

DIGITALIZATION A CRUCIAL TOOL TO IMPROVE THE RESILIENCE OF ORGANISATIONS

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Abstract:

Current developments and trends that characterise the market economy system, in a context marked by many uncertainties and tensions of economic, social and political order, draw more and more attention to the need and importance that resilience has at organisational level. In a world subject to constant change, the need and ability to adapt to the new, imprints a new dynamic at the level of economic systems. If until recently, the economic strength of an organisation, the degree of technology and its ability to concentrate as large a share of the market as possible were considered elements of performance, the reality of recent years has highlighted the fact that they are no longer enough. Digital technology is developing intensively in the volatile and turbulent context of recent years, through the introduction of innovative technologies, the automation of economic processes, but also changes in the organisational culture of many companies. The challenge of today's digital economy is manifested by the need for continuous adaptation to the needs of markets. Starting from these aspects, the purpose of this paper is to verify the hypothesis that digitization is a key element in ensuring resilience at organisational level in the current economic context. Thus, this paper aims to carry out an analysis on the topic of "digitalization of organisations", through a bibliometric study, from a perspective involving resilience. Data was retrieved from the Web Of Science database and analysed using VOSviewer software. The results of the paper aim at outlining some directions regarding development strategies able at ensuring organisational resilience.

Keywords: Digitalisation, Resilience, Innovation, Economic Development

JEL classification: O32, O33, O36

1. Introduction

The level and intensity of current global challenges (Dinga, 2022 uses the term disruption), have a direct impact on the behaviours and functioning of economic systems (organisations) in relation to the dimension of time and space, directly influencing the level of organisational performance. In other words, any disruption coming from the environment of economic activity towards an organisation, will generate structural changes, and it will be in the situation of being able to accommodate/adapt or not to the new requirements and conditions. So, this reversibility must be seen in accordance with the structural changes correlated with the goals/objectives of a certain organisation, including the means at its disposal.

Therefore, the ability of an organisation to adapt and practically return, through its own principles, resources and/or strategies, to the state or trajectory from which it was disrupted, as a result of continuous changes in the environment of economic activity, is called resilience.

Any organisation (over a period of time) lives in a mixture of absorption, recovery and adaptation to disruptions. To understand the concept of resilience, the importance of specifying the causes of disruptions is clear. In the present paper, we will try to set these aspects, present in recent years, as a result of the following bibliometric analysis.

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Digitalization performance has turned into a crucial component of any business plan as the world moves toward a more conscious investing approach. Investors and other stakeholders now expect businesses to implement digitization throughout their entire operation. Digitalization encompasses many different elements, all of which must be carefully taken into account when determining the impact of these initiatives.

As people interact more with digital technology in our economy, it is imperative to have a deep understanding of how digital technology impacts the resilience of the organisations.

Therefore, the present research is a bibliometric and systematic content analysis that aims to 1. examine and identify the trends and patterns of the topic of research. 2. identify the research gap and 3. predict future research direction.

In this sense, the paper is conducted in order to answer to the main research questions:

- How does digitalisation enhance the resilience of companies in the face of unexpected disruptions such as pandemics, natural disasters or economic downturns?
- What are the key factors required for companies to build resilience through digitalisation?
- What are the challenges that companies may face in adopting digitalisation as a tool for building resilience, and how can these challenges be addressed?

2. Methodology

The last two decades have seen a remarkable expansion of bibliometric research. Bibliometric research is a subset of systematic literature reviews that applies quantitative and statistical methods to bibliographic data, such as descriptive statistics analysis, performance analysis, cluster analysis, and science mapping (Debmalya et al., 2022).

The basis for the current analysis was a set of data extracted from Web of Science based on the fact that it is the most reliable global citation index without any publisher bias.

The Web of Science platform database was used for the methodological approach. Based on the research made on April 10, 2023, 1883 papers were selected written in English. The key search terms were "digital*", "resilien*", and "organisatio*" linked with the boolean logical operator "OR," along with the term "firm*," "compan*," "organization*," "adaptability*," "corporation*," and "businesses*," which were also linked with the boolean logical operator "OR." More particularly, the following was the query code: digital* (All Fields) and resilien* OR adaptability OR flexibility (All Fields) and organisatio* OR firm* OR compan* OR enterprise* OR business (All Fields) and Article (Document Types) and English (Languages) and 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 or 2009 (Publication Years).

Based on these results, a primarily analysis of research was made using the WoS Analyse results. The main selection referred to documents by year, sources of publications, affiliations, authors, country and research areas.

