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SCM and SME: achieving competitive advantage through improving supply chain

ULS I MSP: ostvarivanje komeptativne prednosti unapređivanjem lanaca snabdevanja

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Abstract

This paper presents a comprehensive review of the evolving landscape of supply chain management (SCM) for small and medium-sized enterprises (SMEs), focusing on strategies for gaining a competitive advantage. The study highlights the significant impact of the COVID-19 pandemic and geopolitical challenges on global supply chains, necessitating a shift towards more resilient and adaptable systems. Key areas explored include supply chain risk management (SCRM), where proactive risk mitigation strategies help SMEs address vulnerabilities, and the adoption of digital technologies such as cloud computing, big data, and blockchain, which have become essential for supply chain optimization. The research also underscores the role of green supply chain management (GSCM) in improving sustainability and operational efficiency. A model is proposed that encourages continuous evaluation and feedback to drive improvements in logistics, product quality, and market share. The findings suggest that SMEs must embrace innovation, digitalization, and sustainability to thrive in an increasingly complex business environment. This review provides insights into how SMEs can leverage these factors to build resilient supply chains and sustain long-term competitiveness.
Keywords: *Industry 4.0, SCM, SME, risk, innovation*

Sažetak

Ovaj pregledni rad analizira transformacioni uticaj pandemije COVID-19 i geopolitičkih događaja na upravljanje lancem snabdevanja za mala i srednja preduzeća MSP. Naglašavajući potrebu za strateškom procenom, istraživanje ističe važnost otpornosti u oblikovanju praksi lanca snabdevanja. Upravljanje rizicima lanca snabdevanja (URS) pojavljuje se kao ključni element, fokusiran na smanjenje ranjivosti i proaktivno umanjivanje rizika. Istraživanje otkriva uticaj veličine preduzeća na zrelost URS-a, prikazujući da veća MSP usvajaju sofisticirane pristupe radi poboljšanja sposobnosti upravljanja rizicima. Ispituju se DLS, ističući pragmatično usvajanje tehnologija poput informacionih komunikacija, velikih podataka, računarstva u oblaku i blokčejna od strane MSP. Ekološki aspekti unutar upravljanja zelenim/održivim lancem snabdevanja ilustruju pozitivan uticaj odgovornih praksi na ukupnu performansu MSP-a. Stremljenje ka konkurentske prednosti podstiče kontinuiranu procenu i poboljšanje u deljenju tržišnog udela, kvaliteta proizvoda, efikasnosti proizvodnje i logistici. Petlja povratnih informacija postaje ključan alat za MSP-ove, pomažući u evaluaciji trenutnih praksi, optimizaciji resursa i implementaciji inovativnih strategija.
Ključne reči: *industrija 4.0, ULS, MSP, rizik, inovacije*

1. Introduction

A key factor in the longer-term survival of globalized markets is the competitiveness of small and medium enterprises. Small and medium sized enterprises do not determine their competitiveness on the basis of size or country of origin, because they can build a solid competitive position in spite of the presence of big companies across the same market. The company's business environment is characterised by complexity, quick technological growth and continuous change (Durst & Zieba, 2020). The pandemic and the complicated geo-political situations around the World have made these environments even more unstable (Foli et al., 2022). As a result of the latest developments, the pace at which new technologies are being adopted has also been increasing significantly.These developments and their consequences are particularly relevant to the supply chain. (Zeiringer et

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al., 2022). Research interest in supply chain management has surged since COVID-19, yet understanding of the topic, particularly concerning small- and medium-sized enterprises (SMEs), remains limited and requires further exploration. This knowledge gap underscores the need for more research efforts to address the unique challenges faced by SMEs in supply chain management (Ferreira De Araújo Lima et al., 2020). The pandemic-induced supply chain disruptions underscore the imperative for a substantial reconsideration of supply chain design and structure. It's evident that the current landscape necessitates a significant overhaul to ensure resilience and adaptability in the face of future challenges (McMaster et al., 2020).

Small and medium sized enterprises have a key role to play in almost all economies, as they contribute significantly to economic growth, job creation, and innovation. Their agility and adaptability are particularly vital in navigating the complexities of evolving markets and supply chains. (Đorđević et al., 2023). Small and medium enterprises make up 99 % of all businesses in the EU, as stated by the European Commission. Based on two criteria, specifically: the number of employees and the total revenue or financial statements, small and medium enterprises are defined in EU Recommendation 2003/01361. Micro businesses are those with fewer than 10 employees and revenue under two million EUR; small businesses have less than 50 employees and revenue below 10 million EUR; while medium-sized businesses employ fewer than 250 people and have revenue less than 50 million EUR.

