of Polish services exports and the mapping of service branches in the markets of selected EU member states. The analysis also considered a third indicator, *i.e.*, the export share index.

Findings: The most competitive branches of Polish service exports include mainly traditional branches (*i.e.*, goods-related and manufacturing services, transport, travel and construction services) as well as telecommunications and IT services and personal, cultural, and recreational services. During the period under study, the composition of competitive advantages of Polish exports of services to the EU did not change significantly. The only branches of Polish service exports whose competitive advantages increased in the period under study were transport, construction, telecommunications, computer, information, and personal, cultural, and recreational services. Based on traditional service industries, the pattern of competitive advantages in Polish service exports was characterised by relatively little differentiation across the main EU export markets. In exporting traditional branches of services, the greatest advantage occurs in the German market and in exporting other service industries in the Dutch market.

Implications & Recommendations: The obtained research results can be a starting point for verifying the industry structure and partly also the geographical structure of Polish service exports to the EU. On their basis, it is possible to indicate the categories of services with the best prospects for the development of exports to the EU market and the surveyed member states.

Contribution & Value Added: Relatively few studies of Polish service exports concerned their competitiveness in the EU market, most of them analysed the total value of exports. Furthermore, among studies assessing competitiveness in the EU market, researchers' attention generally focused on specific service categories and the EU market was treated as a homogeneous whole. Therefore, the issue of diversification of the competitive position of Polish service exports on the markets of individual EU member states was not taken into account. This article is an attempt to fill this research gap.

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INTRODUCTION

One of the development trends in world trade is the systematic increase in the importance of trade in services as a form of international economic cooperation. Since 2000, the value of global exports of

services based on balance of payments statistics has tripled, and in 2022, it represented 22.2% of global exports of goods and services (UNCTAD, 2024). Numerous studies (Baldwin *et al.*, 2024; Khachaturian & Oliver, 2023; Mann & Cheung, 2019; Rueda-Cantuche *et al.*, 2016; Wettstein *et al.*, 2019) conducted in recent years emphasise that this value is in fact much larger because balance of payments statistics do not take into account the third mode of service supply identified in the General Agreement on Trade in Services (GATS) – the commercial presence model, which is responsible for more than half of the global services exchange turnover. According to Eurostat (2024), in 2020, 54% of EU 27 services exports were accounted for by the commercial presence model, and in some countries (Finland, France, Germany), this share exceeded 70%. Moreover, research on the processes of servitisation of industrial production, trade-in value-added and global value chains proves that services move across borders also as a result of the flows of goods in which they are embodied or embedded (Antimiani & Cernat, 2018; Blázquez *et al.*, 2023; Cadestin & Miroudot, 2020; Cernat & Kutlina-Dimitrova, 2014). This observation is reflected in the concept of mode five of service supply, the value of which in some countries reaches nearly 40% of the value of their gross merchandise exports (Bombińska, 2021).

Services also play an increasingly important role in Poland's foreign trade. In the light of the balance of payments statistics, between 2010 and 2022, their exports increased fourfold, and their share in the total value of exports of goods and services increased in this period from 17.9% to 21% (UNCTAD, 2024). The dynamic growth of exports is increasingly important for the development of the Polish service sector, which in 2022 accounted for 71.8% of the value added and 70.3% of all employees in the Polish economy (GUS, 2024). Importantly, the export of services has significantly increased its share in the creation of Polish GDP. In 2010, the ratio of services exports to GDP was 7.3%, while in 2022, it reached 13.9%. Moreover, unlike trade in goods, the positive and systematically growing balance of exchange of services had a positive impact on Poland's balance of payments.

Analyses of the reasons for the dynamic development of service turnover emphasise the key role of the freedom to provide services in the EU's single internal market, of which Poland is a participant. EU member states are among Poland's most important partners in trade-in service. In 2022, they accounted for 61% of Polish services exports. The maintenance of favourable trends in Poland's services trade, as well as the development of this sector, are therefore largely determined by the competitiveness of Polish service exports to EU markets.

The article aims to assess the competitiveness of Polish service exports on the EU internal market. I conducted the evaluation at the branch level. I attempted to answer the following four detailed research questions:

- RQ1:** Which service branches are the most competitive in Polish service exports to the EU27?
- RQ2:** Is the composition of competitive advantages in Polish exports of services to the EU changing?
- RQ3:** Has the competitiveness of Polish service exports to the EU improved in the years 2010-2022?
- RQ4:** Are there differences in the competitiveness of Polish service exports on the largest EU-member states' export markets?

The remainder of this article is organised as follows. The first section will present the literature review focusing on the studies devoted to the essence of export competitiveness and ways of measuring it and research on Polish services exports, including its competitiveness. The following parts will discuss the research method, present the results of the ratio analysis, and map the branches of services exported by Poland to the EU. In conclusions, we will discuss research results, point out their limitations, and suggest further research and implications for economic policy.

LITERATURE REVIEW

Although the concept of competitiveness is widely used in modern economics, there is no clear and universally accepted definition of this category. Numerous definitions of international competitiveness refer to the position of a given country in international exchange, and in particular, to increasing its share in export markets (Olczyk, 2008; Tyson 1992; Wysokińska, 2001). Reducing international competitiveness solely to trade results raises many controversies because this approach suggests that com-

petitiveness applies only to the foreign market (Wziętek-Kubiak, 2001). Moreover, it is static and emphasises ex-post analysis of market shares (Wysokińska, 2001). Recognizing the validity of these reservations, I fully share the view quite commonly presented in the literature on the subject that within the concept of international economic competitiveness, we can distinguish two elements, *i.e.*, international competitive position (also called ex-post competitiveness or resultant competitiveness) and international competitive ability (ex-ante competitiveness, factor competitiveness) (Bossak & Bieńkowski, 2004; Gorynia, 2009; Misala, 2011; Weresa, 2008; Wosiek, 2016). The first of the mentioned categories – international competitive position – refers to the share of the economy in the broadly understood economic exchange of the country, *i.e.*, international exchange of goods, services and production factors. In turn, international competitive ability, understood as the long-term ability to cope with international competition, is a category that perceives competitiveness from its factors and conditions in a dynamic approach.

Scholars widely consider export competitiveness to be an important tool for achieving the international competitiveness of a country's economy (Caporale *et al.*, 2018; Dhiman *et al.*, 2020; Gnanon, 2019), at the same time constituting its manifestation. Despite numerous theoretical and empirical studies on export competitiveness, this term has not been precisely defined so far and remains an ambiguous concept (Siggel, 2006; Wyszowska-Kuna, 2014). In export competitiveness studies conducted at firm, industry, regional or country level, we can define it the capability to produce and sell goods and services at the required place at competitive prices when compared to other suppliers (Sharples & Milham, 1990). According to OECD, competitiveness in international trade is a measure of a country's advantage or disadvantage in selling its products in international markets (Durand *et al.*, 1992). Literature calls such advantage a competitive advantage and often associates it with the concept of comparative advantage used in the traditional theory of international trade. Comparative advantage means the ability of a country (industry) to produce goods at a lower relative cost than other countries and is reflected in the directions of a country's export and import specialisations. For this reason, the category of competitiveness (and in particular export competitiveness) is linked with export specialisation, which, however, raises serious reservations among some researchers. They express a view that even though both competitiveness and specialisation are comparative categories – both compare the efficiency of different producers – the scope of comparisons made is different (Wziętek-Kubiak, 2001). Because competitiveness 'results from the relative strength of a particular economy or industry in relation to foreign competitors as suppliers of specific products to domestic and international markets' (Wysokińska, 2001, p. 36), in its assessment, it is compared one activity of a given entity to other entities – competitors (vertical approach), while in specialisation research, various activities of one entity are compared (horizontal approach) (Fischer & Schornberg, 2007). Moreover, changes in specialisation may be influenced by demand factors that are not reflected in changes in competitiveness. Moreover, the growing intensity of intra-company exchange means that the level and changes in specialised production are not always verified by competition in the global market (Wziętek-Kubiak, 2001). Therefore, competitiveness and specialisation are not the same concepts. On the other hand, as Wziętek-Kubiak rightly notes, 'The efficiency essence of competitiveness connects it with the category of specialisation because an increase in operating efficiency is a condition for changing or maintaining specialisation' (Wziętek-Kubiak, 2001, p. 477) and 'changes in competitiveness are reflected in specialisation, and changes in the latter – in competitiveness' (Wziętek-Kubiak, 2001, p. 487).

In light of the above considerations, we may conclude that considering specialisation as one of the elements of competitiveness research seems to be fully justified. However, the obtained research results require verification by means of other competitiveness measures described later in the article. I also postulate that export competitiveness studies should include an assessment of changes in the structure of comparative advantages because, from the perspective of the effectiveness of competing in the international market, the nature and directions of specialisation in trade may be more or less desirable, and therefore more or less competitive. It is generally accepted that the most desirable pattern of comparative advantage in a country is the one dominated by goods/services whose production requires the use of more complex production factors, in particular knowledge. This pattern of comparative advantages provides the most stable and lasting foundations for effective competition on an international scale. Con-

sequently, a change in the nature of a country's export specialisation towards the above-described, desired pattern of comparative advantage can be interpreted as an improvement in the country's export ability to compete on international markets, that is, an improvement of its export competitiveness.

Scholars use various measures in empirical studies of export competitiveness. We may divide them into four groups: (i) indicators regarding the country's foreign trade situation (*e.g.*, share in world exports, trade balance, trade coverage index, import penetration index); (ii) specialisation indicators (export specialisation indicator, revealed comparative advantage indicator, intra-industry trade indicators); (iii) price-cost indices (price terms of trade, income terms of trade, real effective exchange rate, relative unit labour costs); (iv) price-quality indicators (relative price index, 'weight-price' index) (Ambroziak, 2016; Jagiełło, 2003; Zielińska-Głębocka, 2000). Due to the limited field of description and point-based nature, we cannot consider single indicators as precise measures of export competitiveness. Therefore, we postulate that appropriate sets of measures be used in research. A review of services export competitiveness research shows that the comparative advantage (RCA) index is the most frequently used measurement tool to determine the country's competitiveness both in specific service categories or the overall services sector (Islam, 2021; Paul & Dhiman, 2021).

