
MIGRATION AND DIGITAL TRANSFORMATION: A SYSTEMATIC REVIEW OF EVIDENCE FROM SMES IN NORTH MACEDONIA AND EMERGING ECONOMIES

Ceneta Telak Durmishi

International Balkan University, North Macedonia, ceneta.telak@ibu.edu.mk

ORCID ID: 0000-0001-9752-4668

Kristina Velickovska

International Balkan University, North Macedonia, kristina.velickovska@ibu.edu.mk

ORCID ID: 0000-0002-5824-6893

Abstract: Migration and digital transformation have become some of the key factors which influence economic development, entrepreneurship, and competitiveness of small and medium-sized enterprises (SMEs) especially in emerging and transition economies. This paper seeks to analyze the impact of migration on the digital transformation of SMEs with special attention paid to North Macedonia and other similar emerging economies. As traditionally understood, migration is associated with labor mobility, remittances, demographic trends, and brain drain, the current paper attempts to explore the impact of migration on the digital transformation of SMEs as a mechanism of knowledge transfer, innovation, internationalization, and technological development. Specifically, based on human capital theory, resource-based view, and knowledge transfer theory, the paper analyzes how migrant networks, diaspora engagement, return migration, international experience, and transnational relations may be used for the enhancement of digital capabilities of SMEs.

In terms of methodology, the paper will use a systematic literature review approach following the PRISMA protocol to conduct a transparent identification, screening, eligibility assessment, and selection of scholarly studies. The academic literature on the topic was collected using databases such as Scopus, Web of Science, and Google Scholar applying specific keywords related to migration, SMEs, entrepreneurship, diaspora, knowledge transfer, digital transformation and innovation.

The study findings are especially useful for the case of North Macedonia where a large amount of migration, the potential of diasporas should be combined with enhancing SME digital readiness and competitiveness. The study enriches the literature by putting migration and digital transformation into the same analysis and stressing the shift from the classical brain drain towards brain circulation and knowledge transfer. The implications from the research for policy, suggest the need to enhance cooperation between diasporas and SMEs, support entrepreneurship of returnees, implement knowledge transfer projects, build digital competences, and develop digital infrastructure and financing.

To Sum up, migration, under proper institutional and policy conditions, can become a very important source of knowledge, innovations, internationalization, and digital transformation of SMEs.

Future research is needed for confirmation of the relationships for the case of North Macedonia and other countries in the Western Balkans.

Keywords: Migration, Digital transformation, SMEs, Diaspora, Knowledge transfer

1. INTRODUCTION

Migration has become one of the key phenomena in today's world that plays an important role in economic, social, and institutional development during the 21st century. As the World Bank reports, the increase in the number of international migrants has become a positive trend that coincides with globalization, labor mobility, and interdependent economy (World Bank, 2020). Traditionally, migration processes have been examined from the perspective of their social and economic impact, including changes in the labor market, remittances, and demographics (Massey et al., 2014). Nowadays, scholars start paying more attention to migration as an element of innovation, knowledge transfer, and economic development, particularly in emerging and transitional countries (Docquier & Rapoport, 2012).

However, digital transformation has proven to be one of the most effective factors that determine the competitiveness and sustainability of SMEs. Digitalization is understood as implementing innovative technologies, such as cloud computing, artificial intelligence, big data analysis, and electronic commerce in the company's activities (Nambisan, 2017; OECD, 2021). SMEs constitute the basis of national economies across the globe and use digital transformation extensively in order to cope with resource scarcity and remain competitive (European Commission, 2022). Although extensive research has been conducted regarding both phenomena individually, there is not much literature on the relationship between migration and digital transformation. Indeed, migrants can become exposed to the new skills and experience concerning technologies and management while abroad and bring them to their home countries either through returning home (direct effect) or via transnational networks (indirect effect) (Kerr, 2018). This may substantially contribute to digital capabilities among SMEs, especially in developing countries that lack advanced technology expertise.

The phenomenon of migration is closely linked with the concept of brain drain in emerging economies such as North Macedonia, as high-caliber individuals typically emigrate to other countries in quest for employment opportunities and improved quality of life (Beine et al., 2008). Outward migration is widely regarded as one of the key challenges to the development of the economy, as it results in losses of human capital. Nevertheless, there are certain scientists who challenge the existing notion of negative impacts of migration and emphasize possible beneficial consequences, including brain gain and brain circulation (Stark et al., 1997; Docquier & Rapoport, 2012). The introduction of innovative business models, the use of digital technologies and international markets by diasporic entrepreneurs or returning migrants contributes to the development and transformation of SMEs (Nielsen & Riddle, 2010). In addition, the involvement of transnational ties enables access to foreign markets and advanced technology, which is important for the further development and competitiveness of SMEs (Kerr, 2018). While these mechanisms may be promising, there is little academic attention to the relationship between migration and the digital transformation of SMEs.

