The Digital Transformation of SMEs and Territorial Economic Development: a Systematic Review and Literature Analysis

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ABSTRACT
Nowadays, digital transformation is a major challenge for all companies, and Small and Medium-sized Enterprises (SMEs) are no exception. Due to Industry 4.0 and increasing competition, SMEs are increasingly required to use digital technologies in order to enhance their productivity, competitiveness, and resilience. In this context, the impact of the digital transformation of SMEs on territorial economic development is increasingly attracting the attention of scientific and political researchers. The objective of this study is to analyze the influence of the digital transformation of SMEs on territorial economic development. By conducting a systematic review and a thorough bibliometric analysis, we have mapped the state of research on this topic and identified trends, gaps, and major perspectives.
The results of this study highlight the growing importance of digital transformation for SMEs as a catalyst for territorial economic development. The four identified research areas offer new opportunities for researchers and policymakers, highlighting the essential issues to consider in order to maximize the impact of digital transformation on territorial economic development.

1. Introduction

Digital technologies are a catalyst for digital transformation (DT), giving a significant boost to SMEs that integrate these key factors into their strategy. Through the integration of artificial intelligence, the Internet of Things (IoT) and Industry 4.0, processes are automated, increasing productivity and facilitating innovation. What's more, these technologies promote sustainability by reducing carbon emissions and incorporating sustainable practices into business operations. This process is supported by the open innovation paradigm, which promotes collaboration between internal and external players to create value, and achieve sustainable competitive advantage [1].

In this respect, DT offers companies the opportunity to improve the efficiency of resource allocation, achieve varied technological upgrades and optimize management [2]; while enhancing their impact on internationalization [3], and performance [4]. Several studies have empirically validated the impact of DT on company performance [5], by reducing the costs and risks associated with innovation, strengthening innovation capabilities and promoting innovation within companies [6]. This in turn increases their productivity and competitiveness, while improving their ability to adapt to market conditions [7], developing new production processes [8], and fostering economic development [9].

In other words, the digital transformation of SMEs plays a key role in optimizing and improving territorial economic development (TED) by stimulating economic growth, innovation and sustainability, while overcoming barriers to adoption and tackling regional inequalities.

Previous research in this field has dealt with the subject in an implicit manner, or has favored one aspect over another. Indeed, some research has highlighted the areas of research trends in DT [10], while others assert that the DT of SMEs aims to modify the organizational processes of SMEs, so that they are more agile and able to respond to market changes [11]. Others have pointed out that SMEs in

certain geographical regions are understudied (i.e. the three American continents, Africa and Oceania). And, there are still theoretical and practical gaps in research concerning the measurement of SME performance, simultaneously taking into account the process of digital SME transformation and the triple bottom line of sustainability (environmental, social and economic) [12] . In contrast, work has focused on ecologically sustainable DT and how to explore the dynamic capabilities of organizations [13]. In this perspective, we aim to describe and analyze the state of the art on digital transformation of SMEs and territorial economic development. To this end, our main question is: What are the main areas of research related to the digital transformation of SMEs and TED?

Our contribution seeks to identify areas of research, while using the processes of systematic reviews, in order to collate, organize and evaluate the existing literature in this field [14]. This enables a comprehensive accumulation, transparent analysis and thoughtful interpretation of all previous studies. Building on the work of Paul [14], Xiao [15], Moher [16], Rousseau [17], and the PRISMA group [18], we bring a comprehensive analysis of DT and territorial economic development. A total of 63 articles on DT of SMEs and TED were collected and analyzed. We used VOSviewer and Artirev to visualize our results, our choice being based on the fact that these programs enable us to examine bibliometric maps in detail. In fact, VOSviewer offers various perspectives for displaying a map, each focusing on a specific aspect of the map. These are distinguished as label view (view by label), density view, cluster density view and dispersion view [19].