The importance of services in Poland's foreign trade is the subject of numerous empirical studies. Some of them concern Poland's total service exchange (*e.g.*, Wosiek & Visvizi, 2021; Zaharieva, 2020), while some researchers focus on trade with the EU (*e.g.*, Kąkol, 2018; Stefaniak & Ambroziak A., 2021) or its individual member countries (*e.g.*, Kuźnar, 2016). The research covers both the entire services sector and individual branches, in particular trade in services with a large share of development prospects in Poland's trade, such as ICT, KIS/KIBS, R&D, or transport services. In recent years, numerous studies have been devoted to the role of services in Poland's participation in global value chains (*e.g.*, Cieślík, 2022; Kordalska & Olczyk, 2021; Odrobina & Folfas, 2020). Many scholars also address the issue of competitiveness of service exports from Poland. Table 1 presents selected research from recent years.

The review of studies indicates that relatively few studies of Polish service exports concerned their competitiveness in the EU market, most of them analysed the total value of exports. Moreover, among studies assessing competitiveness in the EU market, researchers' attention generally focused on specific service categories (ICT, KIBS), and they treated the EU as a homogeneous whole. Therefore, no article considered the issue of diversification of the competitive position of Polish service exports on the markets of individual EU member states. This article fills this research gap.

RESEARCH METHODOLOGY

Considering the previously indicated postulate of using sets of measures in export competitiveness research, and at the same time having regard to the limited volume of the study, three measures were used in the research. The first two were revealed symmetric comparative advantage index (RSCA) by Dalum *et al.* (1998) and trade balance index (TBI) by Lafay (1992). On their basis, we developed a matrix allowing for a synthetic assessment of the competitiveness of Polish service exports on the EU market, and mapped service branches on the entire EU market, and selected the largest export markets among the EU Member States.

The first index used – the RSCA index – is a modified version of the revealed comparative advantage (RCA) index Balassa (1965). The RCA indicator compares the share of product/service in the exports of the examined country j with the share that this product/service has in global exports (or of a given reference country/countries):

$$RCA_{ij} = \frac{X_{ij}}{X_j} \cdot \frac{X_{iw}}{X_w} \quad (1)$$

in which:

X_{ij} - value of exports of good/service i in country j ;

X_j - value of total exports in country j ;

X_{iw} - value of world exports of good/service i ;

X_w - value of exports world exports.

Table 1. Recent research on the competitiveness of Polish services exports

Study	Years covered	Country (countries) in focus)/trade partner	Industry	Methods/ measures applied	Main conclusions
Wyszkowska-Kuna (2016)	2000-2013	New EU member states/world	KIBS	export performance, trade balance, RCA index	Poland wasn't competitive in total KIBS exports, but thanks to high growth rates of its exports of computer and information services and other business services, it managed to achieve trade surpluses and comparative advantage in both fields by the end of the analysed period.
Talar (2016)	2005-2014	Poland, other CEE and BRiCS countries/world	ICT services	Trade share, trade balance, trade coverage, RCA index	Poland did not reveal a comparative advantage in the export of ICT services, but it did have a positive balance. Trade indicators for Poland showed very strong growth, indicating improving competitiveness of ICT exports. Competitiveness indicators in intra-EU trade were less advantageous than in extra-EU trade.
Kuźnar (2016)	2004-2012	Poland/Germany	EBOPS categories, High-tech KIS sub-Sectors,	market shares in exports and imports, export composition, trade balance, RSCA	Poland recorded a comparative advantage in travel, transport and construction services. The share of high-tech services increased in Poland's services exports, but Poland did not reveal a comparative advantage in any of its high-tech knowledge-intensive services.
Kąkol (2018)	2008-2016	Poland/ EU-28 market	EBOPS categories, High-tech KIS sub-sectors	Cost-price and productivity indicators, revealed symmetric comparative advantage (RSCA) index	Poland had a comparative advantage in construction; manufacturing services; transport; maintenance and repair services, as well as such high-tech KIS sub-sectors as information and computer services. Poland based its competitiveness in intra-EU28 trade in services primarily on price and cost advantages.
Stefaniak & Bąk (2018)	2008-2015	EU member states/world	Total services	taxonomic development measures	Ranks of particular EU countries (including Poland) were unstable in the analysed period. Poland ranked between 22nd (in 2009) and 10th (2010) among the 28 countries surveyed, and in 2015, it took 15th place.
Zaharieva (2020)	2014-2018	EU member states/world	EBOPS categories	market share competitiveness matrix	Based on the observations on the change in world market share and changing demand for services for the period 2010-2018, Poland was in the position of rising stars and recorded the greatest improvement in export competitiveness next to Hungary, Ireland, Lithuania, Romania, Slovakia, Croatia and, the Netherlands.
Wosiek & Visvizi (2021)	2010-2019	Poland/world	EBOPS categories	Visvizi-Wosiek RCA (VWRCA) index	Poland revealed comparative advantages in transport, construction and R&D services, and has a real chance to gain a comparative advantage in personal, cultural and recreational services in the next several years. The threat of losing the advantage is noticeable in the category of goods-related services and manufacturing services.
Stefaniak & Ambroziak (2021)	2013-2018	EU member states/ Intra-EU trade, Extra-EU trade	ICT services	Trade share, revealed symmetrical comparative advantage (RSCA) index, trade balance index	Over the years 2013-2018 Poland held weak trade position but improved net trade indices. Moreover, similarly to leaders in ICT services trade, Poland did better in extra-EU trade rankings than in the EU Internal Market.

Source: own study.

The research compared the share of the service industry in Poland's exports of services to the EU27 with the share of this service industry in the export of the rest of the world (excluding Poland) to the EU market. The RCA index can only take positive values, and a comparative advantage in trade in goods/services occurs when the RCA is greater than one. Otherwise, when RCA takes fractional values, the country under study has no revealed comparative advantage. Due to the asymmetric distribution and the lack of a finite upper limit of RCA, several modified formulas with a symmetric distribution have been developed. Particularly well-known is the one proposed by Dalum *et al.*, which is presented by the formula:

$$RSCA_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1} \quad (2)$$

The RSCA index was in the range [-1,1], with positive and negative values indicating the existence and absence of a revealed comparative advantage, respectively.

The second indicator that I used in the research was the trade balance index (TBI):

$$TBI_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} \quad (3)$$

in which:

X_{iw} - value of exports of good/service i in country j ;

M_{ij} - value of imports of good/service i in country j .

Trade balance index, like RSCA, has values in the range [-1,1]. Its positive values mean a trade surplus and indicate the exporting country's competitive advantage over local suppliers from the importing country. In turn, negative values characterise countries that do not have competitive advantages in exports of a given good/service. Noteworthy, it is necessary to be very careful in the interpretation of the TBI value, because the relatively low absolute value of the TBI level, oscillating around 0, does not necessarily indicate low export competitiveness, but it may result from the development of intra-industry trade.

Separately calculated RSCA and TBI indicators do not provide a clear answer as to the export competitiveness of a given branch of services on the export market because a situation may occur in which a favourable (positive) value of one of these indicators is accompanied by an unfavourable (negative) level of the value of the other one. Therefore, using the concept proposed by Widodo (2009), a matrix combining both measures of competitiveness was developed; on its basis, it is possible to comprehensively assess the competitiveness of the country's exports and map services on export markets. The services that a given country exports may belong to one of the four groups presented in Figure 1. Group A includes those services in which the country has both a comparative advantage ($RSCA > 0$) and a trade surplus ($TBI > 0$). If there is a comparative advantage in the trade of a given service and at the same time the country is a net importer ($RSCA > 0$, $TBI < 0$), it belongs to group B. The next group – C – includes those services in the case of which the country is a net exporter but does not have a comparative advantage in trade ($TBI > 0$, $RSCA < 0$). The last possible situation – which corresponds to part D of the matrix – is trade-in services with no comparative advantage and a negative exchange balance. A clear assessment of export competitiveness is possible in relation to services included in parts A (competitive exports) and D (non-competitive exports) of the matrix. In the case of groups B and C, this assessment is not possible due to the discrepancy in the results of the indicators used.

Researchers have widely used Widodo's approach in studies of trade in goods (Ambroziak, 2013; Cieřlik, 2021; Jayadi & Aziz, 2017; Pawlak & Smutka, 2022), and in the analysis of service exports (Ambroziak, 2018; Ambroziak & Stefaniak, 2022; Cunha & Forte, 2017; Jiang & Lin, 2020; Stefaniak & Ambroziak, 2021). In some studies, scholars extended the analysis to include additional indicators, and some researchers – adopting Widodo's approach – modified the indexes on the basis of which the matrix was created (Ambroziak, 2013).

Since the TBI indicator focuses on the assessment of the export competitiveness of the examined country in relation to local suppliers from the importing country, I used the third indicator in this research, *i.e.*, the export share index (ESI). The share of the examined country in total exports to the market of the importing country allowed me to assess its ability to compete on this market in relation to other foreign suppliers.

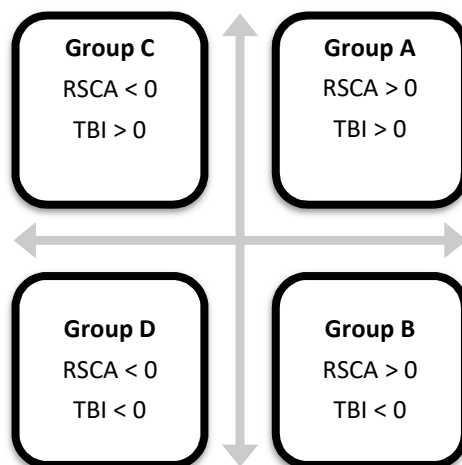


Figure 1. Product mapping scheme for export markets

Source: Widodo, 2009.

The research covered the period 2010-2022, which is determined by the availability of comparable statistical data according to the standards introduced by BPM6 (IMF, 2009). I based the research solely on the balance of payments statistics, so it did not consider the third way of providing services in international trade – the commercial presence model. RSCA, TBI, and ESI indicators have been calculated for the 11 main standard service categories of the Extended Balance of Payments Services Classification (EBOPS, 2010), *i.e.*, SA – SK service categories. All data used in the research come from the Eurostat database.