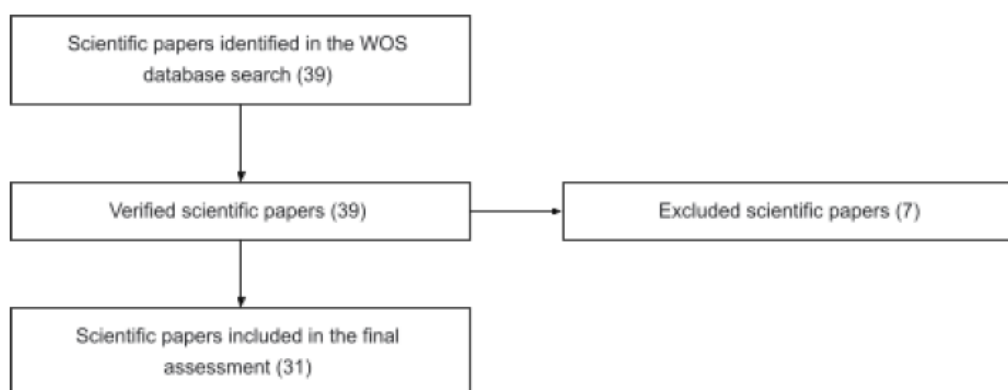
Further, VOSviewer free tool was used to conduct the bibliometric analysis. This tool was chosen because it is a free computer program for creating and viewing bibliometric maps. Unlike commonly used bibliometric mapping programs like SPSS and Pajek, VOSviewer gives special consideration to the graphical representation of bibliometric maps. Large bibliometric maps can be easily understood when displayed using VOSviewer's functionality (van Eck, N.J., Waltman, L., 2010).

The results obtained from WoS were exported in RIS format to be transformed into relevant maps. The raw data was useful for both bibliography and text data. The last 3 years were representative of the topic of this paper, more than three-quarters (79,02%) of the articles being published in this span of time. A large number of written works bears witness to the keen interest in specialised literature for digitalization and resilience concepts.

To conduct the systematic content analysis, only the works marked as "highly cited papers", from the last 5 years, were included, having as an argument the dynamics of the publications, resulting from the interpretation of the figure 2. The title, abstract, keywords, author names, journal name and year of publication of these papers were exported to an MS Excel spreadsheet. Then a screening was performed

at the level of titles and abstracts, excluding papers that, despite mentioning the search terms, did not make the purpose of the analysis. These studies were included if it was easy to locate information about their goals, methods, findings, and abstract conclusions. All included works were subjected to extensive review in order to determine the study's primary goal. To be more precise, each article was carefully read from beginning to end, and the key conclusions were recorded in an Excel spreadsheet with five categories according to the chosen approach.

Figure 1: The selection process of the papers



Source: Authors' own processing

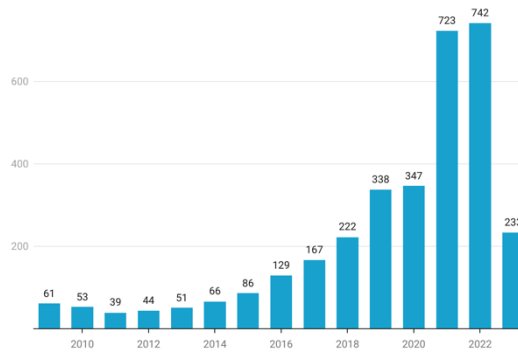
Basically, the results of the bibliographic search produced 39 publications, whose titles and abstracts were checked, and then 7 registrations were rejected because they did not meet the requirements for eligibility. The remaining 31 registrations were thoroughly evaluated based on their complete text. The selection procedure for the studies is shown in Figure 1 above.

3. Primarily analysis

The search for “digital, resilient organisation”, using the previously mentioned filters (articles, written in English, from 2009 to 2023) returned 1883 articles (Fig. 2). The exponential growth in the number of articles reflects the interest in the subject. The digital transformation of organisations has a wide range of implications for every sector like marketing, finance, education, occupational health and safety, and organisational behaviour. Changes within organisations are a result of the need to pursue the way of digitization. The hope behind the changes brought about by digitalization is that they will enable everyone to succeed and prosper while cooperating.

The working task has improved thanks to digital devices. However, the foreseeable future indicates that there is still plenty of room for advancements. Therefore, interest in digitization and the resulting organisational changes will grow even more in the years to come. The future that consumers want is even more digital, connected, global, and intelligent than it is now. So, as Yacine Saidji, the vice president of Morgan Stanley said, the organisations must increase the investments in digital infrastructure in order to realise that future (https://www.morganstanley.com/im/publication/insights/articles/article_thefutureisdigital_en.pdf?1645361635994).