Our ultimate goal is to delineate knowledge flows in DT of SMEs and DET research, identify important research, and visually map the most prominent countries, institutions, journals, and research fields. This work also aims to provide researchers, and public policy-makers, with a clear systematic global picture of the evolution of the current state of research in DT of SMEs and TED, while revealing future directions in the field. In the following sections, we describe the methodology of our work. We then review our results, including the four research areas. Finally, we present the limitations and perspectives of our work.

2. Methods

Our methods are based on the guidelines of Paul (2021), Xiao (2019), Moher (2009), Rousseau (2008), and the PRISMA (2020) group, to carry out our systematic review. On the other hand, we used a series of bibliometric and visualization techniques, such as citation analysis, co-citation analysis, co-authorship analysis, and bibliographic linkage analysis, to propose a systematic, objective and structured synthesis of research in DT of SMEs and DET.

First, we carried out a three-month trial phase to identify relevant scientific research and indexed keywords, then we proceeded to data collection. Data collection began in June 2024 and lasted four months. To identify relevant articles we applied the guidelines of Braner, Harzing, and selected Scopus as our databases. We chose Scopus because it is a carefully organized database of abstracts, and citations with enriched data and linked scientific literature in a wide variety of disciplines.

We then included articles on “social sciences”, “decision sciences”, “business, management and accounting”, as well as on “environmental science”, as these fields are directly related to our research questions. On the other hand, we limited our search to articles definitively published in English, over a period from 2016 to 2024.

Only articles published in journals ranked in Quartile 1 (Q1) of the JCR journal were taken into account. This choice was motivated by meta-analytical data that highlighted a significant correlation between journal rankings and the methodological transparency and rigor of published articles. To finalize our sample, we applied the inclusion and exclusion criteria of the Scopus database, and eliminated duplicates from our search results. Our initial sample of 512 works was reduced to 63 scientific articles.

Our bibliometric and visualization analyses, carried out using VOSviewer and Artirev software, are based on the fact that these programs enable us to examine bibliometric maps in detail, while revealing

currents of thought and recent research themes in a particular field.

3. Results

3.1 Keyword Analysis

The co-occurrence analysis was carried out with keywords repeated at least 5 times. Among 1,544 keywords, only 53 meeting this criterion were grouped into seven clusters, as shown in Figure 4.

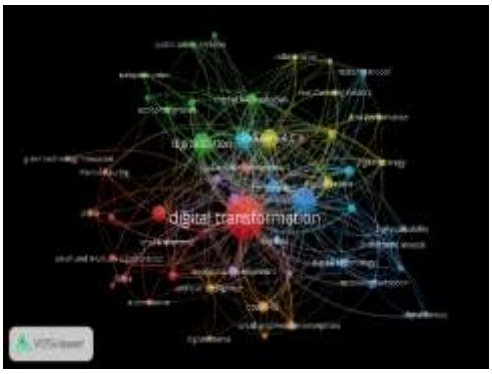

Figure 1. Keyword co-occurrence network visualization map. Unit of analysis =author keywords, Counting method: fractional counting, Minimum number of keyword co-occurrences =5.

Based on the visualization map above, the keyword clusters identified give an idea of the links between common themes in the search. The closer they are to each other, the stronger the correlation between them.

The red group is the predominant one. The most frequently mentioned keywords are DT, digital maturity, SMEs, green technology innovation, e-commerce, china, manufacturing, and digital economy, highlighting a research focus on DT and its impact on SMEs as a field of research in this area. As for the second cluster (green), the most frequently repeated keywords are digital technologies, economic growth, digitization, public administration, and performance, highlighting a research focus on the impact of digital technology adoption on economic growth and organizational performance. The most frequently used words in the third cluster (blue) are SME, digital technology, digital innovation, digital capability, and technology adoption, revealing a field of research focused on the impact of digital capabilities on DT of SMEs adoption. The most repeated keywords in the fourth (yellow) are industry 4.0, SMEs, digitalization, digital strategy, business performance, and manufacturing, highlighting a research focus on the effect of DT on SME performance. Economic development, business performance, sustainable development, and digitalization are the keywords most mentioned in the purple cluster, revealing a research focus on the impact of DT of SME on socio-economic and sustainable performance and stakes. The keywords most present in the turquoise cluster are Big Data, SME, business model innovation, dynamic capabilities, and maturity model, highlighting a research area focused on the effect of SME dynamic capabilities. Finally, the seventh cluster (orange) most common keywords are Covid 19, SMEs, AI, digital finance, and developing countries, highlighting a research field focused on the effect of the health crisis on DT of SME.