RESULTS AND DISCUSSION

Between 2010 and 2022 service exchange of Poland with other EU countries increased dynamically. Exports were more than tripled and imports grew nearly 2.5 times. Throughout the entire period Poland recorded a positive and growing balance of trade in services. In 2022, it was nearly 12 times higher than at the beginning of the period under study (Figure 2). Exports were characterised by very high geographical concentration and minor changes in the group of the largest importers of services from Poland. Both in 2010 and in 2022, more than half of Polish exports of services were directed to the markets of only three countries – Germany, the Netherlands, and France. There was a noticeable decrease in the share of Germany in Polish exports (by 12.6 percentage points) and an increase in the shares of the other most important trading partners (Table 2). The branch structure of Polish exports to the EU (Table 3) was dominated by transport services (37.9%), and especially road transport (22.8%), whose shares increased significantly compared to 2010. The second branch of services in terms of export value was other business services (22.3%) – their importance in Polish exports to the EU decreased slightly. The most important categories of services exported to the EU also included telecommunications, computer and information services, the share of which doubled compared to 2010 (to 10.7%), mainly due to computer services (9.4%). Travel remained an important branch of services, but its share decreased sharply compared to 2010 (by 18.3 percentage points) and in 2022 it amounted to 10%.

Figure 3 presents mapping matrices of the branches of services exported by Poland to the EU in 2010 and 2022, developed on the basis of the Widodo method. Analysis of the chart shows that in 2010, 5 out of 11 analysed EBOPS categories were in the most favourable quadrant of the matrix, showing positive values of both the RSCA and TBI indicators. These were: Manufacturing services on physical inputs owned by others (SA), Maintenance and repair services (SB), transport services (SC), travel (SD), and construction (SE). The remaining six categories (SF-SK), including other business services (SJ), which accounted for nearly 23% of Polish exports, were in the least favourable quarter of the matrix. In 2022 the number of competitive services branches in Poland's exports to the EU in-

creased to 6. This group included the same categories as in 2010, except travel, and was also joined by Telecommunications, computer and information services (SI) and Personal, cultural and recreational services (SK). In total, they accounted for nearly 64% of Polish exports to EU countries. The number of service branches whose exports were characterised by negative values of the RSCA and TBI indices decreased to 3 (Travel, Insurance and pension services and Charges for the use of intellectual property). The competitiveness of the exports of two branches of services – financial services (SG) and other business services (SJ) – was difficult to assess, because although Poland was a net exporter in their case, it did not reveal comparative advantages in their exports.

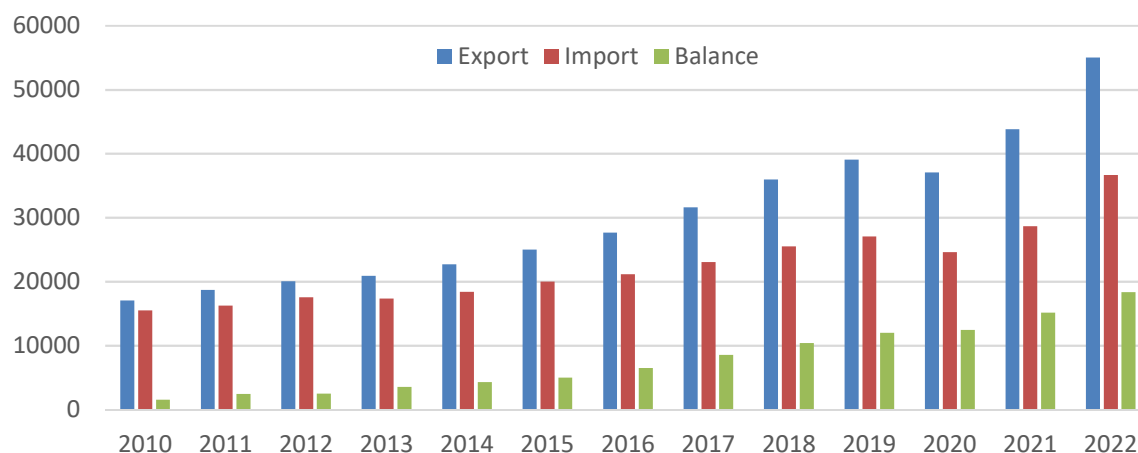


Figure 2. Poland-European Union (EU-27) trade between 2010 and 2022, in million euro

Source: own elaboration based on Eurostat data.

Table 2. Geographic structure of Poland's exports to the EU27 in 2010 and 2022 in percentages

2010			2022		
1.	Germany	41.0	1.	Germany	28.4
2.	France	7.1	2.	The Netherlands	12.8
3.	The Netherlands	8.1	3.	France	9.8
4.	Italy	3.4	4.	Italy	5.8
5.	Sweden	4.1	5.	Belgium	5.3
6.	Austria	3.7	6.	Austria	5.2
7.	Belgium	4.0	7.	Denmark	5.0
8.	Czechia	6.4	8.	Sweden	4.8
9.	Denmark	2.7	9.	Lithuania	3.4
10.	Slovakia	3.8	10.	Finland	3.0
11.	Other EU Countries	15.6	11.	Other EU Countries	16.6

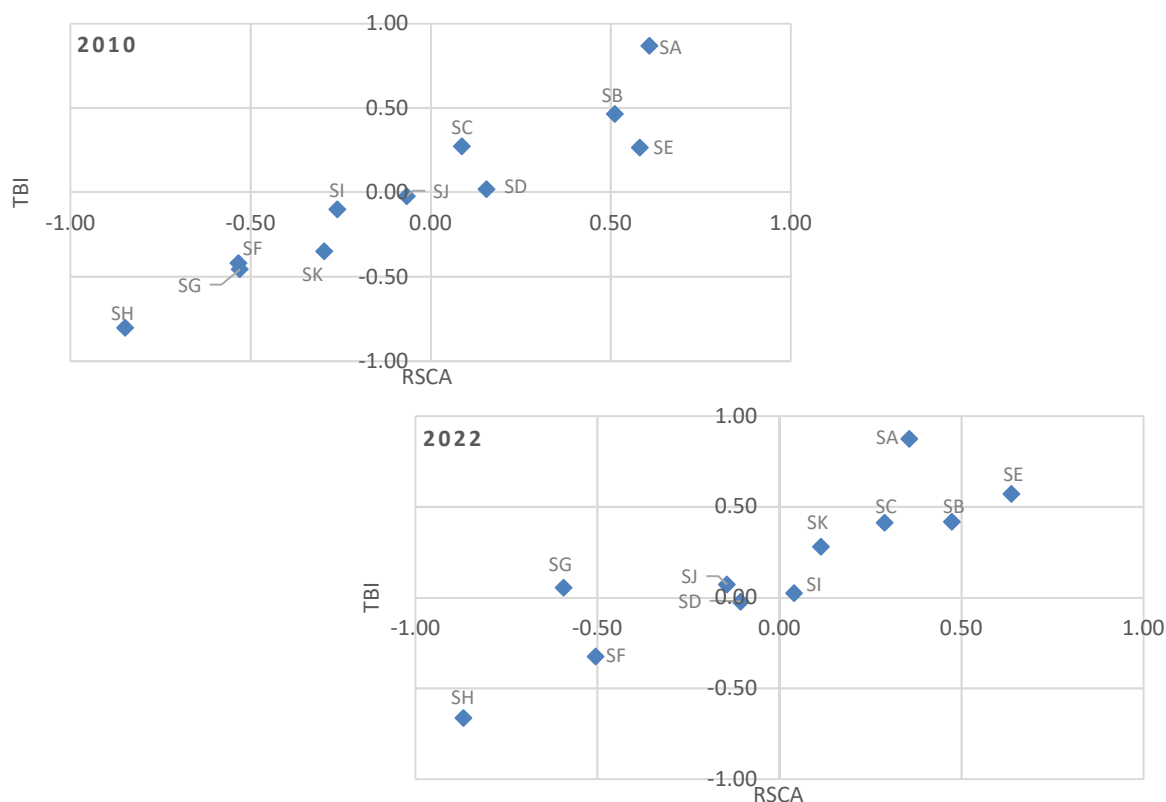
Source: own study based on Eurostat data.

The level of the export share index also proves the relatively high competitiveness of traditional service industries (SA – SE of EBOPS categories) in Polish exports to the EU in 2010 and 2022 (Figure 4). Similarly to the RSCA and TBI indicators, it also shows that the least competitive industries in Poland's exports to the EU market in the analysed years included SF and SH categories. Moreover, SG. The ESI changes also confirm that the export competitiveness of SI and SK branches has significantly improved in the examined years. However, it is still lower than that of traditional service industries. At the same time, contrary to what results from the mapping matrices analysis, between 2010 and 2022 there was an improvement in the export competitiveness of tourist services (ESI increased from 1.62% to 2.21%). In the case of other business services (SJ), ESI changes show that Poland's competitive position on the EU market has improved in the years under study, but compared to other branches of Polish services exports, this category was characterised by a relatively low (although growing) Poland's share in world exports to the EU market.

Table 3. Polish export to the EU27 in 2010 and 2022 by service category in percentages

EBOPS category		2010	2022
SA	Manufacturing services on physical inputs owned by others	6.0	5.7
SB	Maintenance and repair services	2.0	4.0
SC	Transport	26.0	37.9
	<i>Including:</i>		
	- Road transport	17.1	22.8
	- Air transport	2.3	2.8
SD	Travel	28.3	10.0
SE	Construction	4.8	3.8
SF	Insurance and pension services	0.8	0.8
SG	Financial services	1.9	1.7
SH	Charges for the use of intellectual property	0.6	0.8
SI	Telecommunications, computer and information services	5.3	10.7
	<i>Including:</i>		
	- Telecommunications services	1.3	0.8
	- Computer services	3.7	9.4
	- Information services	0.2	0.5
SJ	Other business services	22.9	22.3
	<i>Including:</i>		
	- Research and development services	1.5	2.0
	- Professional and management consulting services	8.4	11.7
	- Technical, trade-related, and other business services	13.1	8.7
SK	Personal, cultural and recreational services	0.8	1.5

Source: own study based on Eurostat data.

**Figure 3. Mapping matrices of the branches of services exported by Poland to the EU in 2010 and 2022**

Source: own elaboration based on Eurostat data.

In addition to changes in the composition of competitive advantages of Polish service exports to the EU in 2010-2022, we can observe changes of the range of these advantages. The analysis of Figure 4 shows the improvement in the competitiveness, both in general and across all service industries, except insurance and pension services (SF), because only in their case did Poland reduce its share in global exports to the EU market. In the case of the RSCA index, Poland recorded an increase in only five branches (SC, SE, SF, SI and SK), while the TBI improved in all branches except SB and SD (Figure 5). Basing the assessment on changes in all three indices, we can therefore conclude that during the period under study, four out of 11 branches increased their competitiveness on the EU market and these were: SC, SE and SI, and SK.