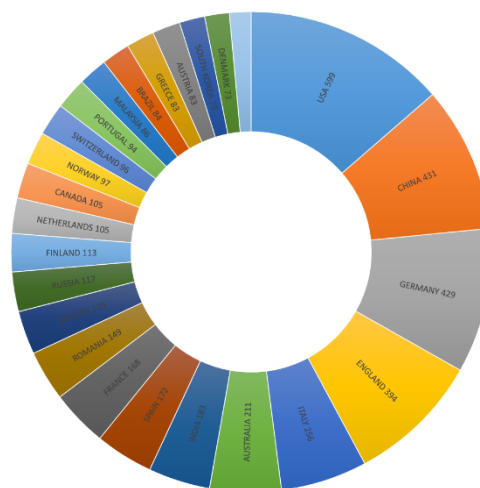
Figure 1: Document by year



Source: Web of Science platform

Based on figure 3, it is observed that The United States has the highest number of articles written (599 articles), indicating that it is likely the most covered country in the dataset. This suggests that there is a significant focus of Americans on this research topic. Germany closely follows China, with a similar number of articles written (around 430 articles). This suggests that Germany is also a significant focus in the dataset, likely due to its economic influence or political landscape. England, Italy and Australia are still in the top of the countries with the most written articles. To mention is that Romania is still ranked high in terms of the number of articles written among the world countries, demonstrating increased attention from the academic and research environment. The countries with relatively minimal focus on digitalisation at the corporate level are South Korea, Austria, Greece, and almost all Nordic countries.

Figure 3: Categorization of articles based on countries, ranked by the number of articles written

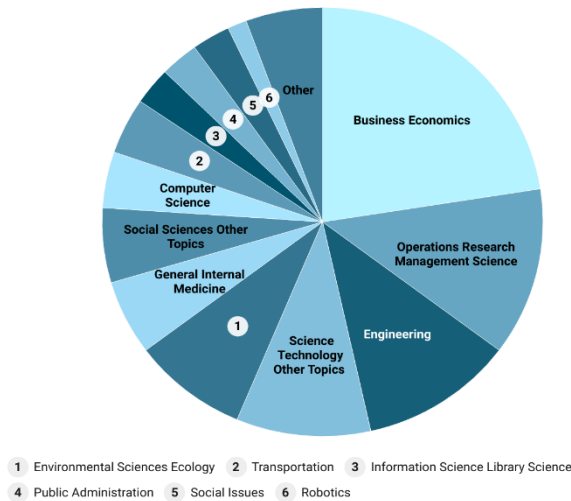


Source: Web of Science platform

The subject of digitization in the context of the resilience of organisations is mostly debated in the field of interest represented by business economics (figure 4). Likewise, researchers from the fields of operations research, management science, engineering, science technology, environmental science, ecology and general internal medicine are concerned with the topic of digitization, followed by those from the fields of social science, computer science and transportation. It requires new strategies and

practices to stay competitive in this new business environment. Our findings suggest that executives are paying attention and trying to understand the strategic importance of technology as a vital part of the company, not just a source of cost savings.

Figure 4: Categorization of articles based on different focus areas

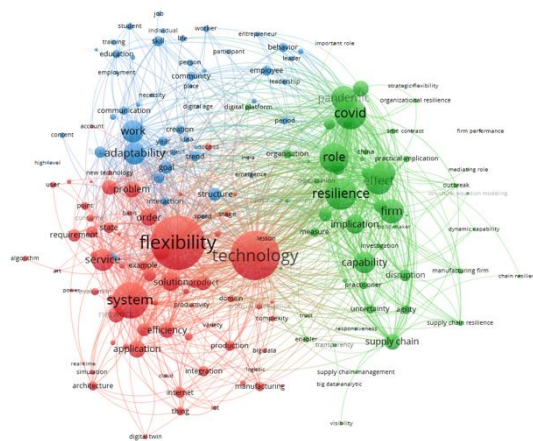


Source: Web of Science platform

4. Bibliometric analysis

The analysis of the term co-occurrence based on text data reveals three clusters (figure 5) emerged around the keywords technology, resilience and adaptability. The co-occurrence map reveals the main topics covered in scientific literature. Around the main tree keywords can be seen the networks and the significant items of every cluster. The linked words highlight the reality of concerns resulting from the primary topics. The role of the COVID pandemic was to accelerate the adoption of technology and to foster the flexibility of organisational systems. This can be seen also in the map below which reflects the interest of academia mostly from the business economic sector.