3.2 Country and Institution Visualization

The visualization of countries and institutions makes it easy to identify countries, regions and institutions that exert significant influence in a research area (Zhu, et al 2021).

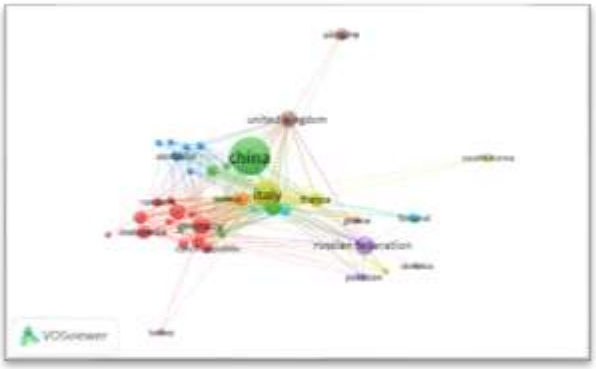

Figure 2. Citation visualization map. Analysis unit =country, Counting method: fractional counting, Minimum number of documents from a country =5, Minimum number of citations from a country =2.

The results of this figure show that Asian, European and American countries are the leaders in DT research, and that there is a very strong collaborative relationship between them. Indeed, China leads the way with 111 papers, followed by Italy with 60 papers, and in third place the Russian Federation with 34 papers. These results show that our research field is dominated by countries with strong national strategies and dynamic academic ecosystems. In terms of citations, Italy is the most frequently cited country (3107), this is because it distinguishes itself from other countries by its SME-dominated ecosystem, followed by China with 2045, because it is a world leader in this field, and France in third place with 992, thanks to its international collaborative links. On the other hand, Ukraine, South Korea and Colombia have only two collaborative links with other countries; this can be explained by geopolitical, economic and linguistic factors, while South Africa is the only African country with publications in this field, with eight documents, because it has global scientific collaborations and a more digitized economy.

According to figure 3, the sources with the most documents and strongest interconnections are sustainability (Switzerland), technological forecasting and social change, and environmental science and pollution research. In addition, the journal of business research is widely cited in our selected database (1124 citations), sustainability occupies second place with 1117 citations and twenty-one collaboration links, and in third place is technological forecasting and social change with 743 citations.

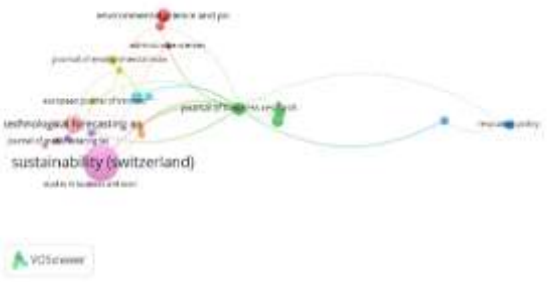

Figure 3. Citation visualization map. Analysis unit =Sources, Counting method: Fractional counting, Minimum number of documents from a source = 3, Minimum number of citations from a source = 2.

Figure 4 also shows the most influential institutions in this field. leonard de vinci, pole universitaire, research center, paris la défense (France) is the leader in this field, followed by Paris school of business (France), and University of Rome (Italy) comes third. These organizations have seven collaborative links with other organizations. The most frequently cited institutions are school of economics and trade, hunan university, changsha (China) with 170 citations, followed by leonard de vinci, pole universitaire, research center, paris la defense (France) with 162 citations, and school of business, university of applied sciences and arts northwestern switzerland fhnw, olten, switzerlandwith147

citations.

Figure 4. Carte de visualisation de citation. Unité d'analyse =Organisations, Méthode de comptage : Comptage fractionnaire, Nombre minimum de documents d'une organisation=2, Nombre minimum de citations d'une organisation=2.