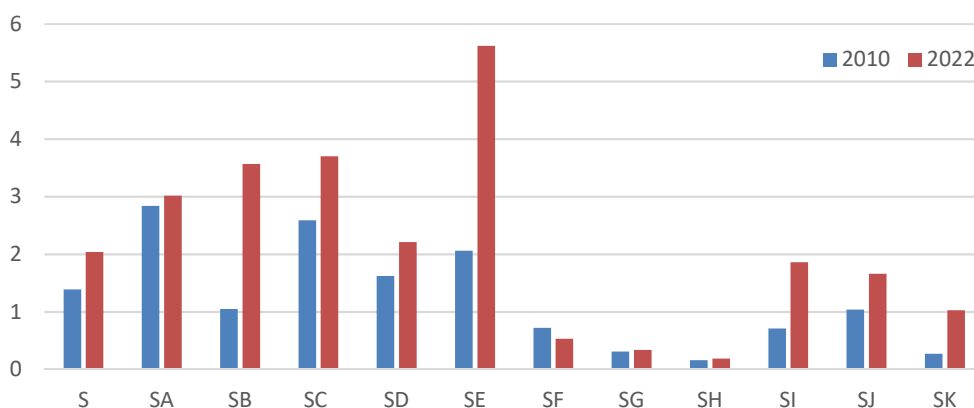


Figure 4. Export share index (ESI) in Polish exports of services to the EU in 2010 and 2022 by EBOPS categories in percentages
Source: own elaboration based on Eurostat data.

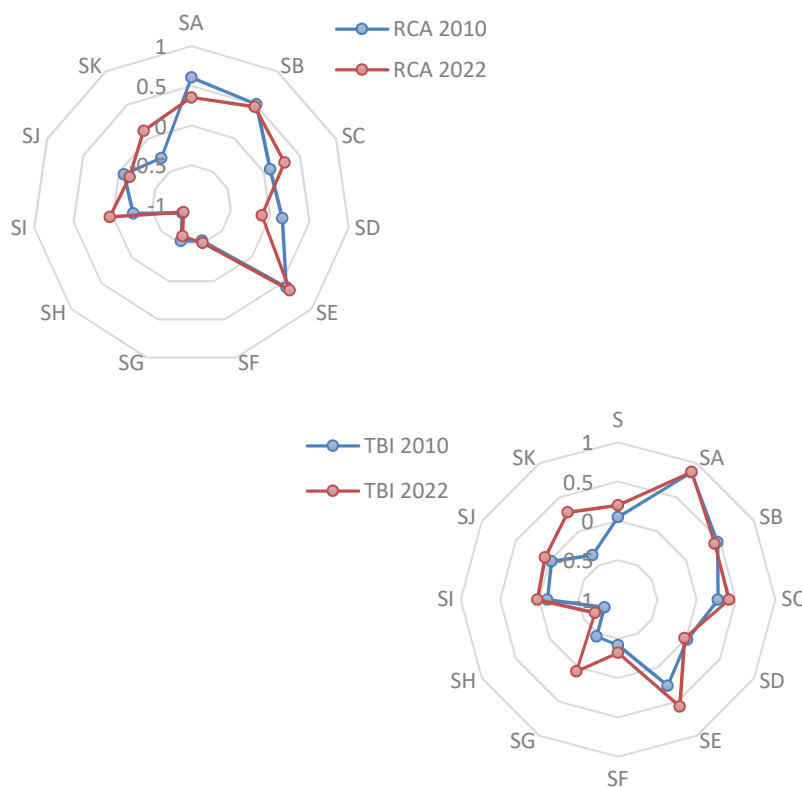


Figure 5. RSCA and trade balance indicators in Polish exports of services to the EU in 2010 and 2022 by EBOPS categories
Source: own elaboration based on Eurostat data.

Mapping matrices of the services categories exported by Poland to the main EU markets (Germany, France, and the Netherlands) indicated relatively little differentiation in the composition of competitive advantages (Figure 6). In 2022, in all three countries, Polish export of four service branches (SA, SB, SC, SE) was highly competitive, and additionally in Germany – SK, and in France, and the Netherlands – SI. Exports of other service categories to these markets were uncompetitive, except for SD in Germany, SG in France and SG and SJ in the Netherlands. In these cases, negative RSCA and positive TBI values did not allow for a clear assessment of export competitiveness. The above patterns in the composition of competitive advantages also confirmed the development of the ESI except for the export of SA and SB services to France. In this case, Poland’s shares in global exports to the French market were low in relation to other branches of service (Figure 7). Moreover, the level of ESI on the three main export markets proves that Polish exporters of traditional services (SA-SE) had the greatest competitive advantage on the German market, while in the export of other branches of services (SF-SK), they are the most competitive on the Dutch market.

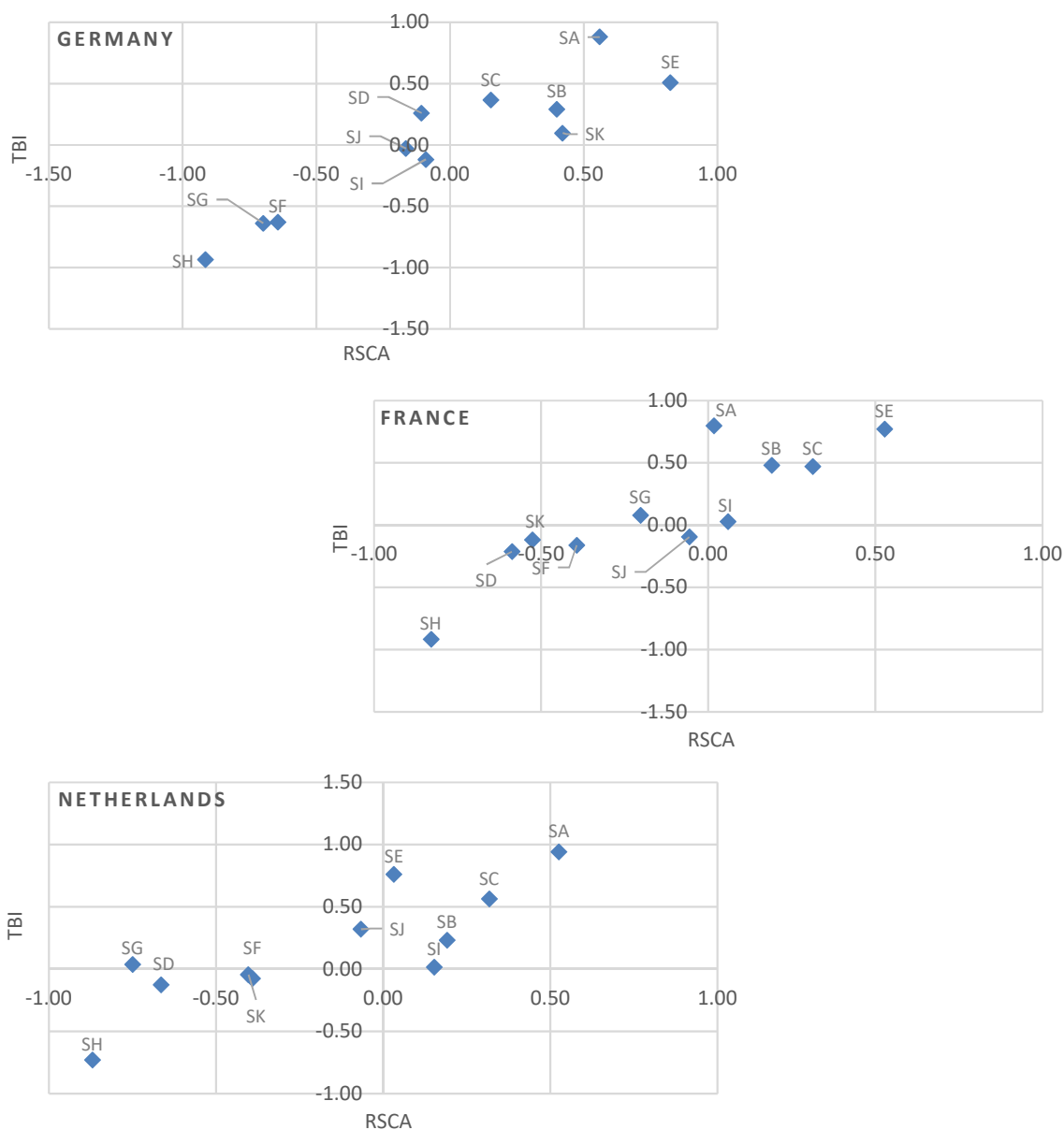


Figure 6. Mapping matrices of the branches of services exported by Poland to Germany, France, and the Netherlands in 2022

Source: own elaboration based on Eurostat data.

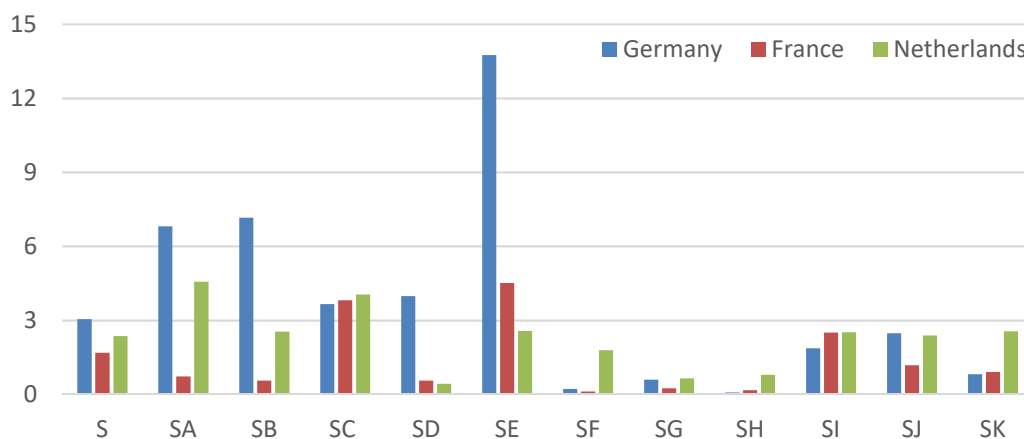


Figure 7. Export share index (ESI) in Polish exports of services to Germany, France, and the Netherlands in 2022 by EBOPS categories, in percentages
Source: own elaboration based on Eurostat data.

CONCLUSIONS

The conducted research allows for formulating several conclusions regarding the competitiveness of Poland's service exports to EU27 countries in the years 2010-2022.