Given their significant economic importance globally, small and medium-sized enterprises also wield considerable influence within supply chains. Similar to larger corporations, small and medium-sized enterprises need to adjust their business practices, including supply chains, to effectively address current and future challenges. However, implementing new strategies, approaches, or technologies poses greater difficulties for small and medium-sized enterprises compared to larger enterprises (Temel & Durst, 2021).

The aim of this paper is to make comprehensive and extensive analysis of current literature regarding different topics about supply chain management and small medium enterprises and try to give solutions how can small and medium enterprises achieve competitive advantage through improving their supply chain. We will also showcase how did COVID-19 pandemic change landscape of supply chain management, talk about risk management in supply chain and especially focus how it impacts small and medium enterprises. Not only did COVID-19 change landscape of supply chain management but introduction of AI and digitalization also drastically changed the way supply chains and small and medium enterprises operate nowadays.
As guidelines for research, this paper deals with four main research issues:
RQ1: How did COVID-19 change landscape of supply chain management?
RQ2: How does supply chain chain risk management impact innovative performances in SME?
RQ3: How does digitalization of supply chain impact performances of SME?
RQ4: How does green supply chain management improve performances and sustainability of SME?

Four main sections, excluding the introduction and conclusion sections, are included in this paper. Firstly, more detailed explanations are given of the research methodology. The results of the review process will then be presented.

2. Methodology

2.1. Review process

In order to do complete adequate literature review KoBSON and Google Schoolar were used. Search and download of scientific articles on supply chain management, supply chain risk management, green supply chain management, small and medium enterprises began the review. Subsequently, duplicate articles have been eliminated. In order to identify those articles that deal with the subjects concerned for systematic review, a detailed screening process has been carried out. Literature sources that were deemed not relevant have been ignored.

2.2. Literature eligibility criteria

For the review, consideration has been given to articles published between 2013 and 2023. All articles are published in respected scientific and peer reviewed journals. In these articles, the main topics are as follows: Supply Chain Management; Supply Chain Risk Management; Green Supply Chain Management; Small and Medium Enterprises; Digitalization; Sustainability.

Furthermore, articles involved in the review process are not taken into account, nor are those published in journals engaged in predatory practices. Most scientific journals primarily focus on supply chain, management, SMEs, digitalization, and sustainability. The reference section for specific literature sources is provided below in section “References”.

2.3. Data collection, search and study selection

Initially, articles were sought using Google Scholar. They were then acquired via KoBSON or directly from journal archives, based on their title and abstract if they were accessible. During this process, scrutiny was applied to determine if articles or conferences were labeled as predatory. Articles meeting review criteria were downloaded and stored on the author's personal computer. Duplicates have been eliminated, and articles were examined. Those not aligned with the review paper's objective were excluded from further consideration. Articles containing data on supply chain management, risk management in the supply chain, green supply chain management, small and medium-sized enterprises, digitalization, and sustainability were prioritized. The primary aim of the review is to address four key questions and offer guidance as outlined in the report's introduction.

3. Review results

3.1. Qualitative analysis

The Fourth Industrial Revolution ushered in a new era of entrepreneurship Qualitative results

The supply chain disturbances resulting from the pandemic highlight the necessity for business decision-makers to reassess and reformulate their supply chain strategies to address both present and future challenges, while also ensuring alignment with recent developments (Miroudot, 2020). RETHINKING AND RESHAPING SUPPLY CHAIN PRACTICES

In order to enhance the robustness of production networks, it has been proposed to reorganize global supply chains by making them more concise, locally focused, or even more expansive. To bolster resilience, this restructuring may involve diversifying sourcing strategies, leveraging digital technologies, and fostering closer collaborations with suppliers and partners. (Coveri et al., 2020). Alternative policy objectives, distinct from risk management, might motivate certain proposed solutions, like reshoring or diversifying production away from China. These strategies may stem from broader economic or geopolitical considerations rather than solely focusing on mitigating supply chain risks. Additionally, they could entail significant implications for global trade dynamics and regional economic development (Evenett, 2020). RESILIENCE