3.3 Co-Citation Analysis

Figure 5 shows the collaborative links between authors in this field, taking references as the unit of analysis. Three main clusters can be distinguished, each representing a group of authors working closely together, proposing specific areas of research and strengthened scientific groups. In the first cluster (Red), the most cited references are Eller's "Antecedents, consequences and challenges of SME digitalization" (2020), Verhoef's "Digital transformation: a multidisciplinary reflection and research agenda" (2021), and Matarazzo's "Digital transformation and customer value creation in Italian SMEs: a dynamic capabilities perspective" (2021), highlight a research focus on the digital transformation of SMEs. For the second cluster (Green) the leading references in this field are "Dynamic capabilities and strategic management" by Teece (2007), "Adopting digital technology: a new strategic imperative" by fitzgerald (2014), and "Strategies for Digital Transformation" by Matt (2015), reveal a research focus on the dynamic capabilities and have adapted strategies required for the DT of SMEs. With respect to the third cluster (Blue), the frequently cited references are "Fortune smiles on the most prepared: how SMEs approach business model innovations in Industry 4.0" by Muller (2018), "Understanding Digital Transformation: a review and research agenda" by Vial (2019), "Digitization, business models and SMEs: how do business model innovation practices improve the performance of SMEs undergoing digitization?" by Bouwman (2019), and "Digital Transformation by SME entrepreneurs: a capability perspective" by Li 2018, highlight a research focus on the impact of Digital Transformation on SMEs.

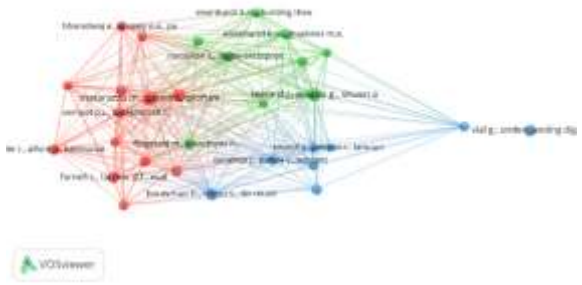

Figure 5. Co-citation network visualization map. Analysis unit = References, Counting method: Fractional counting, Minimum number of citations of a reference =10.

Figure 6, shows the most influential authors in this field, as well as the collaboration, and networks of connections that exist between researchers in this field. Three main clusters have been identified. The first cluster (Red) includes authors such as Teece, Verhoef, and Del giudice. The second cluster (Green) features Zhang, Liu, Li and Wang as the most influential authors. The third cluster (Blue)

shows that the leading researchers in this group are Muller, Xu, and Lu.

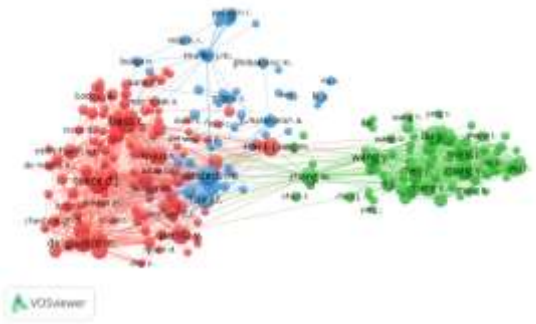

Figure 6. Co-citation network visualization map. Analysis unit = Authors, Counting method: Fractional counting, Minimum number of citations of an author =30.

3.4 Co-Authorship Analysis

Figures 7 and 8 show the collaborative links between researchers, with authors and countries as units of analysis, respectively, and the thematic proximity between them. China, Italy, the Russian Federation, the United States, Germany and the United Kingdom are among the leading countries in terms of cooperation. Scuotto, Del giudice, Papa armando, and Bresciani, stefano stand out as the most influential authors, thanks to their multiple collaborations.Moreover, the results show an intensification of international collaborations between researchers. In this sense, Schubert et al assert that, cultural relations, geopolitical position and language are the factors that determine co-author collaboration networks (Schubert, et al 2020).