Firstly, the most competitive industries in Polish service exports included goods-related and manufacturing services, transport, travel and construction services (*i.e.*, SA-SE of EBOPS branches), while the least competitive branches were financial services, insurance and pension services, and charges for the use of intellectual property (SF-SH of EBOPS branches).

Secondly, during the period under study, the composition of competitive advantages in Polish service exports did not change significantly. Admittedly, telecommunications, computer and information services (SI), personal, cultural and recreational services (SK) and other business services (SJ) joined to the competitive exports branches, however their competitiveness was still lower than that of the traditional services industries (SA-SE categories). Relatively small changes in the structure of competitive advantages dominated by traditional service branches did not indicate a significant improvement in the competitiveness of Polish service exports to the EU.

Thirdly, except for charges for the use of intellectual property (SH), during the period under study, each service branch recorded an increase in the value of at least one of the export competitiveness measures used in the research. However, the only branches of Polish service exports whose competitive advantages increased in the period under study were transport, construction, telecommunications, computer and information and personal, cultural and recreational services. Only in their case did the research results show simultaneously deepening export specialisation, increasing trade surplus, and rising shares in exports to the EU market.

Fourthly, based on traditional service industries, the pattern of competitive advantages in Polish service exports was characterised by relatively little differentiation across the main EU export markets. At the same time, research showed a diverse range of competitive advantages in these markets. In the export of traditional branches of services, the greatest advantage occurs in the German market and in the export of other service industries – in the Dutch market.

Fifthly, research confirmed the need to use sets of appropriately selected measures to assess the competitiveness of a country's exports.

The obtained research results can be a starting point for verifying the industry structure and partly also the geographical structure of Polish service exports to the EU. On their basis, researchers can indicate the categories of services with the best prospects for the development of exports to the EU market and the surveyed member states.

However, the limitations and imperfections of the research method used should be considered. Firstly, I conducted the research for 11 main standard service categories of EBOPS. Deepening the analysis by including at least second-level balance of payments service categories in the research would allow for more precise identification of groups of services with high export potential to EU markets. In particular, this applies to the group of other business services, which is very important in Polish exports and, at the same time, extremely diversified. Secondly, there are alternative measures and methods of assessing export competitiveness that I have not used due to the limited volume of the study. These methods and measures are worth using to verify or supplement the presented research results. Thirdly, I conducted the analysis ex-post and did not consider the changing conditions for the development of trade in services in the EU, in particular those related to the consequences of the COVID-19 pandemic and the war in Ukraine. This raises the need to continue research and observe the directions and dynamics of changes in the future.

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Labour or capital factors: Which influence industrial automation more?

Marcin Gryczka

ABSTRACT

Objective: The purpose of the article is to determine which economic factors, specifically those related to labour and capital, have a more significant impact on the level of industrial automation. This assessment is based on robot density per 10 000 employees in the manufacturing sector.

Research Design & Methods: The empirical insights came from a broad array of statistical data spanning from 2000 to 2022, acquired from reputable international institutions. The study employs a methodological framework that integrates a review of pertinent literature, deductive reasoning, and an in-depth comparative analysis of selected time series. The central element of the research is the application of multiple regression analyses, primarily focusing on data from 2020 for 27 nations progressing in manufacturing automation.

Findings: Analysis of time series data on multifactor, labour, and capital productivity in countries with the highest robot densities shows a complex interplay between labour and capital productivity in the realm of industrial automation. Multiple regression analysis, particularly Model 1, substantiated hypothesis H2, revealing that capital-related factors, specifically gross domestic expenditures on R&D and foreign direct investment, emerged as statistically significant predictors of robot density (RD), both exhibiting positive correlations. This underscores the pivotal role of capital investments and technological advancements in fostering automation. Further analysis using Model 2, aggregating labour and capital variables, reaffirmed the predominance of capital factors in influencing industrial automation. The pronounced positive association between the capital index (CAP) and RD highlights the critical influence of capital-related variables, such as technological innovations and investments, in driving the adoption and density of industrial robots, thereby underscoring the foundational role of capital in the advancement of automation in the manufacturing sector.

Implications & Recommendations: The findings highlight a bidirectional influence between automation and productivity in the manufacturing sector, with capital access and utilization playing a pivotal role in automation disparities across economies. Economies reliant on labour-intensive methods lag in automation, underscoring the insufficiency of abundant labour for promoting automation. Instead, capital availability, particularly through R&D spending and foreign investment, emerges as crucial for advancing industrial automation. This necessitates a strategic realignment, where policymakers and industry leaders must prioritize capital investment and technological innovation as key automation enablers. The study calls for comprehensive strategies that emphasize capital investment, technological innovation, skill development, and quality education to effectively engage in the global automation landscape.

Contribution & Value Added: Contrary to the prevalent focus in existing literature on automation's impact on socio-economic factors, particularly labour productivity, this research adopts a reverse perspective by examining the influence of labour and capital factors on automation progression. The study's novel approach, asserting the paramountcy of capital in driving automation, suggests that active participation in the global automation landscape necessitates comprehensive efforts encompassing R&D investment, FDI attraction, workforce skill enhancement, and investment in quality education.

Article type: research article

Keywords: industrial automation; robotisation; robot density; capital drivers; labour drivers

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INTRODUCTION

The contemporary global economy is increasingly explained by its reliance on knowledge and data, establishing these elements as pivotal in the cultivation of competitive advantage. This transition towards an information-centric paradigm has been significantly propelled by the advancements in information and telecommunication technologies (ICT). On the other hand, these developments have laid the groundwork for the emergence of Industry 4.0, a revolutionary phase in industrial evolution characterized by a focus on automation, data exchange, cloud computing, the Internet of Things (IoT), and innovative manufacturing technologies such as 3D printing, underpinned by the pervasive influence of artificial intelligence (AI). This technological leap has engendered a paradigm shift in how industries operate, fostering an environment where efficiency, connectivity, and smart automation are at the forefront.

Following the strides made in Industry 4.0, the concept of Industry 5.0 has surfaced, heralding a renaissance in the integration of the human element within the industrial matrix. Unlike its predecessor, Industry 5.0 emphasizes the symbiotic relationship between humans and advanced smart systems, including robotics and AI. This new industrial vision advocates for a human-centric design approach, where personalization, sustainability, and resilience are not just supplementary benefits, but foundational pillars. The ascension of Industry 5.0 is intrinsically linked to the rapid advancements in AI and robotics, suggesting a future where manufacturing processes are not only dictated by machine efficiency, but are also reflective of human values and ethics.

However, the discourse surrounding the impact of industrial automation, a cornerstone of Industry 4.0, often veers towards its potential negative repercussions, particularly concerning the labour market. Critics highlight issues such as job displacement and the widening skills gap as automation becomes more prevalent. However, it is crucial to acknowledge that the adoption and effects of industrial automation have been markedly uneven across different regions, predominantly concentrated in a handful of countries. This article aims to invert the traditional analysis by examining the influence of selected labour and capital factors on the progression of automation, as evidenced by the density of robots per 10 000 employees in the manufacturing sector. This approach seeks to offer a more refined understanding of the dynamics at play, bridging the gap between technological advancement and socio-economic factors, thereby contributing to a more holistic discourse on the future of industry in the global economy.

The article is structured to analyse the impact of labour and capital factors on industrial automation, utilizing empirical data and multiple regression models. It includes a literature review, a detailed methodological framework, and an evaluation of automation drivers, highlighting the dominant role of capital investments over labour-related factors.

LITERATURE REVIEW

In tracing the historical and theoretical perspectives on technological advancements and their impact on society and the economy, the seminal works of Babbage (2010) and Beniger (1986) lay the foundational understanding of the mechanization of industries and the onset of the information society. Babbage's exploration into the economy of machinery provides an early examination of the efficiency and division of labour brought about by technological innovations, a theme that resonates with contemporary discussions on automation and AI. On the other hand Beniger (1986) extends this discourse into the realm of the control revolution, delving into the technological and economic origins of the information society. His analysis offers a comprehensive view of how technological progress has shaped organizational structures and societal functions, setting a precedent for understanding the current digital transformation.

Further enriching this narrative, Braverman (1998) and Piketty (2014) offer critical insights into the socio-economic implications of technological change. Braverman's critique on the degradation of work in the twentieth century highlights the implications of industrial advancements on labour practices, presenting a perspective that compares the optimistic views on technology's potential to enhance human labour. In parallel, Piketty's extensive examination of capital in the twenty-first cen-

ture sheds light on the economic disparities exacerbated by technological progress, offering a macroeconomic perspective on how technology influences wealth distribution and social stratification. These historical and theoretical explorations provide a nuanced understanding of the complex interplay between technology, economy, and society, serving as a crucial background for contemporary analyses of automation and AI's impact on the labour market.

Delving into the intricate dynamics between automation's role in job displacement and creation, the influential studies by Acemoglu and Restrepo (2017, 2019) provide a diverse perspective on the impact of robotics and automation in the US labour markets. Their research highlights the complex nature of technological advancements, echoing historical debates on machinery's dual capacity to enhance and replace human labour. This body of work emphasizes the necessity for societies to adapt and harness the positive aspects of automation, mirroring past transitions in labour dynamics induced by technological breakthroughs.

Furthering the discourse on the implications of technological change for the labour market, Autor's significant contributions (Autor, 2015; Autor *et al.*, 2001; Autor & Salomons, 2018) challenge the prevalent narrative of automation leading to widespread job loss. Instead, he argues for the enduring nature of employment, albeit transformed by technology's evolution. This perspective aligns with earlier concerns about labour transformation, suggesting that technological advancements tend to complement complex human skills, thereby reshaping job demands in favour of tasks that require complex problem-solving and interpersonal abilities.

Exploring the transformative effects of Industry 4.0 on various sectors, particularly in industrial automation and supply chain management, the study by Acharya *et al.* (2017) provides in-depth insights into how analytic hierarchy processes serve to navigate the complexities introduced by these technological advancements. Their research offers a detailed examination of the factors influencing industrial automation, revealing the complex interplay between technological capabilities and organizational needs. This aligns with the discussions by Acemoglu and Restrepo on the diversified impact of automation, further emphasizing the need for strategic adaptation to harness the full potential of technological innovations in the industrial landscape.

As concerns supply chain performance, the contributions of Fatorachian and Kazemi (2020) shed light on the pivotal role of Industry 4.0 technologies in reshaping production planning and control. Their analysis delves into the significant enhancements in efficiency and responsiveness that Industry 4.0 brings to supply chains, illustrating the profound implications of these technologies for global trade and logistics. This body of work complements the broader narrative on the impact of automation on labour markets by highlighting the complementary nature of technological advancements in optimizing operational processes and creating value across different industry sectors.