The economic downturn sparked by COVID-19 differs from the trade crisis experienced during the Great Financial Crisis of 2008 to 2009, as it primarily affects sectors reliant on human movement rather than intricate value chains. These sectors, which do not heavily rely on extensive supply networks, have been particularly hard hit by the pandemic-induced crisis. Furthermore, the impact of COVID-19 on these sectors underscores the vulnerability of economies to disruptions in human mobility, necessitating novel strategies for resilience and recovery. (Benz et al., 2020) When China implemented a lockdown in January, concerns initially arose regarding potential disruptions to global manufacturing value chains due to delayed deliveries of essential inputs from China. Promptly, several reports addressing the vulnerability of international supply chains and the risks associated with production in China were released (Braw, 2020). RISK MITIGATATION and RETHINKING AND RESHAPING SUPPLY CHAIN PRACTICES

Governments are facing significant pressure to demonstrate that they are addressing the vulnerabilities exposed in global value chains (GVCs) by the COVID-19 pandemic. However, focusing solely on previously examined solutions creates an analytical gap, which could be perilous as it neglects potential new strategies or approaches needed to address current challenges effectively. In essence, it warns against relying solely on past solutions and emphasizes the importance of considering innovative approaches to tackle the vulnerabilities in global supply chains (Strange, 2020). RISK MANAGEMENT

Relationship between risk management strategies and the Just in Time (JiT) approach commonly used in business operations. It suggests that companies often invest in risk management alongside JiT practices, aiming to minimize inventory and streamline production processes throughout the value chain. Cisco's supply chain management is cited as an example, where the company balances resilience and efficiency by determining optimal inventory levels. Essentially, it highlights how companies seek to manage risks while maintaining operational efficiency by carefully managing inventory levels, as demonstrated by Cisco's approach (Miklovic & Witty, 2010). RISK MANAGEMENT

Supply Chain Risk Management has been defined in various ways within literature. Essentially, Supply Chain Risk Management involves the implementation of strategies aimed at minimizing vulnerability to risks within the supply chain. In other words, Supply Chain Risk Management encompasses the practices and processes designed to identify, assess, and mitigate risks that could potentially disrupt or negatively impact the supply chain operations. (Wieland & Wallenburg, 2012). Supply Chain Risk Management as encompassing the stages of risk identification, assessment, treatment, and monitoring, mirroring the typical phases of risk management. In essence, SCRM involves identifying potential risks, evaluating their impact, implementing measures to address them, and continuously monitoring the situation to ensure effective risk mitigation within the supply chain (Fan & Stevenson, 2018). Purpose of Supply Chain Risk Management, which is to diminish vulnerability within the supply chain by engaging and collaborating with partners. Supply Chain Risk Management involves identifying potential risk sources and implementing appropriate strategies to address them effectively. In essence, it emphasizes the proactive approach of Supply Chain Risk Management in safeguarding the supply chain against various risks through collaborative efforts and strategic interventions.. (Vaughan & Vaughan, 2001) RISK MANAGEMENT

Scholars have categorized supply chain risks into several dimensions (Chara & Zerin, 2021). Including internal or external factors (Birkel & Hartmann, 2020) source or outcome-based risks (Schiele et al., 2021) probability or severity assessments (Majumdar et al., 2021) and distinctions between macro and micro-level risks.(Ho et al., 2015) among others. These categorizations help to provide a comprehensive framework for understanding and managing the diverse array of risks that can affect supply chain operations. RISK MANAGEMENT

Innovation plays a crucial role in ensuring the sustainability and ongoing growth of companies, regardless of their size. For small and medium-sized enterprises specifically, sustaining innovation activities is vital for enhancing business performance and remaining competitive in the market. By consistently investing in innovation, small and medium enterprises can adapt to evolving market dynamics, seize new opportunities, and foster long-term success in today's competitive landscape. (Wadho & Chaudhry, 2018). Experts recommend that

SMEs focus on nurturing their internal capabilities, such as identifying organizational potential and continually enhancing skills and knowledge, to leverage their strengths effectively in the competitive business environment. This approach enables small and medium enterprises to build resilience, adaptability, and sustainable growth over time (Prajogo & Ahmed, 2006). INNOVATION