The problem is especially acute in countries like North Macedonia, where the number of SMEs significantly exceeds other types of organizations; however, such enterprises face issues related to their ability to operate in the sphere of digitalization, innovation, and internationalization (OECD, 2021). It can be noted that the country has a considerable diaspora and a high level of migration; however, there is no systematic study of the effect of such migration on the process of digital transformation among SMEs in North Macedonia.

Hence, the main purpose of this research is to try to fill this void through a systematic literature review of the linkages between migration and digital transformation in SMEs, with an emphasis on emerging countries and its implications for North Macedonia. Using migration studies, management literature, and literature related to innovation and technology, this article endeavors to explore the extent to which migration is linked to technological innovations and business transformations. This research will contribute to literature regarding the linkages between migration and development.

2. METHODOLOGY

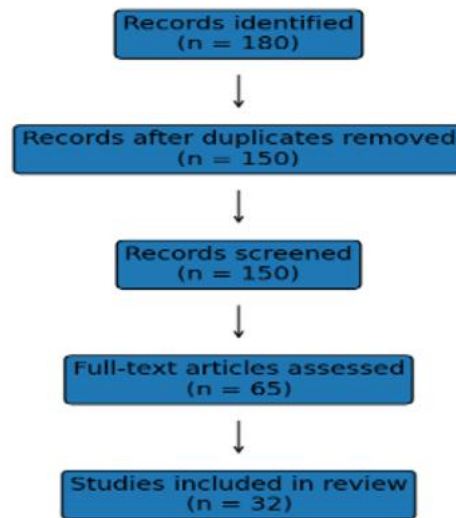
In this study, a Systematic Literature Review (SLR) will be used to investigate the relationship between migration and digital transformation in SMEs. The use of an SLR is especially relevant for interdisciplinary studies since the systematic collection, evaluation, and analysis of evidence, as well as the identification of research gaps, become possible through such method (Tranfield et al., 2003; Snyder, 2019). Considering the fact that both phenomena have links to entrepreneurship, innovation, knowledge transfer, and economic development, SLR can be regarded as the right framework for evidence integration from various research areas. The review was performed according to the PRISMA guideline, which implies a structured and transparent procedure including four major steps such as identification, screening, eligibility, and inclusion (Page et al., 2021). Peer-reviewed articles on the topic were searched in Scopus, Web of Science Core Collection, and Google Scholar due to their comprehensive content related to business, economics, migration, entrepreneurship, innovation, and information systems.

The search strategy comprised three primary conceptual dimensions, namely migration, SMEs and entrepreneurship, and digital transformation and ICT adoption. Main combinations of keywords comprised “migration AND SMEs,” “diaspora AND digital transformation,” “knowledge transfer AND migration,” “migrant entrepreneurship AND innovation,” “international migration AND digitalization,” and “return migration AND technology adoption.”

Specific inclusion and exclusion criteria were predefined for the review. The literature included only peer-reviewed papers in English from 2015 to 2025 that considered migration, entrepreneurship, development of SMEs, digital transformation, ICT adoption, or innovations, specifically related to emerging and transition economies. The literature under analysis did not include non-peer-reviewed publications, conference abstracts without full-text access, irrelevant to SMEs or any other business-related issues, pure IT researches, and duplicate records.

During the initial searching stage, 180 publications were found. Eliminating duplicate records, 150 publications were left for the title and abstract screening stage. Among the remaining 150 studies, 65 studies met the relevance criteria related to migration, SMEs, and digital transformation. In the end, applying the defined eligibility criteria, 32 studies were included in the systematic review. The detailed selection process is shown in Figure 1 through PRISMA flowchart.

Figure 1. PRISMA flow diagram of the study selection process



Source: Author's own elaboration based on the PRISMA framework

For each of the 32 selected studies, a standardized data extraction and coding procedure was applied. Information was recorded according to author(s) and year of publication, geographical setting, research methodology, theoretical variables or concepts, and main findings. The extracted information was organized into a coding matrix and coded iteratively, allowing recurring patterns and relationships to emerge while maintaining consistency with the theoretical framework. An illustrative example of the coding matrix is presented in Figure 2, while the complete coding procedure was applied to all studies included in the review.