Furthermore, the comprehensive review by Sima *et al.* (2020) on the influences of the Industry 4.0 revolution on human capital development and consumer behaviour provides a holistic view of the socio-economic changes ushered in by these technological shifts. Their systematic exploration of the interconnectedness between Industry 4.0 and various aspects of human capital and consumer dynamics underscores the multifaceted effects of technological progress. This research not only echoes the labour market transformations discussed by Autor *et al.* (2001) but also extends the understanding of technology's impact by encompassing the broader socio-economic ecosystem, including changes in consumer behaviour and workforce development in the face of rapid technological innovation.

Building on the exploration of Industry 4.0's impact on supply chains and human capital, the discourse extends to the transformative potential of information technology on organizational structures and business performance, as exemplified in the work of Brynjolfsson and Hitt (2000). Their research provides empirical evidence on the correlation between technological adoption and enhanced business outcomes, emphasizing the strategic importance of digital transformation. This perspective merges with the efficiencies brought about by Industry 4.0, as discussed by Fatorachian and Kazemi, highlighting the broader implications of automation and technological innovation beyond the manufacturing floor and into the realm of organizational strategy and performance. Furthermore, the empirical study by Doms *et al.* (1997) and the recent work of Dinlersoz and Wolf (2023) on the effects of automation on labour share and productivity in U.S. manufacturing plants offer nuanced insights into

the sector-specific impacts of technological advancements. These studies reveal the intricate relationship between technology adoption, workforce composition, and economic outcomes within the manufacturing sector, echoing the findings from the Industry 4.0 literature. They underscore the complex, multifaceted nature of technology's impact on labour markets, highlighting the necessity of strategic adaptation and the potential for innovation-led growth in a rapidly evolving technological landscape.

Transitioning from the discussion on the interplay between technology, organizational structures, and labour dynamics, the exploration of artificial intelligence (AI) and automation's broader societal impacts offers a further understanding layer. In their book on the economics of AI, Agrawal *et al.* (2018) delve into the concept of 'prediction machines,' framing AI as a pivotal tool for enhancing decision-making processes. This notion complements the insights from Brynjolfsson and Hitt regarding the strategic significance of technological adoption in organizations. Agrawal's *et al.* (2018) perspective underscores the transformative potential of AI to extend beyond mere efficiency improvements, driving innovation and redefining competitive landscapes across industries.

Furthermore, Ford's explorations in *Rise of the Robots* (2015) and *Rule of the Robots* (2022) provide a comprehensive analysis of the implications of AI and robotics for the future of work and the economy. Author highlights the dual nature of technological advancements: while they present unprecedented opportunities for innovation and efficiency, they also pose significant challenges in terms of potential mass unemployment and economic inequality. This dual narrative echoes the discussions on the nuanced impact of automation on labour markets presented by Autor *et al.* (2001), further emphasizing the need for a balanced approach to harnessing technology's benefits while mitigating its potential downsides.

Finally, the contributions of Hoff and Bashir (2015) and Susskind and Susskind (2022) broaden the scope of the discourse by examining the human element in the technological revolution. Hoff and Bashir's research into trust in automation highlights the critical importance of developing reliable and user-friendly systems to foster positive human-technology interactions. This aspect is crucial for ensuring the seamless integration of AI in both personal and professional spheres. Similarly, Susskind and Susskind's (2022) examination of the future of professions in the age of AI suggests a significant transformation in how professional expertise is accessed and utilized. Their work suggests a redefinition of roles and skills, highlighting the need for adaptability and lifelong learning in the workforce. These perspectives add depth to the discussion on technology's impact, suggesting that both technological capabilities and how individuals and societies adapt to these changes will shape the future.

Based on the conducted research, it is evident that the majority of literature focuses on the influence of automation on labour and capital-related domains in the economy, rather than the reverse. Specifically, numerous studies and analyses have been devoted to understanding how automation impacts employment rates, labour share of income, productivity, and the overall economic structure. These studies typically explore how the introduction of automation and technological advancements displaces certain types of labour, affects wage dynamics, and shifts the income distribution between labour and capital.

On the other hand, there is comparatively less evidence and fewer studies that specifically address the reverse assumption, *i.e.* how labour and capital incentives might drive the automation adoption rate. While some research does explore this aspect, indicating that factors such as labour supply, wage rates, and the strategic decision-making of firms can influence the adoption of automation technologies, these studies are less prevalent than those examining the impacts of automation on the economy.

For instance, Gaimon's research (1985) explores the decision-making process regarding the mix of automation and labour within organizations. It identifies the optimal mix to enhance productivity, considering incentives such as output increase, labour cost reduction, and compensation for limited labour supply. The dynamic model considers factors like technological improvement and wage rate changes, highlighting the complex interplay between labour and capital incentives and automation implementation. In turn, Romer (1990) provides a theoretical foundation that underscores the role of human capital, policy, and market structures in driving technological progress and, subsequently, its impact on labour and automation. In contrast, Fornino and Manera (2019) investigate the economic incentives for automation in scenarios where labour and machines are perfect substitutes. It reveals that even when labour is more costly than robots, firms may still employ it if they face risks and machine adjustments are costly. Moreover, labour can be flexibly managed. This underscores the role of labour flexibility and idiosyncratic firm

risks in driving the deployment of automation technologies. Building on this discourse, Danzer *et al.* (2020) examined the impact of labour supply dynamics on automation innovation, uncovering a negative correlation between an abundant labour supply and the drive for labour-saving technological advancements, particularly in sectors heavily reliant on low-skilled workers.

In summary, it seems that the prevailing body of literature offers a more comprehensive examination of how automation impacts labour and capital in the economy, while fewer works devote attention to exploring how incentives related to labour and capital might influence the pace and trajectory of integrating automated technologies.

RESEARCH METHODOLOGY

The empirical findings presented in this study have been derived from an extensive collection of statistical data sourced from reputable organizations such as the International Federation of Robotics (IFR), OECD, The World Bank, the International Labour Organization (ILO), and UNCTAD, covering the period from 2000 to 2022. The methodological approach adopted in this research includes a thorough review of relevant literature and primary sources, complemented by deductive reasoning and a detailed comparative analysis of selected time series. A pivotal aspect of this study involves multiple regression analyses, predominantly utilizing data from the year 2020. In rare instances where data for 2020 were not available, figures from 2019 have been substituted to ensure analysis consistency.

To address the research objectives, the following main hypotheses have been established:

- H1:** In 27 countries with high and medium density of industrial robots, the key factors influencing the level of automation are those associated with labour as a critical production component.
- H2:** In the same cohort of countries, the extent of automation is significantly affected by capital-related factors.

Table 1. List of variables for Model 1

Variable	Description	Data source	Dependent/independent
<i>RD</i>	Robot density per 10 000 employees	IFR (2021)	Dependent variable
<i>EMP</i>	Manufacturing employment (% of total)	ILO (2024)	Independent variable related to labour
<i>UnEmp</i>	Unemployment rate 25+ (%)	ILO (2024)	Independent variable related to labour
<i>LProd</i>	Output per worker (GDP constant 2015 USD)	ILO (2024)	Independent variable related to labour
<i>GERD</i>	Gross domestic expenditures on research and development (% of GDP)	WB (2024)	Independent variable related to capital
<i>GFCF</i>	Gross fixed capital formation (% of GDP)	WB (2024)	Independent variable related to capital
<i>FDI</i>	Foreign direct investment, net inflows (% of GDP)	WB (2024)	Independent variable related to capital

Note: WB – the World Bank.

Source: own study.

To evaluate the proposed hypotheses, two distinct econometric models have been subjected to rigorous analysis, leveraging normalized data from the year 2020. These models encompassed a consistent dataset pertaining to the following 27 countries: Australia, Austria, Belgium, Canada, China, Czechia, Denmark, Finland, France, Germany, Hong Kong, Hungary, Italy, Japan, Netherlands, Norway, Poland, Portugal, South Korea, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and the United States. Model 1 delineates labour- and capital-related factors as separate variables, in contrast to Model 2, which constructs two composite measures treated as independent variables. These have been derived from the arithmetic mean of normalized indices, representing labour (L) and capital (C) as key determinants of industrial automation. Tables 1 and 2 systematically document the variables and metrics employed in each model.

Table 2. List of variables for Model 2

Variable	Description	Data source	Dependent/independent
<i>RD</i>	Robot density per 10 000 employees	IFR (2021)	Dependent variable
<i>LAB</i>	Labour-related composite measures including: 1) Output per worker (GDP constant 2015 USD) 2) Unemployment rate 25+ (%) 3) Average monthly earnings of employees in manufacturing (USD) 4) Qualification mismatch 5) Skills sub-index from Frontier Technology Readiness Index (FTRI)	1,2,3 – ILO (2024), 4 – OECD (2024), 5 – UNCTAD (2024).	Independent variable
<i>CAP</i>	Capital-related composite measures including: 1) Gross domestic expenditures on research and development (% of GDP) 2) Foreign direct investment, net inflows (% of GDP) 3) Gross fixed capital formation (% of GDP) 4) ICT sub-index from FTRI 5) Access to finance sub-index from FTRI	1,2,3 – WB (2024), 4,5 – UNCTAD (2024).	Independent variable

Note: WB – the World Bank.

RESULTS AND DISCUSSION

Although the common methods for analysing the growth of the industrial automation market primarily rely on data related to industrial robot installations and operational stock, segmented by country and industry, it seems that robot density provides the most objective measure of industrial automation's progress. The International Federation of Robotics (2020) defines robot density as 'the number of multipurpose industrial robots in operation per 10 000 employees.' This definition proves particularly useful for this article, as it highlights the relative specificity of the measure by comparing the 'world of machines' with the 'world of humans.'

From 2010 to 2020, the global density of industrial robots in manufacturing increased by over 150%, reaching 126 units (IFR, 2021). Furthermore, in 2021, the worldwide average growth of robot density climbed to 141 units (Statista, 2024), indicating that even the COVID-19 pandemic did not disrupt this clear upward trend. Between 2017 and 2021, the highest, record-breaking growth rate occurred in China, where robot density in manufacturing more than tripled. While the achievements of the next four countries in this respect – Switzerland, South Korea, the United States, and Sweden – were not as dramatic, with increases ranging from 86% in Switzerland to over 30% in the USA and Sweden (Statista, 2024), they were still significantly higher than those in other countries on the path to industrial automation.