Small companies are employing various activities and methodologies to enhance their internal capacity for innovation performance. For instance, some small and medium enterprises are self-educating through hands-on activities to build their capabilities and foster innovation within their organizations (Tamer Cavusgil et al., 2003) To assist them in achieving a higher level of innovation performance and enhancing their ability to innovate, small and medium enterprises can leverage external resources such as partnerships, collaborations, and knowledge-sharing networks. (Li et al., 2010) This underscores the significance for SMEs to carefully assess their internal environment, allowing them to select suitable and low-risk activities aimed at boosting innovation performance. Such strategic decision-making enables SMEs to effectively allocate resources and minimize potential risks while fostering innovation within their organizations. INNOVATION

Research confirms that the size of a firm influences the maturity of its supply chain risk management practices, suggesting that larger small and medium enterprises are more likely to adopt advanced supply chain risk management approaches, potentially enhancing their risk-handling capabilities. This size-related effect underscores the significance of resource optimization, particularly for smaller companies, emphasizing the importance of judicious resource allocation in SCRM efforts to mitigate risks effectively. (Parast & Subramanian, 2021) The results of this study reveal that while the increase in Supply Chain Risk Management (SCRM) capacity does influence innovation performance, the effect was not statistically significant. Nevertheless, enhanced SCRM capabilities can aid SMEs in more effectively managing risks associated with innovation, potentially impacting company performance in terms of innovation. This highlights the importance of integrating robust supply chain risk management practices to support and enhance overall innovation endeavors within small and medium enterprises. RESOURCE MANAGEMENT

Understanding the relationship between supplier performance certification (SPC) and innovation performance holds significant management implications for decision-makers within small and medium enterprises and supply chain managers operating in such contexts. This knowledge equips them to make informed decisions regarding resource utilization, enabling them to effectively leverage available resources to drive innovation and enhance overall performance within their organizations. The study demonstrates a clear correlation between the maturity of supply chain risk management and innovation performance. By doing so, it not only contributes to the advancement of research in supply chain risk management within small and medium enterprises, an area still in its infancy, but also offers empirical evidence supporting this relationship (Zeiringer et al., 2022). RESOURCE MANAGEMENT

Scholars have explored the concept of digitally connected supply chains, emphasizing the utilization of IT systems and innovative technologies to enhance integration and flexibility. This approach aims to improve customer service and foster sustainable organizational performance, aligning with the principles of Industry 4.0. In response, scholars have developed frameworks to guide the digital transformation of supply chains, facilitating the adoption of advanced technologies and practices in the modern business landscape (Shao et al., 2021) Additionally, other researchers have devised a framework, drawing upon existing literature, to establish digital supply chains .This framework focuses on three primary areas: digitalization, supply chain management, and technology implementation, providing a structured approach to guide organizations in effectively transitioning towards digitalized supply chain operations (Büyüközkan & Göçer, 2018). DIGITALIZATION

While digital supply chains offer anticipated benefits such as agility, seamless integration of supply chain activities, intelligent optimization, transparency, and holistic decision-making, many companies encounter challenges in implementing these strategies in practice, often resulting in failure during the application process. The difficulties are often associated with the considerable costs involved in adopting and integrating digital technologies into existing supply chain operations. (Ellis & Santagate, 2015) Moreover, a lack of empirical and theoretical research on digital supply chain implementation has been reported (Ageron et al., 2020). DIGITALIZATION

The influence of Industry 4.0 on manufacturing, production lines, sales, and customer delivery, coupled with the acceleration of digital transformation in supply chains, has been profound. Larger enterprises, with fewer constraints compared to small and medium enterprises, can more readily adapt their supply chain processes to capitalize on these advancements. (Radanliev et al., 2019) Nevertheless, small and medium enterprises hold significant economic importance and serve as crucial partners for large multinational manufacturers in offering products and services. Unlike larger corporations, smaller firms often lack the essential knowledge and resources needed to digitalize their operations, particularly within the intricate supply chains characteristic of Industry 4.0.(Pradabwong et al., 2017) This predicament may result in SMEs experiencing setbacks if they fail to undergo transformation and embrace the latest technologies necessary for adapting to digital supply chains. Additionally, SMEs frequently face financial constraints that hinder their ability to invest in modern technologies, despite sharing the same imperative as larger firms to efficiently allocate and manage resources for sustained effectiveness (Wong et al., 2020). INDUSTRY 4.0