Figure 2. Enhanced literature coding matrix used for thematic analysis

Study	Theme	Theory	Method	Main Finding	Code
Kerr (2018)	Knowledge Transfer	Human Capital Theory	Conceptual	Migration supports innovation	RET-KNOW
OECD (2021)	SME Digitalization	Innovation Systems	Report	SMEs face digital barriers	DIG-BAR
Nambisan (2017)	Digital Entrepreneurship	Digital Innovation Theory	Conceptual	Digital tools improve competitiveness	DIG-ADOPT
Docquier & Rapoport (2012)	Brain Drain / Brain Gain	Knowledge Transfer Theory	Review	Migration enables knowledge transfer	KNOW-TRANS
Bouwman et al. (2019)	Digital Business Models	RBV Theory	Empirical	Digitalization improves SME performance	DIG-PLAT
Nielsen & Riddle (2010)	Diaspora Investment	Diaspora Network Theory	Empirical	Diaspora networks support SME growth	DIA-INV

Source: Author's own elaboration based on systematic literature review.

After being extracted, the data was analyzed through thematic synthesis based on the thematic analysis approach put forward by Braun & Clarke (2006). It was done through four related thematic dimensions, which are migration and development of SMEs, knowledge transfer and innovation, digital transformation and adoption of ICTs, and migration as an engine of digital transformation. This made it possible to go beyond a simple description of existing literature and find out common patterns, relations, and mechanisms of the interaction between migration and digital transformation of SMEs.

It is worth noting that the reliability and validity of this systematic review were ensured by using a variety of academic databases, pre-established inclusion and exclusion criteria, systematic recording of search and screening procedures, and the PRISMA approach to systematic reviews.

However, some methodological weaknesses need to be considered. First, focusing solely on peer-reviewed academic literature in English language may mean missing some important information presented in different languages, especially from specific nations or regions. Second, limiting the scope of the research to peer-reviewed literature means missing information from grey literature. Finally, as a secondary research study, the findings depend on the scope, methodological quality, and availability of the existing literature. These limitations should therefore be considered when interpreting the findings and identifying directions for future research.

3. RESULTS

The systematic analysis of the selected 32 studies identified several common trends related to the link between migration and digital transformation of SMEs. The results were summarized under four interrelated issues:

migration and SME development, knowledge transfers and innovations, digital transformation and ICT adoption, and migration as an impetus for the digital transformation process. Thus, the reviewed literature reveals that migration can impact the development of SMEs not only by providing them with funding and entrepreneurial skills but also by means of knowledge, international networks, technological experience, and new business practices.

First, the link between migration and SME development is discussed. According to the literature, migrant entrepreneurship, diasporic investments, and transnational business connections can play a role in the establishment and development of SMEs. Migrants can create firms in their host countries while at the same time retaining economic and professional ties with their home countries. Such ties can help in investments, trade, foreign market entry, and establishment of international business links (Nielsen & Riddle, 2010). Therefore, diasporic networks can be a source of resources for SMEs which may not be easily accessed, especially in the case of emerging and transition economies where domestic markets are smaller and funding is limited.

Theme two is associated with knowledge exchange and innovation. Migrations can serve as a facilitator of exchanges involving knowledge, professional skills, technological experience, and management styles between countries. People migrating abroad may gain new competences and knowledge which could be further transferred to their home countries via return migration, entrepreneurship, professional connections, or virtual cooperation (Docquier & Rapoport, 2012). In such a way, the return migrants could introduce new management systems, technologies, and business models into their native countries. Meanwhile, diaspora networks allow knowledge to spread over borders without returning migrants at all times, offering SMEs a chance to utilize international knowledge and innovations (Kerr, 2018).

Theme three deals with digital transformation and the adoption of ICT by SMEs. The reviewed literature notes several obstacles that may delay digitalization, which include financial issues, the lack of digital skills, organizational change resistance, and inadequate availability of technology. All of them can be especially acute for SMEs in emerging and transition economies that might be less equipped institutionally and technologically for digital transformation (OECD, 2021). Nonetheless, international exposure can provide SMEs with new chances to address some of the problems.