As illustrated in Figure 1, the data from the IFR on robot density showcased significant disparities in the adoption of industrial automation across various countries from a broader perspective. The top 5 countries – South Korea, Singapore, Japan, Germany, and Sweden – demonstrated notable advancements in this area, highlighting their global leadership in the adoption of industrial robotics. Particularly, South Korea has shown an impressive trajectory, with its robot density soaring from 107 robots per 10 000 employees in 2000 to 932 in 2020, reflecting a dedicated and aggressive approach to automation aimed at boosting manufacturing efficiency and global competitiveness. In contrast, Japan's growth has been more moderate, indicating a potentially maturing market or a strategic phase of consolidation in robotics adoption. Two decades ago, Japan was the only country to surpass the threshold of 300 industrial robots per 10 000 employees. By 2020, only three additional countries – South Korea, Singapore, and Germany – had crossed this benchmark, with the first two leaving Japan significantly behind. Furthermore, despite China's improvements in industrial automation in recent years, it was not sufficient for the country to move from the group of automation followers, with a robot density in the range of 200-300 units, into the top 5, let alone close the gap with the leading countries in Southeast Asia.

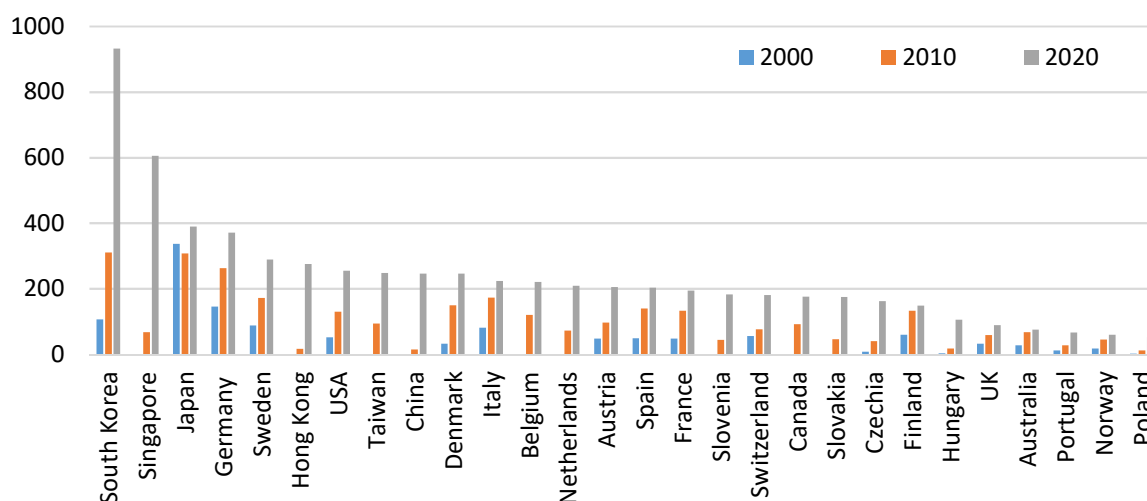


Figure 1. Robot density per 10 000 employees in manufacturing, 2000-2020

Source: own elaboration based on IFR (2020, 2021, 2024).

In contrast, we may link the disparity in robot density among Central European countries to a variety of factors. With their significant share of advanced manufacturing sectors like automotive and electronics, Slovakia and Czechia may have created a more favourable setting for embracing robotics. These industries often feature higher automation levels, benefiting from the complex, repetitive tasks that robotic systems excel at handling. Conversely, Hungary and Poland might possess a higher proportion of sectors that rely less on automation, but more on cheaper low- and medium-skilled labour, such as food processing, furniture making, textiles, or traditional manufacturing, which could account for their lower robot densities. Furthermore, we cannot overstate the role of economic strategies and investments in technological infrastructure. Slovakia and Czechia have been more effective in attracting foreign direct investments that not only supply capital but also bring technological expertise and elevate automation standards. Meanwhile, Hungary and Poland may have encountered obstacles in these areas, potentially due to unfavourable economic policies, inadequate investment in technology and innovation, or a belated effort to adopt industrial automation solutions.

As Figure 2 shows, we may partially attribute the trend in multifactor productivity from 2000 to 2022 to the growing role of automation in enhancing economic efficiency across selected economies. With the rise in robot densities, particularly in countries leading in automation such as South Korea, there has been a significant increase in multifactor productivity (MFP) indices. This suggests that we may treat the widespread adoption of robotics as a key factor in optimizing resource utilization and increasing productivity. This trend highlights the direct impact of automation on manufacturing processes and its wider implications for the economy, illustrating how technological advancements are pivotal in making industries more efficient and productive.

Significant additional observations emerge from the data presented in Figures 3 and 4. Integrating trends in robot density in manufacturing and multifactor productivity with labour and capital productivity data revealed compelling patterns, particularly in the comparison between the automation leader, South Korea, and its close followers. South Korea has made exceptional strides not only in robot density but also in labour productivity, with GDP per hour worked exhibiting steady growth from 2015 onward. This can suggest a likely direct link between increased automation and labour efficiency, implying that the introduction of industrial robots has substantially contributed to improving workforce productivity. Conversely, economies such as Germany, Japan, Sweden, and the USA, while also experiencing enhancements in labour productivity, demonstrate a velocity and magnitude that are particularly noteworthy in South Korea, emphasizing its superiority in industrial automation. This is further evident in capital productivity trends, where South Korea, despite a slight decline, sustains a commendably high level of efficiency in capital utilization, including undoubtedly investments in robotics and technology. This indicates that South Korea's assertive investment in automation not only maximizes labour output but also ensures efficient capital utilization, fostering overall economic productivity.

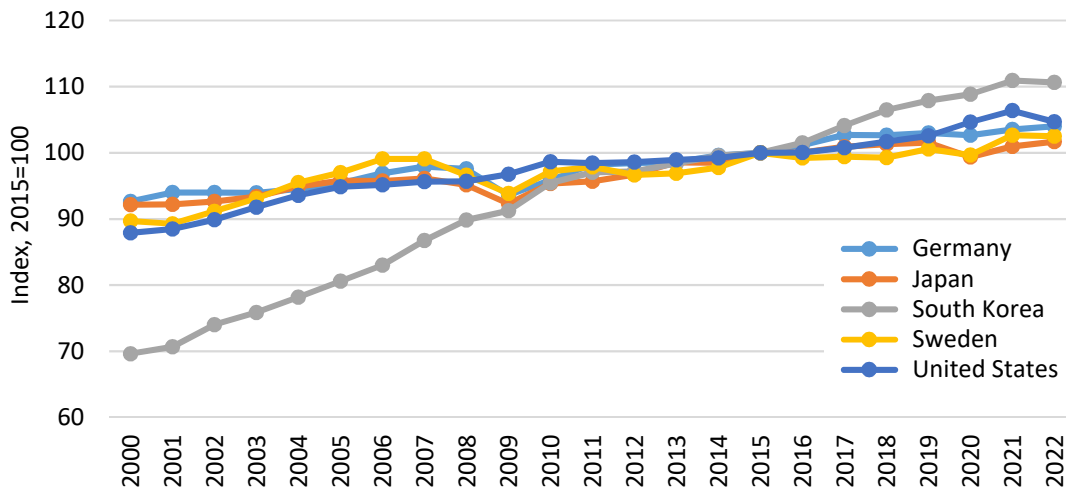


Figure 2. Comparative multifactor productivity (MFP) in selected automation leader countries, 2000-2022
 Source: own elaboration based on OECD (2024).

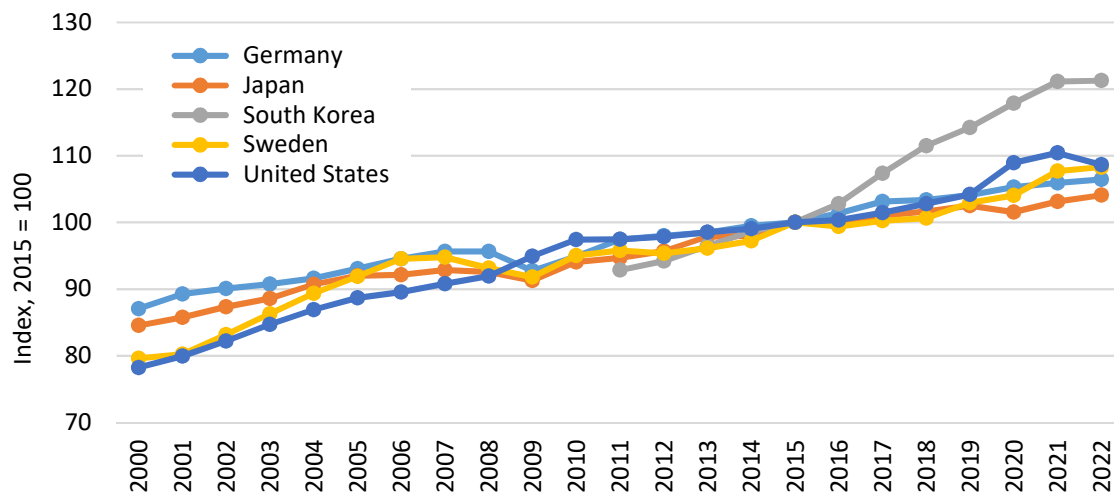


Figure 3. Comparative labour productivity in selected automation leader countries, 2000-2022
 Source: own elaboration based on OECD (2024).

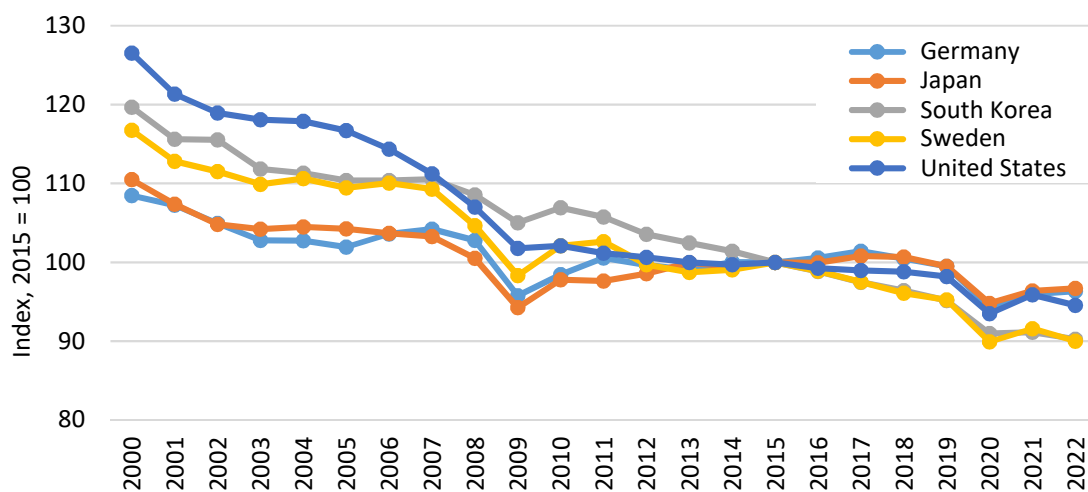


Figure 4. Comparative capital productivity in selected automation leader countries, 2000-2022
 Source: own elaboration based on OECD (2024).