Figure 5: Term co-occurrence map based on text data



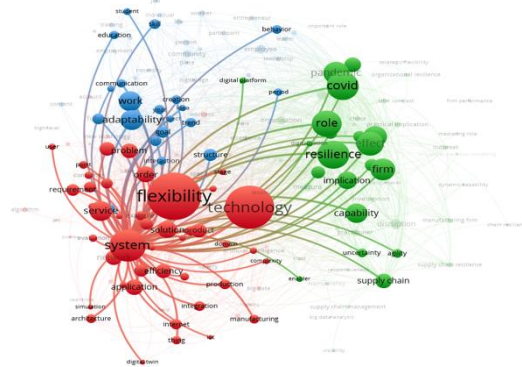
Source: VOSviewer

The cluster focused around the term technology includes the following interconnected terms: flexibility (with 174 links, 320 occurrences and 3865 total link strength), system (with 229 occurrences and 2523 total link strength), efficiency (with 89 occurrences and 1016 total link strength), internet (with

59 occurrences and 828 total link strength), solution (with 109 occurrences and 1250 total link strength), service (with 133 occurrences and 1501 total link strength), big data (with 26 occurrences and 391 total link strength), production (with 56 occurrences and 746 total link strength).

The crisis that passed had improved connectivity and flexible working arrangements to become the norm rather than an indulgence. It goes without saying that using the internet and big data solutions has increased efficiency and determined cost savings for the organisations.

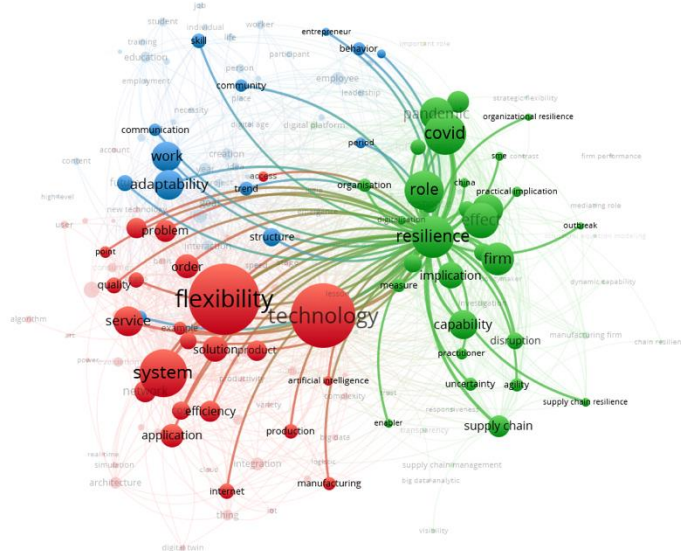
Figure 6: Cluster 1 - technology



Source: VOSviewer

The cluster resilience has the main keyword **resilience** (with 172 link, 201 occurrences and 2424 total link strength), **covid** (with 196 occurrences and 2599 total link strength), **capability** (with 175 occurrences and 1770 total link strength), **supply chain** (with 92 occurrences and 1633 total link strength), **uncertainty** (with 50 occurrences and 723 total link strength), **effect** (with 163 occurrences and 1996 total link strength), **disruption** (with 68 occurrences and 1025 total link strength).

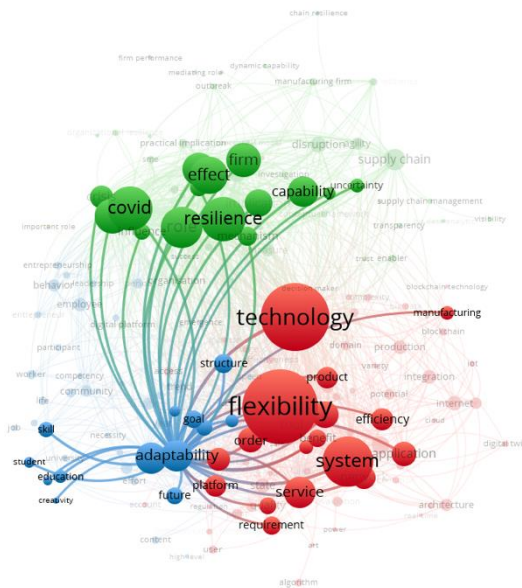
Figure 7: Cluster 2 - resilience



Source: VOSviewer

Resilience must be at the core of everyone's work, no matter the organisation specificity but we have to take into consideration that the competitive environment of today heavily depends on innovation. Because there are many problems that cannot be solved by using outdated techniques, business leaders must constantly seek out novel ways to innovate and prevent uncertainty.