Namely, firms that have access to foreign markets, international business partners, migrant entrepreneurs, and diaspora communities might benefit from more exposure to new technologies, international standards, and best business practices. This increased exposure might result in higher awareness of digital solutions and motivate SMEs to apply new technologies driven by evolving customer and competition demands (Bouwman et al., 2019). The studies reviewed above link digital transformation of SMEs to such technologies and practices as cloud computing, e-commerce, customer relationship management (CRM), digital marketing, online communication, and other digital business solutions.

The fourth and final topic is related to migration being a potential trigger for digital transformation. According to the synthesis provided, the connection between migration and digitalization is not always direct but rather indirect as there are a few channels through which migration could stimulate digital transformation of the economy. First of all, migration could help to accumulate human capital; secondly, diasporas could offer access to international expertise and knowledge; thirdly, migrants themselves could bring innovative business models; fourthly, international networks could facilitate connections between SMEs and foreign technologies; finally, diaspora investments could serve as sources for modernization.

These mechanisms imply that migration cannot be viewed solely as movement of labor from one country to another. In the context of SME development, migration can be seen as a channel through which knowledge, capital, experience, technology, networks and business practices migrate between countries. Moreover, digital technologies can enhance the importance of the connection as migration allows to maintain economic and professional contacts with firms and entrepreneurs from countries of origin.

In conclusion, the reviewed literature provides evidence that the relationship between migration and SME digitalization can be characterized as multidimensional. On one hand, migration-related resources seem to help SMEs develop their capabilities required for innovation and digitalization, while on the other hand, digitalization allows more efficient cross-national collaboration and information exchange. Thus, a possible reinforcement between migration, knowledge flows, entrepreneurship, innovation, and digital transformation emerges.

The results have particular importance in the context of emerging and transition economies including North Macedonia, where SMEs are likely to operate under certain limitations due to the size of domestic markets, financial constraints, technological and specialized knowledge gaps. Under such conditions, migrant and diaspora networks may serve as an essential external source of knowledge, finance, international experience, and technological awareness. Therefore, the reviewed literature implies that in order to investigate the impact of migration on SME development, one should take into account not only migration-related labor movement and remittances but also its contribution to knowledge flows, innovation, internationalization, and digitalization.

4. CONCLUSION AND POLICY IMPLICATIONS

The present paper analyzed the correlation between migration and the digital transformation of small and medium enterprises through a systematic review of 32 peer-reviewed papers. The analysis revealed that migration is a multidimensional element of the SMEs development that includes not only migration of workers and remittances but also knowledge transfers, skill development, entrepreneurship, innovation, international contacts, and access to advanced technologies. Diaspora networks and return migration, in particular, play a key role in the transfer of knowledge, experience, capital, and business practices from one country to another.

This paper has made an original contribution to the field through highlighting several mechanisms through which migration is connected to digital transformation of SMEs such as international knowledge acquisition, use of technologies, innovativeness, diaspora investment, and international business networks. From the theoretical standpoint, all of these connections can be explained from the human capital, resource-based, and knowledge transfer perspectives.

The implications of the research findings are highly relevant for North Macedonia as well as other economies in transition, as such entities usually lack not only financial resources but also digital skills and innovation capacity. In this regard, the involvement of diaspora members and their return is of significant importance for boosting the digital maturity of SMEs. The policies of such countries should focus on fostering investments and networking within the diaspora community, knowledge transfer from diaspora professionals, returnee entrepreneurship, development of digital skills, and increased accessibility of digital infrastructure and financing.

It is important not to focus solely on brain drain as an issue of concern but also think about the possibility of brain circulation as a mechanism that allows transferring acquired knowledge and skills to the country of origin through return migration, entrepreneurship, investment, mentoring, and digital cooperation.

The paper does suffer from certain limitations, however. Being a systematic literature review, it is heavily dependent on the availability and quality of research. The limitation of the scope of review to only peer-reviewed papers in English may have caused exclusion of the relevant regional or grey literature, while the insufficient empirical evidence on the issue from the Western Balkans limits the generalizability of the results to North Macedonia. The future research should use quantitative, qualitative, and mixed methods and focus more on firm-level evidence from North Macedonia and comparisons between the Western Balkans and other transition countries.

In conclusion, the paper shows the necessity of considering migration not only as an aspect related to demography and labor market but also as a resource that may facilitate knowledge creation, networking, entrepreneurship, innovation, and technological development. The integration of these resources into the SME and digitalization strategies would contribute to the digital transformation and economic development of North Macedonia and similar economies.

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