However, in comparing these trends, it is essential to recognize that although South Korea leads in automation and labour productivity, the difference in capital productivity with countries such as Germany and the USA was narrowing in the analysed period. This suggests that despite lower robot densities, these nations employ their capital in ways that sustain competitive productivity levels. We may view this as further evidence of the intricate relationship between labour and capital productivity in the context of automation, where the influence of robotics transcends manufacturing efficiency to affect broader economic indicators.

The presented data underscores the vital importance of automation in defining the contours of productivity landscapes. The example of South Korea demonstrates how substantial investments in robotics can enhance both labour and capital productivity, establishing a benchmark for other economies. Meanwhile, countries closely following the automation journey, despite their progress, display a sophisticated interplay between capital investment, labour efficiency, and technological adoption, providing insightful perspectives on the comprehensive impact of automation on economic productivity.

To understand how various labour and capital-related factors affect the adoption and density of robots in the manufacturing industry, the multiple regression model has been utilized. The proposed econometric model was:

$$RD = \beta_0 + \beta_1 \times EMP + \beta_2 \times UnEmp + \beta_3 \times LProd + \beta_4 \times GERD + \beta_5 \times GFCF + \beta_6 \times FDI + \varepsilon \quad (1)$$

in which:

RD - (robot density per 10 000 employees) is the dependent variable;
EMP, *UnEmp*, *LProd*, *GERD*, *GFCF*, and *FDI* - independent variables, as described in Table 1;
 ε - significance of the particular component in question.

The analysis of the proposed multiple regression model, which explored the influence of various economic factors on robot density (RD) within the manufacturing sector, yielded critical insights (see Table 3). The model accounted for approximately 59.06% of the variance in RD as indicated by an R² value of 0.5906. It demonstrated a significant overall fit. Among the independent variables, gross domestic expenditures on R&D (GERD) and foreign direct investment (FDI) emerged as statistically significant predictors of RD, both showing positive correlations. Meanwhile, GERD, with a p-value of 0.000101, underscored the pivotal role of research and development investments in driving technological advancements and automation in manufacturing. Similarly, FDI's significance (p-value of 0.011586) suggests that foreign investments contributed substantially to the adoption and density of robotics, likely through technology transfer and enhanced industrial capabilities.

Table 3. Multiple regression analysis results for model (1)

N=27	b*	Std. error of b*	b	Std. error of b	t(20)	p
Intercept	–	–	-0.227442	0.239397	-0.950061	0.353421
EMP	0.144870	0.293516	0.116765	0.236572	0.493570	0.626986
UnEmp	0.269677	0.166307	0.270086	0.166560	1.621556	0.120558
LProd	-0.279652	0.260372	-0.220595	0.205386	-1.074046	0.295590
GERD	1.014221	0.209894	0.882824	0.182701	4.832069	0.000101
GFCF	-0.065742	0.177003	-0.066661	0.179477	-0.371420	0.714231
FDI	0.568964	0.204750	0.514847	0.185275	2.778829	0.011586

Note: R= 0.76851122, R²= 0.59060950, corr. R²= 0.46779235, F(6,20)=4.8089, p<0.00345, est. std. error: 0.15045.

Source: own elaboration using Statistica software.

Conversely, the model revealed that labour-related factors, such as manufacturing employment (EMP), unemployment rate (UnEmp), and output per worker (LProd), did not significantly influence RD within the context of this analysis. The lack of significance of these labour variables, coupled with the pronounced impact of capital-related factors (GERD and FDI), suggests that capital investments, particularly in innovation and foreign capital inflows, played a more critical role in determining the level of automation in the manufacturing sector than labour-related factors. This distinction highlights the importance of technological infrastructure and investment in innovation for enhancing automation, sug-

gesting that strategies aimed at increasing robot density might benefit more from focusing on capital-related factors, such as R&D and attracting FDI, rather than adjustments in labour market characteristics.

To support these insights, an additional econometric model for multiple regression analysis has been developed. In this model, robot density (RD) serves as the dependent variable, while two composite indices – as independent variables: one for labour-related factors and the other for capital-related factors. The proposed econometric model is expressed as follows:

$$RD = \beta_0 + \beta_1 \times LAB + \beta_2 \times CAP + \varepsilon \quad (2)$$

in which:

RD - (robot density per 10 000 employees) is the dependent variable;

LAB, CAP - independent variables, as described in Table 2;

ε - is the error term, accounting for the variation in robot density not explained by the model.

Table 4. Multiple regression analysis results for model (2)

N=27	b*	Std. error of b*	b	Std. error of b	t(24)	p
Intercept	–	–	-0.224585	0.145633	-1.542129	0.136126
LAB	-0.097685	0.196370	-0.132102	0.265556	-0.497454	0.623396
CAP	0.596952	0.196370	1.119710	0.368334	3.039931	0.005643

Note: R= 0.55442984, R²= 0.30739244, corr. R2= 0.24967515, F(2,24)=5.3258, p<0.01219, est. std. error: 0.17864

Source: own elaboration using Statistica software.

In this approach, the regression analysis exploring the determinants of robot density (RD) within the manufacturing sector underscores the critical role of capital-related factors. The significant positive relationship between the capital index (CAP) and RD, indicated by a p-value of 0.005643, highlights that variables associated with capital, such as technological advancements and investments, were key automation drivers. This significant correlation suggests that increased emphasis on capital-intensive activities within the sector is closely linked to higher adoption and density of robots, emphasizing the importance of capital investments in promoting automation.

In contrast, the labour index (LAB), which encompasses labour costs, workforce size, and productivity, does not exhibit a statistically significant influence on RD, as evidenced by its p-value of 0.623396. This lack of significance suggests that within the confines of this analysis, labour-related factors might not play a crucial role in determining the automation level, as represented by robot density. This finding indicates that while labour dynamics are integral to the manufacturing sector, they may not directly impact the adoption and integration of robotics within the industry.

Overall, this supplemental model's explanatory power, with an R² value of 0.3074, reveals that the included variables capture a substantial portion of the variance in RD. However, there remains a significant portion unexplained, suggesting the presence of other influential factors not represented by the LAB and CAP indices. Nonetheless, the analysis sheds light on the complex interplay between economic forces and automation trends, with capital-related factors emerging as particularly influential in driving the adoption of robotics. This in-depth understanding is crucial for stakeholders in the manufacturing sector, emphasizing the need for strategic capital investments to enhance automation and productivity.

CONCLUSIONS

The analyses validated the research hypothesis H2, namely the impact of capital factors on robot density, which we may interpret as an indicator of the level of industrial production automation. As outlined in the literature review, the context of automation often examines its consequences for industry efficiency and employment. However, the IFR data on the development of robotization in recent decades indicate that progress in this area is particularly prevalent in economies well-endowed with capital. However, the models presented in this article are characterized by several limitations. Primarily, it is challenging to gather a sufficient dataset that allows for the extension of analyses to a larger number of countries. Moreover, many of the indicators used in the analyses are composite and therefore do not fully describe the particular situation in the manufacturing industry. Developing a model based on a larger set of more

detailed variables would thus allow for more precise and meaningful outcomes. Moreover, the demonstrated greater significance of capital factors does not imply a lack or minimal influence of labour-related factors. The progress in robotization results from the interaction of various, often difficult-to-measure parameters, such as the legal and regulatory environment, support systems for investment in robotization, the level of education and efficiency of workers, dominant industrial sectors in a country (labour-intensive vs. capital-intensive), and the existing international specialization of a given economy.

This last aspect may be particularly significant in economies, where the service sector accounts for the largest share of GDP and employment. In these countries, which include most high and middle-income per capita economies, robotization may progress relatively slowly because the manufacturing sector does not play a significant role.

However, in some Asian countries, Germany, and Sweden, where the importance of the manufacturing sector is still relatively high (World Bank, 2024), the pace of industrial automation is significantly higher than in other economies, where other areas related to Industry 4.0, especially artificial intelligence solutions, seem much easier to implement in the service sector. Based on current observations, these advancements in artificial intelligence are likely to become increasingly important compared to agriculture and industry. Furthermore, similar to robotization, the disruptive shifts observed in the field of AI and their immediate impact on the service sphere are likely to be, to a large extent, conditioned by access to capital, as investments in the broadly understood ICT infrastructure contribute to the rapid development of artificial intelligence.

Noteworthy, continuing and rapid advancements in artificial intelligence, as a key part of the Industrial Revolution 5.0, can also have consequences for industrial automation progress. On the one hand, growing investment in AI and its practical deployment, especially in the service sector, can lead to diminishing investment in industrial robots. In such a scenario, we may observe a gradual transition from robotics to AI-related fields in R&D and investment in the near future. On the other hand, as the primary objective of Industry 5.0 is to achieve a balance between automated production systems and human ingenuity, investment in AI can simultaneously attract interest in the development of more sophisticated, smart automation systems, like collaborative robots. In such a case, where capital will still be crucial for consequential developments, the role of labour-related factors may be diminishing. In other words, capital-driven investment in AI may make human labour, especially low and medium-skilled, obsolete, with the acceleration of human replacement both in the service sector (by AI itself), and in the manufacturing sector (by industrial robots and cobots controlled and managed by AI).

The primary limitation of this research lies in the insufficient availability of comprehensive and consistent data on robot density across all countries, which may impede cross-country comparisons and limit the generalizability of the results. Future studies could focus on applying classification methods to evaluate the combined effects of robot density and AI deployment on the progression of industrial automation. Moreover, research should explore how these trends vary across nations with differing levels of capital endowment and ICT infrastructure.

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Conflict of Interest

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