Figure 8: Cluster 3 - adaptability



Source: VOSviewer

Since change is a constant in life, being adaptable is a vital skill. As the world tries to figure out new hybrid and remote workdays, adaptable people have the capacity to confidently navigate changing circumstances in the workplace. Cluster number three is made up of the word **adaptability** (with 175 occurrences and 1770 total link strength) and **education** (with 47 occurrences and 599 total link strength), **trend** (with 55 occurrences and 715 total link strength), **behavior** (with 49 occurrences and 501 total link strength), **structure** (with 74 occurrences and 802 total link strength), **creativity** (with 52 occurrences and 594 total link strength), **skill** (with 87 occurrences and 677 total link strength), **future** (with 63 occurrences and 807 total link strength).

Figure 9: Funding sponsors



Source: VOSviewer

The large number of research grants supported by significant international organisations demonstrates the importance of the topic covered in this article. For example, among the most significant number of articles was granted by National Natural Science Foundation of China, followed up by UK Research Innovation and European Commission. For instance, the National Natural Science Foundation of China funded a significant number of articles, followed by the UK REsearch Innovation and the European Commission.

5. Systematic analysis

Analysing the database composed of the articles that complied with the restrictions imposed to answer the studied research problem, we notice that the ordered topics were mainly concentrated around 5 research directions, captured as categories in the table below.

Table 1: The main 5 categories of approach regarding the importance of digitalization, as a resilience tool

Category of approach	Research direction addressed	Authors and Year of publication
Field of applicability	Main fields that support digital technologies and find its applicability: industry 4.0, supply chain, food industry, automobile and airline industries, manufacturing.	Kumar, A; Liu, R; Shan, Z., (2020); Rapaccini, M; et. al., (2019); Belhadi, A; et. al., (2021); Kipper, LM; et. al., (2021); Leng, JW; et. al., (2021); Autio, E; Mudambi, R; Yoo, Y., (2021); Ivanov, D; Dolgui, A; Sokolov, B., (2019); Ivanov, D; Dolgui, A., (2021); Olsen, TL; Tomlin, B., (2020); Gupta, H; et. al., (2022); Burgos, D; Ivanov, D., (2021); Li, Y; Dai, J; Cui, L., (2020); Tsolakis, N; et. al., (2021); Rejeb, A; et. al., (2022); Tao, F; et. al., (2019).
Ensuring resilience in the context of crisis	Investigates the impact of digitalisation in a context of global disruptions, like those associated with the COVID-19 pandemic, and how companies through digital service orientation and accelerating digital transformation are enhancing resilience.	Miroshnychenko, I; et. al., (2021); Huang, X; et. al., (2022); Xie, XM; Wu, YH; Min, H., (2019); Palacios-Marques, D; Ribeiro-Navarrete, S., (2022); Del Giudice, M; et. al., (2022); Bardhi, F; Eckhardt, GM., (2017); Papagiannidis, S; Harris, J; Morton, D., (2020). Rapaccini, M; et. al., (2020); Lu, YQ; Xu, X., (2019); Belhadi, A; et. al., (2021); Gupta, H; et. al., (2022); Burgos, D; Ivanov, D., (2021); Lohmer, J; Bugert, N; Lasch, R., (2020); Argyroudis, SA; et.. al., (2022).
Digital solutions	Instruments and digital tools that are successfully implemented in some fields: blockchain, logistics digital twin, digital platforms, digital workplaces.	Kumar, A; Liu, R; Shan, Z., (2020); Min, H., (2019); Rapaccini, M; et. al., (2020); Lu, YQ; Xu, X., (2019); Svahn, F; Mathiassen, L; Lindgren, R., (2017); Autio, E; Mudambi, R; Yoo, Y., (2021); Babich, V; Hilary, G., (2020); Olsen, TL; Tomlin, B., (2020); Gossling, S; Hall, CM., (2019); Burtch, G; Carnahan, S; Greenwood, BN., (2018); Gupta, H; et. al., (2022); Burgos, D; Ivanov, D., (2021); Lohmer, J; Bugert, N; Lasch, R., (2020); Li, Y; Dai, J; Cui, L., (2020); Argyroudis, SA; et. al., (2022); Tao, F; et. al., (2019).
Reaching organisational performance and sustainability	Explore how digital technologies influence economic and environmental performance in the context of sustainability.	Del Giudice, M; et. al., (2022); Chafi, MB; Hultberg, A; Yams, NB., (2022); Gossling, S; Hall, CM., (2019); Li, Y; Dai, J; Cui, L., (2020); Tsolakis, N; et. al., (2021); Rejeb, A; et. al., (2022); Muller, JM; Kiel, D; Voigt, KI., (2018).