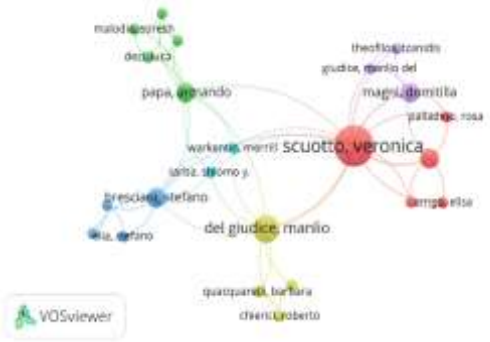

Figure 7. Co-authorship network visualization map. Unit of analysis = Authors, Counting method: Fractional counting, Minimum number of documents by an author =1, Minimum number of citations by an author =5.

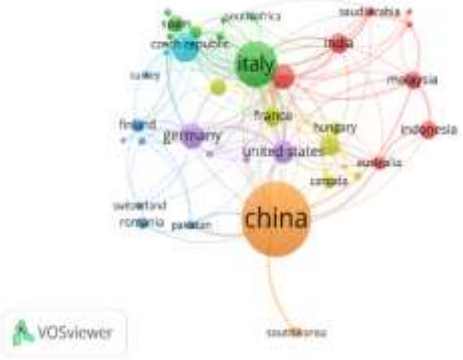

Figure 8. Co-author network visualization map. Unit of analysis = Country, Counting method: Fractional counting, Minimum number of documents from a country = 5, Minimum number of citations from a country = 5.

3.5 Bibliographic Linkage Analysis

Figure 9 shows the links and connection networks between the main authors in the field. Four clusters have been revealed. Each cluster groups together researchers with common bibliographic references and similar problems. The first cluster (Red), grouping Scuotto, Veronica, Del Giudice, Manlio, and Peter, Marc, reveals areas of research focused on factors influencing the adoption of TD in SMEs, digitalization as a lever for sustainable SME growth. The second cluster (Green), whose main influential authors are Pellerin, Robert, Brodeur, Jonathan, Deschamps, and Isabelle, highlights a line of research focused on the impact of open innovation on SME TD. The third cluster (Blue), whose leading authors are Lehmann, Claudia, Kraus, Sascha, and Pfister, Paul, highlights areas of research focused on the impact of DT on SME strategy, and the role of digital skills in SME DT success. The fourth cluster (Yellow), featuring Penco, lara, and Profumo, Giorgia, highlights a research focus on DT and SME performance.

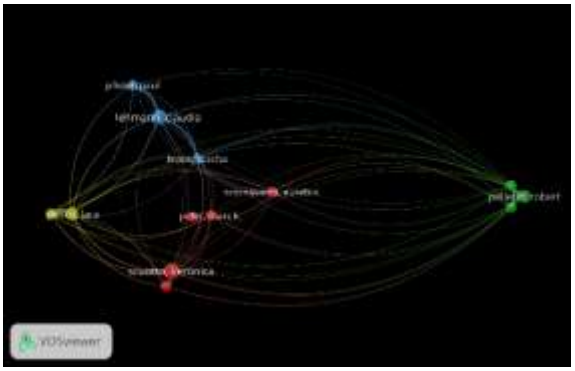

Figure 9. Bibliographic linkage network visualization map. Analysis unit = Authors, Counting method: Fractional counting, Minimum number of documents by an author=3, Minimum number of citations by an author =5.

3.6 Analysis of Artirev Results

Figure 10, below, represents the four research areas we have identified in our research, and reinforces the results we have obtained in the different visualization maps. Four clusters have been revealed. In the first cluster (Red), the most representative reference is Marino (2024), while the references most cited in the literature are Al okaily (2024), Omrani (2024), and Triose (2022). This cluster focuses on the impact of DT adoption on SMEs. The second cluster (Green) includes Soluk (2024), the leading reference; Matarazzo (2021), and Li (2023), the most frequently cited references. This cluster focuses on dynamic capabilities required for successful digital transformation of SMEs .The third cluster (Blue) includes, Zahoor (2023), and Skare (2023) respectively as the most prominent reference, and most cited reference. The research field of this cluster is the impact of DT of SME on TED. The fourth cluster (Violet) includes, Zheng (2023), most significant reference; Hu (2023), Lin (2022), and Liu (2023), most motioned references. This cluster focuses on the impact of DT of SME on the environment.