Despite the potential benefits of a wider array of technologies, SMEs may face barriers such as cost constraints and limited expertise, limiting their adoption to these four key technologies in their digital supply chain initiatives. n the literature, eleven technologies have been recognized within the domain of Digital Supply Chains (DSC). However, it seems that only four technologies—ICT, big data, cloud computing, and blockchain—are commonly adopted by SMEs (Menon & Shah, 2020). INDUSTRY 4.0

While the majority of environmental, social, and governance research predominantly emphasizes the financial advantages of environmental management for large corporations, both large companies and small and medium enterprises face mounting pressure to demonstrate social responsibility. However, studies conducted by green supply chain management indicate an overall enhancement in the performance of small and medium enterprises attributable to environmental management benefits. (Bu et al., 2020). The areas of green sustainable supply chain management, such as sourcing, supplier selection, product design, and logistics, have garnered considerable attention from both practitioners and researchers. By incorporating core concepts and critical processes of green supply chain management , major organizations in the manufacturing sector have significantly improved their sustainability efforts. (Zhu & Sarkis, 2006) ENVIRONMENTAL MANAGEMENT

Businesses strive to minimize their environmental footprint and improve economic performance by mitigating their negative impact on the environment. Researchers in green supply chain management have integrated ecological principles into traditional supply chain management, fostering environmentally-friendly practices and facilitating sustainable growth (Mangla et al., 2014). SUSTAINABILITY

To mitigate greenhouse gas emissions and enhance environmental performance, businesses have expanded their focus to include processes throughout the entire supply chain. Researchers have examined various green supply chain management practices, including internal environmental management, green purchasing, collaboration with customers, investment recovery, and ecodesign, as potential strategies for achieving these objectives (Lee, 2009). ENVIRONMENTAL MANAGEMENT

Internal Environmental Management (IEM) involves operational activities and policies aimed at fostering environmentally-friendly processes and products within a company. It is categorized under Green Supply Chain Management (GSCM) practice categories, emphasizing its role in promoting sustainability and reducing environmental impact throughout the organization's operations. (Sarwar et al., 2021) Manufacturing companies recognize the necessity of Internal Environmental Management (IEM) due to market demands for eco-friendliness. Institutional pressures drive firms to implement IEM practices, leading to improved external green supply chain management practices. A prominent trend in the manufacturing sector involves certifying companies with internationally recognized green standards, such as ISO 14001, to showcase their readiness in addressing environmental concerns (Ociepa-Kubicka et al., 2021). ENVIRONMENTAL MANAGEMENT

Small and medium enterprises play a significant role in the international value chains of large companies. Despite their size, SMEs cannot and should not evade responsibility for the environmental impact of their activities. (Mathiyazhagan et al., 2014). Large corporations actively transfer their knowledge and resources to their suppliers to enhance environmental capabilities or encourage their partners to transfer their capabilities to each other. Furthermore, small firms have different strategies from medium-sized firms because they have simpler structures and more limited resources (Parrilli et al., 2023). SUSTAINABILITY

Numerous strategies have been identified to enhance resilience, with particular emphasis on increasing flexibility, establishing redundancies, fostering collaborative supply chains, and enhancing supplier adaptability. These approaches are recognized as crucial elements in bolstering the resilience of supply chains against disruptions (Tukamuhabwa et al., 2015). The adoption of traditional risk management practices from individual organizations to the broader supply chain context would lead to a considerable expansion of the list of risk sources. This transfer highlights the interconnected nature of supply chains and the need to consider risks that transcend individual organizational boundaries. (Wieland & Durach, 2021). The ripple effect, a particular area of supply chain disruption, poses significant challenges to the resilience of these systems. Research on the ripple effect focuses on analyzing how disturbances propagate through the system, impacting its resilience and efficiency. In recent years, this phenomenon, well-established in practice, has garnered substantial research attention, reflecting its importance in understanding and managing supply chain disruptions (Dolgui & Ivanov, 2021).