<p>Opportunities and vulnerabilities</p>	<p>Explore opportunities of digitalization: absorptive capacity, strategic flexibility, and business model innovation; acquisition, assimilation transformation and exploitation of knowledge; key skills and competencies developed in professional education.</p> <p>Explore vulnerabilities of digitalization: costs and risks of blockchain adoption, cybersecurity concerns.</p>	<p>Miroshnychenko, I; et. al., (2021); Kumar, A; Liu, R; Shan, Z., (2020); Lu, YQ; Xu, X., (2019); Kipper, LM; et. al., (2021); Leng, JW; et. al., (2021), Autio, E; Mudambi, R; Yoo, Y., (2021); Ivanov, D; Dolgui, A; Sokolov, B., (2019); Babich, V; Hilary, G., (2020); Ivanov, D; Dolgui, A., (2021); Olsen, TL; Tomlin, B., (2020); Chafi, MB; Hultberg, A; Yams, NB., (2022); Muller, JM; Kiel, D; Voigt, KI., (2018).</p>
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Source: Authors' own processing

While digitalization is widely recognized as an important tool for organisational resilience, there are several potential research gaps that could be explored to further understand its significance and implications. Based on the 5 categories aimed at research directions addressed in the articles subjected to the systematic analysis, we were able to identify a series of gaps in the scientific research regarding the importance of the digitization approach as an essential tool in ensuring resilience at the level of an organisation. The main research gaps refer to the following aspects:

- *Long-term impact:* Investigating the long-term impact of digitalization on organisational resilience is an area that requires further exploration. Many studies focus on short-term outcomes, such as cost reduction or operational efficiency, but understanding the sustained benefits and challenges of digitalization over an extended period is crucial.
- *Organisational culture:* The influence of organisational culture on the adoption and successful implementation of digitalization for resilience is an area that merits attention. Exploring how cultural factors, such as risk appetite, openness to change, and collaboration, shape the adoption and effectiveness of digital tools can provide valuable insights.
- *Human factors:* While digitalization introduces automation and technological advancements, it is essential to investigate the human factors associated with digital transformation and resilience. Research could focus on topics such as the impact of job redesign, workforce upskilling, employee engagement, and psychological well-being in the context of digitalization and resilience.
- *Sector-specific analysis:* Different industries may experience varying challenges and benefits when adopting digitalization for resilience. Conducting sector-specific studies can provide a more nuanced understanding of how digital tools can enhance resilience in specific contexts such as healthcare, manufacturing, finance, or retail.
- *Ethical considerations:* The ethical implications of digitalization for organisational resilience are an emerging area of research. Investigating issues such as data privacy, cybersecurity, algorithmic bias, and the impact on employee well-being can shed light on the ethical challenges and best practices associated with digitalization.
- *Integration of digital tools:* Organisations often use multiple digital tools and platforms, leading to complexities in integration and interoperability. Exploring the challenges and opportunities associated with integrating various digital systems and platforms can help identify strategies for maximising the benefits of digitalization for resilience.
- *Organisational size and structure:* Research could investigate how organisational size and structure influence the adoption and effectiveness of digitalization for resilience. Small and medium-sized enterprises (SMEs) might face different challenges compared to larger organisations, and understanding the factors that facilitate or hinder digitization efforts in different contexts can be valuable.
- *Resilience measurement:* Developing robust frameworks and metrics to assess organisational resilience in the context of digitalization is an area that requires further attention. Research could

focus on identifying key indicators, benchmarks, and methodologies for evaluating the impact of digitization initiatives on organisational resilience.

These research gaps provide a starting point for further exploration of the importance of digitalization as a tool for organisational resilience. Conducting research in these areas can contribute to the development of more effective strategies and practices for organisations to leverage digital tools to enhance their resilience in an increasingly complex and uncertain business environment.

6. Systematic analysis

In our opinion, the research subject is particularly important in terms of the trends that characterise sustainable economic development, by identifying an infrastructure that is less sensitive to the turbulent international environment, ensuring the efforts regarding the premises of resilience. Considering that the organisation is the functional cell of any system, its resilience becomes a major objective in the foundation of all development policies.

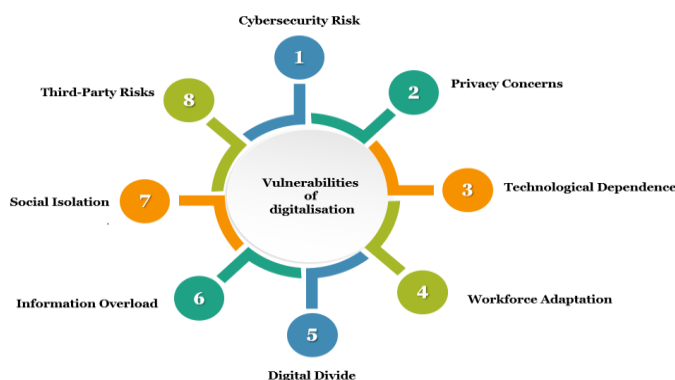
The motivation that was the basis of the foundation of the research direction and the establishment of its objectives, was represented by the multitude of advantages that we considered relevant when analysing the resilience of an organisation, through the perspective of digitalization. The systematic analysis of the articles that complied with the restrictions imposed to answer the studied research problem, highlighted a series of gaps regarding the research directions. The importance of the intensification of efforts to approach and develop these gaps, we consider to be based on the following arguments that justify the opportunity of using digitization in the growth resilience at the level of an organisation:

- *Enhanced Agility*: Digitalization enables organisations to quickly adapt and respond to changes in the market. By leveraging digital tools and technologies, companies can streamline their operations, automate processes, and make data-driven decisions in real time. This agility allows organisations to stay ahead of the competition and respond effectively to unforeseen challenges.
- *Improved Operational Efficiency*: Digitalization helps optimise various aspects of organisational processes, leading to improved operational efficiency. By automating repetitive tasks, implementing digital workflows, and leveraging advanced analytics, businesses can eliminate bottlenecks, reduce errors, and enhance productivity. This efficiency enables organisations to allocate resources effectively, respond to disruptions, and maintain continuity even during challenging times.
- *Enhanced Customer Experience*: Digitalization empowers organisations to deliver superior customer experiences. By leveraging digital platforms, businesses can provide personalised, seamless, and convenient interactions across various touchpoints. From online shopping to self-service portals and AI-powered chatbots, digital tools enhance customer satisfaction, engagement, and loyalty. This customer-centric approach helps organisations build resilience by adapting to changing customer preferences and expectations.
- *Effective Data Management and Insights*: Digitalization enables organisations to collect, store, and analyse vast amounts of data. By leveraging advanced analytics and artificial intelligence, businesses can derive valuable insights and make informed decisions. These data-driven insights help organisations identify emerging trends, anticipate market shifts, and mitigate risks. The ability to harness data effectively is crucial for organisational resilience as it enables proactive decision-making and strategic planning.
- *Robust Communication and Collaboration*: Digitalization facilitates seamless communication and collaboration within organisations and with external stakeholders. Through digital tools such as video conferencing, project management platforms, and collaborative document sharing, teams can work together effectively regardless of geographical location. This connectivity enables organisations to maintain continuity, coordinate responses, and foster innovation, even in challenging circumstances.

- **Business Continuity and Disaster Recovery:** Digitalization plays a critical role in ensuring business continuity and effective disaster recovery. By adopting cloud computing, organisations can securely store data, applications, and infrastructure, enabling swift recovery in case of disruptions. Digital tools also enable remote work capabilities, allowing employees to continue operations during crises such as pandemics or natural disasters. These measures enhance organisational resilience by minimising downtime and ensuring the availability of critical resources.

While digitalization brings numerous advantages and opportunities, it also comes with certain disadvantages reflected by the vulnerabilities that refer to weaknesses or areas of exposure within digital systems and processes that can be exploited by malicious actors or lead to unintended consequences. In figure no. 12 are presented some common disadvantages associated with digitalization.

Figure 10: The main disadvantages associated with digitalization



Source: Authors' own processing

Digitalization increases the risk of cyber threats such as hacking, data breaches, identity theft, and malware attacks. As more information and processes move online, organisations and individuals must invest in robust cybersecurity measures to protect sensitive data.

Regarding privacy concerns, digitalization often involves the collection, storage, and analysis of vast amounts of personal data and private data of the company. This raises concerns about privacy and the potential misuse or unauthorised access to sensitive information. Maintaining data privacy and ensuring compliance with regulations like the General Data Protection Regulation (GDPR) can be challenging.

Digitalization relies heavily on technology infrastructure and connectivity. Any disruptions, such as power outages, network failures, or hardware malfunctions, can significantly impact operations and productivity. Organisations must have backup systems and contingency plans to minimise the risk of downtime.

The digital transformation of industries and workplaces can result in job displacement and require employees to acquire new skills. Some individuals may struggle to adapt to the digital era, leading to unemployment or job insecurity. Reskilling and upskilling initiatives are essential to help workers navigate the changing job landscape.

Not everyone has equal access to digital technologies and the internet, leading to a digital divide. Socioeconomic factors, geographic location, and infrastructure limitations can prevent certain communities or individuals from fully benefiting from digitalization. This can exacerbate existing inequalities and create a knowledge gap between digitally literate and non-literate individuals. This aspect can affect the success of digital business if the potential customers do not have access to digital platforms.