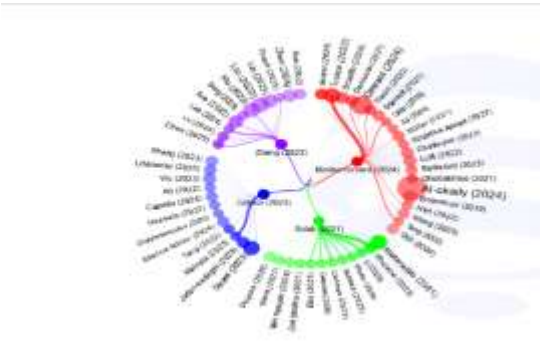

Figure 10. Dendrogram of collaborations between authors in research on digital transformation of

SMEs

3.6.1 The impact of DT adoption on SMEs

The research reviewed highlights the factors influencing SMEs' decision to adopt technologies, as well as the consequences of this adoption on their growth. Several studies point to a significant improvement in competitiveness (Troise, 2022), productivity (Müller, 2021), resource efficiency (Jia, 2024), performance (Nasiri,and al,2020), and economic growth (Denicolaiet 2021, Teng,2022), via the integration of digital technologies, digital skills of managers and employees, having a digital transformation strategy, dynamic capacity. However, research has classified these factors into three main categories: technological, organizational and environmental.

On the other hand, some studies highlight the difficulties SMEs have in achieving an adequate level of readiness to adopt digital technologies, despite their potential to innovate and improve business models. These divergences reflect discrepancies linked to the level of digital maturity, or to the digital techniques adopted. Although the overall benefits are widely recognized, major obstacles remain, limiting the effect of DT on certain categories of SMEs.

3.6.2 Dynamic capabilities required for successful digital transformation of SMEs

The studies analyzed reveal the dynamic capabilities essential for SMEs to succeed in their digital transformation, and improve their performance. In other words, the ability of SMEs to integrate, develop and reconfigure internal and external skills, in order to cope with constantly and rapidly changing environments. Dynamic capabilities include the ability to detect, evaluate and identify advantages and threats, so that SMEs remain competitive (Matarazzo, et al 2021). As a compliment, other capabilities play a vital role in the successful digital transformation of SMEs. For example, the ability to mobilize resources to exploit opportunities.

3.6.3 The impact of TD of SME on TED

The research studied highlights the effects of DT of SME on sustainable growth by harmonizing competitiveness, social inclusion, environmental responsibility and economic performance. Indeed, the adoption of digital technologies encourages innovation, process automation and dematerialization, thus ensuring the requirements of the DET. In addition, the adoption of digital technologies by SMEs contributes to regional socio-economic development by encouraging business models and operational efficiency. This reinforces sustainability and the creation of social value. The benefits of digital transformation also translate into the ability of SMEs to create intangible assets through improved managerial quality, a skilled workforce, professional training and the reduction of incompatibilities between jobs. It encourages stakeholders to develop high-quality management, increases the availability of skilled personnel and experienced managers (Skare, et al 2023), and also improves the ability of companies to reorganize their knowledge and transfer this expertise (Aly, H. 2022).

3.6.4 The impact of DT of SME on the environment

The studies analyzed underline the effect of technology adoption by SMEs on environmental sustainability. Indeed, the adoption of DT enables SMEs to optimize their processes, minimize waste, and opt for sustainable practices. What's more, the dematerialization of processes and documents combats the intensive consumption of paper and ink, thus limiting physical waste. On the other hand, they make it easier to monitor environmental performance, enabling SMEs to identify and react quickly in a constantly changing environment. Finally, digitalization encourages remote working and virtual meetings, minimizing travel and, consequently, greenhouse gas emissions.