Over the past two decades, there has been significant momentum in the development of supply chain management, including the emergence of concepts such as Green Supply Chains and Sustainable Supply Chain Implementation. This progress spans from the middle of the Third Industrial Revolution to the present Fourth Industrial Revolution, reflecting a continuous evolution towards more environmentally conscious and sustainable practices within the industry. (Balon, 2020). Green Supply Chain Management (GSCM) has gained prominence due to the growing concerns about global warming, depletion of nonrenewable resources, and environmental pollution. In response, manufacturers are compelled to adopt sustainable practices and prioritize green initiatives throughout their supply chains. To date, only a limited number of studies have offered clear empirical evidence regarding the tangible impact of green initiatives on business performance, especially within the European manufacturing context. Additionally, there remains a lack

of understanding regarding the actual effects of potential drivers for the implementation of these initiatives. This highlights a need for further research to assess the effectiveness and implications of green supply chain management practices in the manufacturing sector. (Micheli et al., 2020).

A dedicated research area, known as digital transformation, has emerged to analyze the role of digital technologies in both business and society, recognizing digital technology as a transformative force. This development has also impacted the supply chain, a network comprising multiple companies and actors, with many new digital tools being integrated into supply chain management systems. he emergence of the digital supply chain represents a novel concept that introduces several changes and enhancements to traditional supply chains, facilitated by the effective utilization of digital technology in supply chain management (Farajpour et al., 2022).

Furthermore, in Table 1. a concise overview of the analyzed studies is presented.

Table 1. Overview of the analyzed studies

SCM/SME	Reference/Author	Year published	Description
Rethinking and reshaping SCM	Miroudot	2020	Decision making
Resilience	Evenett	2020	Policy
	Coveri, Cozza, Nascia, & Zanfei	2020	Production network
	Tukamuhabwa, Stevenson, Busby, & Zorzini	2015	Flexibility
Risk mitigation	Benz, Gonzales, & Mourougane	2020	Manufacturing global value chain
	Braw	2020	International supply chain
	Wieland & Durach	2021	Risk management process
	Dolgui & Ivanov	2021	Ripple effect
Risk management	Strange	2020	Vulnerabilities in international SC
	Miklovic & Witty	2010	Efficiency
	Fan & Stevenson	2018	Identification and assessment
	Vaughan & Vaughan	2011	Collaboration of SC pateners
	Chara & Zerin	2021	Categories of SC risks
	Birkel & Hartmann	2020	Internal and external risks
	Schiele, Hoffmann, & Koerber	2020	Outcome
	Majumdar, Sinha, Shaw, & Mathiyazhagan	2020	Micro and macro aspect of SCM
Innovation	Ho, Zheng, Yildiz, & Talluri	2015	Role of SME in SCM
	Wadho & Chaudhry	2018	Innovative activities
	Prajogo & Ahmed	2016	Developing skills
	Tamer Cavusgil & Calantone	2013	Enhancing SME capabilities
	Li, Ye, & Sun	2016	Increase innovation performance
Resource management	Parast & Subramanian	2021	SCRM
	Zeiringer	2021	SCRM in SME
Digitalization	Shao, Liu, Li, Chaudhry, & Yue	2021	Digital transformation
	Büyüközkan & Göçer	2018	Digital supply chain
	Ellis & Santagate	2018	Intelligent optimization
	Ageron, Bentahar, & Gunasekaran	2021	Implementation process of DSC
Industry 4.0	Radanliev, De Roure, Nicolescu, & Huth	2019	Industry 4.0 impact on supply chain
	Pradabwong, Braziotis, Tannock, & Pawar	2017	Supply chain as complex part of Industry 4.0
	Wong, Leong, Hew, Tan, & Ooi	2020	Investing in new technologies
	Menon & Shah	2020	Impact of blockhain, big data, cloudcomputing and IoT on supply chain
Environmental management	Bu, Dang, Wang, & Liu	2020	Green supply chain
	Zhu & Sarkis	2016	Critical process of green supply chain
	Lee	2019	Eco-designed supply chain
	Micheli, Cagno, Mustillo, & Trianni	2020	Performance
Sustainability	Mangla, Kumar, & Barua	2014	Environmental effort
	Sarwar, Zafar, Hamza, & Qadir	2021	Eco-friendly processes
	Ociepa-Kubicka, Deska, & Ociepa	2020	Green standards