The digital age has brought an overwhelming amount of information, leading to information overload. With vast amounts of data available, it can be challenging to filter, verify, and extract relevant and accurate information. This can hinder decision-making and productivity if not managed effectively.

Increased reliance on digital communication can lead to reduced face-to-face interactions and social isolation. Online interactions may lack the nuances and personal connections of in-person communication, impacting relationships, mental well-being, and social cohesion, which can also affect the performance of an organisation.

Organisations often rely on third-party vendors, suppliers, or service providers for various digital services, such as cloud computing or software development. However, these third parties may introduce vulnerabilities if they have weak security practices or inadequate safeguards in place. Proper due diligence, contractual agreements, and regular security audits of third-party vendors are crucial to manage this vulnerability.

Digitalization vulnerabilities also include social engineering attacks, where attackers manipulate individuals to gain unauthorised access or obtain sensitive information. Techniques such as phishing emails, impersonation, or pretexting can trick individuals into revealing passwords or other confidential information. Raising awareness about social engineering tactics and implementing security training programs can help reduce the risk of falling victim to such attacks.

Digitalization involves complex supply chains that may include hardware components, software libraries, or third-party integrations. Compromised or tampered components in the supply chain can introduce vulnerabilities into the final digital product. Organisations need to ensure supply chain security, perform thorough security assessments, and establish trusted relationships with suppliers to mitigate these risks.

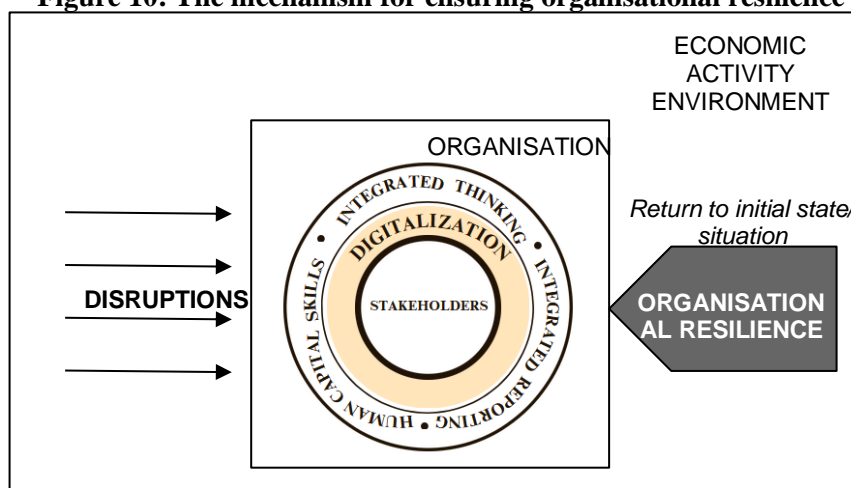
Addressing digitalization vulnerabilities requires a multi-layered approach, including robust security practices, regular monitoring and testing, employee awareness and training, and staying informed about the latest threats and best practices in cybersecurity.

Analysing the results of the systematic analysis, we can say that research on the use of digitalization in ensuring organisational resilience is still insufficiently addressed and in-depth. Thus, as we suggested by identifying the main approach gaps and outlining future research directions, the topic of the present paper is of particular topicality and importance, an idea also supported by the numerous international organisations that finance scientific research articles on this topic.

Digitalization serves as a powerful tool for organisational resilience, as highlighted by the bibliometric analysis. It empowers businesses to adapt quickly, improve efficiency, enhance customer experiences, make data-driven decisions, foster collaboration, and ensure business continuity.

The figure below is a representation of our proposed strategy that any organisation should follow to ensure resilience through digitization. It places stakeholders in the centre and it will always be facilitated by an integrated mentality, based on innovation at the level of all dimensions of a business. Business management should focus on supporting and continuously developing the capabilities and skills of the human capital involved in the business environment, by providing training and attracting, retaining and motivating talent.

Figure 10: The mechanism for ensuring organisational resilience



Source: Authors' own processing

Stakeholders, after all, regardless of the category/group they belong to, are the key to the success of any company. Their knowledge of digital tools and processes has a significant impact on organisational resilience and, ultimately, on organisational success. In addition, the process of restoring the initial situation (or returning to the trajectory from which the organisation was disrupted) is only possible by adopting a robust framework characterised by the existence of a system for measuring and reporting the level of digitalization in relation to a benchmark.

In conclusion, by embracing digitalization, organisations can navigate uncertainties, mitigate risks, and thrive in an ever-changing environment. But it is also important to note that there are multiple vulnerabilities that exist, and that they can be mitigated or managed with appropriate measures, policies, and awareness. The overall impact of digitalization depends on how organisations navigate and address these challenges.

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