4. Discussions

The specific aim of this work is to analyze knowledge trends in the field of DT of SMEs and TED. The results of our bibliometric analysis revealed four main research areas. These research areas cover various aspects of Digital Transformation of SMEs and its impact on TED. Each field of research allows us to analyze this area from different angles, and to refine our understanding of the key factors

influencing this process, highlighting the challenges faced by SMEs in a constantly changing environment.

4.1 The Impact of DT on SMEs

Digital transformation is seen as a catalyst for innovation in SMEs. The studies reviewed emphasize that the determining factors in the adoption of digital technologies in SMEs are technological, organizational and environmental factors. However, other studies show that organizational factors predominate over the other factors [20]. IT infrastructure, understanding of Industry 4.0 technologies, a clear and conscious strategy, and higher innovation capacity are the key factors that act as springboards for digital technology adoption [20], [21]. In addition, financial resources, qualified digital skills, and SME regulation are indispensable in the adoption decision.

In addition, Müller and al. point out that SMEs need support in implementing digital technologies, as they need to minimize the risks associated with their size. To this end, government support such as subsidies and training programs, as well as external organizations, play a key role in preparing SMEs for digital transformation.

On the other hand, the research reviewed reveals the impact of this adoption on SMEs. It leads to a positive increase in competitiveness [22], productivity [23], resource efficiency [24], performance [25], and economic growth [26]. [27]. On the other hand, some studies highlight the difficulties SMEs have in achieving an adequate level of readiness to adopt digital technologies, despite their potential for innovation and improved business models. These divergences reflect discrepancies linked to the level of digital maturity, or to the digital techniques adopted.

4.2 The Dynamic Capabilities Required for Successful SMEs DT

Dynamic capability refers to an organization's ability to integrate, adapt and reorganize its internal and external resources to cope with change, create value [28], [29], and remain competitive in a constantly changing environment. This finding is in line with the results of several previous studies, notably those by [30] [8] al, and [31], which reveal that SMEs need to develop specific skills to take advantage of the benefits of digitalization, and manage technological and organizational change. In addition, the research reviewed highlights the key drivers of digital in SMEs, namely, having a digital strategy, investing in continuous training for their leaderships and employees, and integrating digital technologies with an agile approach. This is crucial to overcoming internal resistance and maximizing the benefits of digitalization, as shown by the work of [31], who demonstrated that adaptability [34], [35] and organizational agility are key determinants in DT success.

On the other hand, the studies reviewed emphasize that dynamic capabilities combine several key competencies that enable SMEs to innovate and thrive in a changing environment. [28], [29], and [30] assert that these competencies encompass the ability to detect market opportunities, identify and adopt digital technologies (such as AI, IoT or cloud platforms), as well as the ability to anticipate environmental needs and changes in order to improve operational efficiency. In addition, [36], [37] stress the importance of continuous innovation, reorganizing internal structures, and creating value through digital, rethinking business models and personalizing the customer experience. On the other hand, [38] [39] highlight the need to develop a digital culture, and train leaders and employees to support this transformation, while encouraging strategic collaborations to access external resources.

In addition, [40] point out that these dynamic capabilities help SMEs to strengthen their resilience in the face of crises, notably, during the COVID-19 pandemic. According to [41], they have the competence to assess and perfect their digital performance through data analysis, while [42] highlight their ability to integrate into digital environments to improve their competitiveness. In short, these dynamic capabilities, combining the ability to detect, grasp and transform, are essential if SMEs are to transform digital challenges into opportunities for sustainable growth.

4.3 The Impact of DT of SMEs on TED

This area focuses on the economic impact of integrating DT into SMEs. The research studied highlights the role of this transformation in TED, investigating it from different angles. Indeed, some research claims that this transformation offers major opportunities for improving economic and environmental performance, while highlighting the role of digital technologies in increasing productivity [9], technological development [43], [44], increasing new production processes [8], and fostering economic development [9]. In addition, other research reveals the effect of DT of SMEs on sustainability, analyzing how DT can facilitate the ecological transition of European SMEs and reduce urban pollution in smart cities [45] [46]. They point out that digital technology, while complex to implement, offers major opportunities for improving economic and environmental performance.