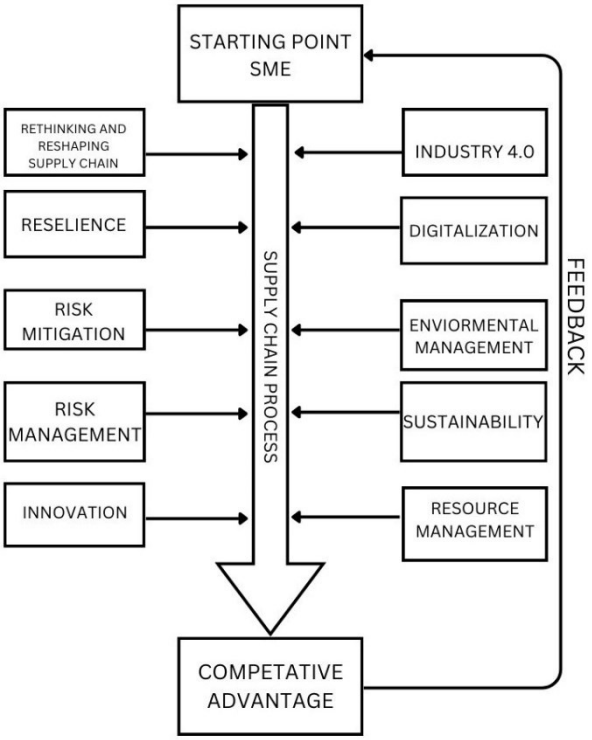
Source: Authors

3.2. Developed model

Based on the thorough literature analysis a model for improving supply chain with goal of achieving competative advantage model is presented in the figure 1. The model presented is generic and applicable to a wide range of small and medium-sized enterprises. According to Figure 1, improving and optimizing their supply chains can be viewed as a strategy for small and medium enterprises to gain competitive advantage, a notion supported by the quality results outlined in the paperThe objective was to create a versatile and adaptable model applicable to enterprises across various industries and business environments. The findings from the Review Results Section corroborate and enhance this model. The enhancement of supply chain processes relies on continuous feedback and aims to bolster the

competitiveness of small and medium enterprises in the market.

Figure 1. Model for improving supply chain



Source: Authors

In order to achieve certain competative advantage on the market small and medium enterprises need to see improvements in at least one of the following categories: larger market share, high quality product, production efficiency or improved logistics. Although it's sign on improving competative advantage even if only one of the mentioned categories has improved it means there is still a lot of room for improvement and growth. That's why feedback is the key. It helps small and medium enterprises with their overall evaluation of current practices, help them optimize their given resources, make room for further improvements and also implement new strategies.

On the model presented in this paper we can see that there are many factors that have huge impact on supply chain. Those factors can be external factors or internal factors. External factors such as global pandemic caused by COVID-19 or complicated geo-political situations around globe, force small and medium enterprises to rethink and reshape their current supply chain practices. By doing so they greatly improve their resilience which is a key factor for surviving in today's market. Small and medium enterprises need to be resilient and agile when it comes to facing difficulties and overcoming them. Risk mitigation and risk management go hand in hand. It is of course impossible to negate risk but with help of supply chain risk management goal of small and medium enterprises should be to reduce it as much as possible. Trying to be proactive and determine future events greatly help. As a result of being proactive in regard to current activities on the market we have innovative performances of small and medium enterprises. Those innovative performances can be seen in few different categories such as resource management, digitalization and implementing Industry 4.0 technologies and also focusing on environmental management and sustainability.

4. Discussion

The pandemic-induced supply chain disruptions have underscored the necessity for a profound reevaluation of supply chain design and structure. Decision-makers in companies are urged to overhaul practices, ensuring alignment with recent developments. Proposals to reshape global supply chains for increased resilience, including shorter, more domestic, or diversified structures, have surfaced. However, motivations behind certain solutions, such as reshoring or diversifying production away from China, may be influenced by policy agendas rather than solely risk mitigation. Unlike the 2008 financial crisis, COVID-19 triggered an economic crisis rather than a trade crisis, particularly impacting service industries not relying on extensive value chains. Early concerns about disruptions in manufacturing global value chains from China led to warnings about supply chain vulnerabilities. The substantial impact of COVID-19 on the supply chain management landscape is evident through the results of a comprehensive analysis of existing literature pertaining to the first research question.

Supply chain risk management involves activities such as reducing vulnerability, identifying, assessing, treating, and monitoring risks. Scholars have proposed different risk categories, including internal/external, source/outcome, probability/severity, and macro/micro, among others. The influence of firm size on supply chain risk management maturity reveals larger small and medium enterprises adopting more sophisticated approaches, enhancing risk management capabilities. Despite a statistically insignificant finding, improved Supply chain risk management abilities impact innovation performance, emphasizing the link between the two. Our second research question regarding supply chain chain risk management impact on innovative performances in small and medium enterprises can be confirmed too. Supply chain risk management improves innovative performances in small and medium enterprises.