On the one hand, studies underline that the digitalization of SMEs generates significant economic value, provided that managers possess the necessary digital skills and adopt appropriate leadership [5], which increases the availability of skilled staff and experienced managers. Skare, and al [7], so improves companies' ability to reorganize their knowledge and transfer this expertise [9]. On the other hand, Hossain and al [47] point out that SMEs that succeed in their DT become more resilient in the face of crises, such as the COVID-19 pandemic, and play a crucial role in economic recovery. These works converge to show that Digital Transformation of SMEs is an essential lever for improving territorial economic development, such as productivity, regional competitiveness, job creation and economic resilience.

4.4 The Impact of DT of SMEs on the Environment

The works analyzed highlight the links between digital transformation of SMEs, technological innovation and environmental sustainability, emphasizing the economic and ecological impacts of digitalization. The studies analyzed point out that digital transformation stimulates innovation in green technologies, facilitating the optimization of industrial processes and encouraging the development of sustainable solutions [48], [49]. Others show that the digital economy improves energy efficiency, notably in China, where it helps reduce energy consumption while supporting economic growth [50]. These studies reveal that digitalization acts as a catalyst for the transition to a green economy, aligning the goals of economic performance and sustainability.

On the other hand, research highlights the challenges of this transformation, identifying the negative effects of digitization, and suggesting that while digitization initially reduces emissions, it may also increase them in the long term due to increased energy demand linked to digital infrastructures [51]. Other research points to the need for public policies to maximize the benefits of this transformation, while highlighting the possible synergies between pollution reduction and carbon mitigation through digitalization [52]. On the other hand, Thanh and al [53] analyze the impact of digitalization on energy security in Europe, showing that it can improve the management of energy resources, but is highly dependent on the infrastructures and regulations in place.

Finally, studies highlight the role of regional and sectoral contexts in the success of digital transformation. Some studies examine how resource-endowed regions can overcome the challenges of digitalization through adaptive management capabilities (AMC), transforming their traditional advantages into digital assets [54]. Others highlight that the development of China's digital economy has become a key driver of energy consumption, requiring strategies to balance digital growth and sustainability [50] [55]. In short, these works converge to show that digital transformation, while offering major opportunities for economic development and ecological transition, must be accompanied by targeted policies and technological innovations to maximize its benefits while minimizing its negative impacts.

5. Conclusion

By way of conclusion, the field of digital transformation of SMEs and territorial economic development is a very rich, captivating and dynamic one, both from the point of view of scientific

research and the thematic axes tackled. China, Italy and Russia stand out for their academic influences, linked to their roots in dynamic academic ecosystems and their strategic approaches to SME digitalization. In our study we have revealed four areas of research that guide future research in this field: the impact of DT on SMEs, the dynamic capabilities required for successful DT of SMEs, the impact of DT of SMEs on TED, and the impact of DT of SMEs on the environment.

In this respect, we propose to scientific researchers two combinations with different ambitions. The first combination consists in combining the research axis the impact of DT adoption on SMEs, with the domain the impact of DT of SMEs on the environment, to adopt a broader perspective of this field. The aim is to provide food for thought, analyses or proposals to enrich the discussion on how SMEs can adopt more sustainable practices, while considering the economic and environmental dimensions of DT of SMEs. The second combination aims to deepen analyses of the economic impact of DT of SMEs on TED, exploring the determinants of DT and its economic consequences, and focusing on specific aspects such as growth, productivity, job creation and competitiveness. This combination consists of combining the areas of dynamic capabilities and digital transformation and the impact of DT of SMEs on TED.

Although this study sheds light on the field of DT of SMEs, it has its limitations. The analyses do not include a sufficient number of studies to deduce widely applicable conclusions. It would be wise to increase the volume of data by integrating other sources, including the latest publications. In addition, by integrating other databases such as Web of Science, we could reinforce the credibility of the results and deepen the exploration of the impacts of digital transformation in different contexts.

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