Information systems, innovative technologies, and frameworks associated with digitalization, supply chain management, and technology implementation constitute integral components of a digital supply chain. Despite expected advantages, practical challenges and a lack of research on DSC implementation are noted. Industry 4.0's impact on manufacturing and the digital transformation's challenges for small and medium enterprises. are emphasized. small and medium enterprises., vital for economies, may struggle with digitalization due to knowledge gaps and financial constraints. Within Digital supply chains, small and medium enterprises. utilize fewer technologies than identified in the literature, focusing on information communications technologies, big data, cloud computing, and blockchain. Based on research question 3, how digitalization of supply chain

impact performances of small and medium enterprises., we can confidently say that introduction of digitalization in field of supply chain boosts performances of SME.

Environmental social, governance research often centers on large corporations, but Green/Sustainable Supply Chain Management (GSCM) studies show small and medium enterprises. benefitting from environmental management, improving overall performance. Efforts to reduce environmental impact while achieving economic performance are noted, with GSCM practices integrated into traditional closed-loop supply chain management. These practices include internal environmental management, green purchasing, cooperation with customers, investment recovery, and eco-design. Internal environmental management (IEM) within GSCM categories involves functional activities and policies supporting environment-friendly processes and products. Market pressures and institutional forces drive companies to adopt IEM, aligning with internationally-recognized green standards like ISO 14001. SMEs, integral to multinational corporations' global value chains, are urged not to evade responsibility for environmental impacts. Large corporations transfer knowledge and resources to enhance environmental capabilities, recognizing differences in strategies between small and medium-sized enterprises. Our last research question, how does green supply chain management improve performances and sustainability of SME, gives us an answer that by introducing different policies in field of supply chain management we can not only improve our positive impact on environment but also boost economic performance of SME.

5. Conclusion

In conclusion, the dynamic and complex landscape of supply chain management for small and medium enterprises (SMEs) requires continual adaptation to external and internal factors. The unprecedented disruptions caused by the global pandemic and other geopolitical events emphasize the need for a strategic reevaluation of supply chain practices. Resilience emerges as a pivotal factor for survival in today's market, prompting SMEs to rethink and reshape their approaches. The integration of Supply Chain Risk Management (SCRM) becomes crucial in navigating uncertainties, with a focus on vulnerability reduction and a proactive stance in risk mitigation. The findings in this model underscore the impact of firm size on SCRM maturity, revealing larger SMEs adopting sophisticated approaches to enhance risk management capabilities.

The discussion extends to the realm of digital supply chains (DSC), emphasizing the role of information systems and innovative technologies. While SMEs face challenges in DSC implementation, focusing on technologies like information communications, big data, cloud computing, and blockchain showcases a pragmatic approach to digitalization. Environmental social governance (ESG) considerations, particularly within Green/Sustainable Supply Chain Management (GSCM), highlight the positive impact of environmental management on SMEs' overall performance. The incorporation of internal environmental management (IEM) aligns with internationally-recognized green standards, reinforcing the importance of responsible practices.

Furthermore, the pursuit of competitive advantage compels SMEs to continually assess and improve key aspects such as market share, product quality, production efficiency, and logistics. The feedback loop emerges as a critical tool, aiding SMEs in evaluating current practices, optimizing resources, and implementing new strategies. As SMEs navigate external challenges and internal complexities, embracing innovation becomes a hallmark of success. Innovations in resource management, digitalization, and sustainability contribute to the resilience and growth of SMEs in an ever-evolving market. The presented model serves as a valuable guide for SMEs seeking to enhance their supply chain practices, adapt to changing landscapes, and thrive in the competitive business environment.

The primary limitation of this document is the absence of survey data regarding how businesses navigate unpredictable markets, alongside the potential exclusion of empirical data on domestic enterprises. Nonetheless, the review paper offers a succinct overview of pertinent issues concerning small and medium enterprises. Additionally, the findings are incorporated into a comprehensive supply chain improvement model. Despite these limitations, this study serves as a robust foundation for future research endeavors in the realm of supply chain management and small and medium enterprises.

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