CHALLENGES OF DIGITAL TRANSFORMATION IN THE VUCA ERA ON MICRO, SMALL AND MEDIUM ENTERPRISES: A SYSTEMATIC REVIEW OF THE LITERATURE

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Abstract
The era of Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) has created a business environment that is very dynamic and full of uncertainty. This has an impact on the digital transformation carried out by Micro, Small and Medium Enterprises (MSMEs) so that they remain competitive and sustainable. However, MSMEs face significant challenges in adopting digital technology in this VUCA era. This research uses the Systematic Literature Review (*SLR*) methodology. By exploring relevant literature, this research aims to explore and synthesize the digital transformation challenges faced by MSMEs in the VUCA era based on existing literature. This SLR also explores potential strategies and solutions to overcome these challenges in the context of the VUCA era, such as flexible technology adoption, continuous digital skills training, and strategic collaboration and partnerships. The findings from this SLR provide valuable insights for policy makers, MSME support organizations, and academics to facilitate MSME digital transformation more effectively and sustainably in the challenging VUCA era.
Keywords: Digital Transformation, Volatility, Uncertainty, Complexity, and Ambiguity (VUCA), Micro, Small and Medium Enterprises (MSMEs)

1.0 Introduction

1.1 Definition and importance of digital transformation for MSMEs in the VUCA era

Digital transformation for Micro, Small and Medium Enterprises (MSMEs) in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) era refers to the process of adopting and integrating digital technology into all operational aspects and business models of MSMEs. Micro, small and medium enterprises (MSMEs) are defined differently in each literature according to several institutions or agencies and even laws. Based on Law No. 20 of 2008 concerning MSMEs, MSMEs are defined as follows:

1. Micro business is a form of productive business owned by an individual or individual business entity, which meets the criteria for a Micro Business as regulated in this law.

2. Small Business is a type of productive economic business that stands alone, carried out by individuals or business entities that are not subsidiaries or branches of Medium Businesses or Large Businesses, and meets the criteria for being a Small Business as regulated in this law.

3. Medium Enterprises are a form of productive economic enterprise that stands alone, carried out by individuals or business entities that are not subsidiaries or branches of Small Businesses or Large Businesses, and have net assets or annual sales proceeds that are in accordance with the provisions stipulated in the statutory regulations. this law. Digital transformation consists of digitizing production processes, marketing, sales, customer service, as well as data and information management.

Digital transformation is very important for MSMEs in the VUCA era. With digital transformation, MSMEs will get several benefits such as:

1. Increase Efficiency and Productivity. Technology and digitalization enable MSMEs to automate processes and increase operational efficiency, thereby saving time and resources.

2. Expanding Market Reach. By utilizing digital platforms such as *e-commerce* and social media, MSMEs can reach a wider market and penetrate geographical boundaries.

3. Improve Customer Experience. Digital technology enables MSMEs to interact with customers more effectively, provide better services, and increase customer satisfaction.

4. Adapt to Change. In the VUCA era, change occurs quickly and is difficult to predict. Digital transformation allows MSMEs to adapt quickly to changes in consumer preferences, market trends and technological developments.

5. Increasing Competitiveness. By adopting digital technology, MSMEs can compete with large companies that are more digitally advanced, and take advantage of new opportunities that arise in the digital era.

6. Business Sustainability and Growth. In the VUCA era full of uncertainty, digital transformation is the key to the long-term sustainability and growth of MSME businesses.

Therefore, digital transformation is an urgent need for MSMEs to remain relevant, competitive and sustainable in the VUCA era. Despite facing significant challenges, MSMEs that successfully carry out digital transformation will have a competitive advantage and be able to take advantage of new opportunities in the digital era.

Research by Rupeika-Apoga & Petrovska (2022) states that strategies that can be implemented are overcoming IT security problems, developing digital skills,

overcoming retention of change, and adopting digital and environmentally friendly transformation.

1.2   Aim and scope of the systematic literature review

The aim of this systematic literature review is to explore and synthesize the digital transformation challenges faced by Micro, Small and Medium Enterprises (MSMEs) in the context of the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) era.

Specifically, this literature review aims to:

1. Identify and categorize various challenges faced by MSMEs in the digital transformation process in the VUCA era based on existing literature.
2. Analyze the causal factors and implications of these challenges for the success of MSME digital transformation.
3. Explore potential strategies and solutions that have been proposed in the literature to effectively address these challenges.
4. Highlights gaps in existing literature and points out areas that require further research regarding the challenges of digital transformation of MSMEs in the VUCA era.

The scope of this literature review includes literature from various sources such as academic journals, research reports, books and articles related to digital transformation, MSMEs, as well as challenges and strategies in the VUCA era. This review will include empirical, conceptual, and theoretical studies relevant to the topic, from both national and international perspectives.

In this literature review, the VUCA era will be discussed as a context that represents a dynamic, uncertain, complex and ambiguous business environment, in which MSMEs must operate and carry out digital transformation. The challenges that will be identified and analyzed may include aspects of infrastructure and technology, human resources, organization and business processes, as well as external factors such as regulations and competition.

Thus, this systematic literature review aims to provide a comprehensive understanding of the challenges of digital transformation of MSMEs in the VUCA era, as well as map strategies and solutions that have been proposed in the literature. It is hoped that the results of this review will provide valuable insights for policy makers, MSME support organizations, academics and practitioners in facilitating a more effective and sustainable digital transformation process for MSMEs in the VUCA era.

2.0   Literature Review Methodology

In conducting a systematic literature review on the challenges of digital transformation for MSMEs in the VUCA era, the methodology used is the *Systematic Literature Review (SLR) methodology* . Systematic Literature Review Methodology is a systematic methodology for collecting, critically evaluating, integrating, and presenting findings from various research studies regarding specific research questions or topics of interest (López et al., 2021). SLR provides a methodological framework for identifying and synthesizing qualitative evidence, ensuring that the research process is consistent and follows methodological conventions (Mays & Pope, 2000;, Mays & Pope, 1995). The use of SLR methodology involves a systematic search through several databases with strict inclusion and exclusion criteria, followed by a detailed data selection and extraction process as follows:

2.1   Study Inclusion and Exclusion Criteria
Inclusion criteria:

1. Studies that discuss challenges, barriers or obstacles in the digital transformation process for MSMEs.
2. Studies that focus on the context of the VUCA era (Volatility, Uncertainty, Complexity, and Ambiguity) or a business environment that is dynamic and full of uncertainty.
3. Studies published in academic journals, conference proceedings, books, or research reports that can be accessed online.
4. Study written in English.
5. Studies published in the 2019-2024 time period.

Exclusion criteria:

1. Studies that only discuss digital transformation in general without a specific focus on MSMEs or the VUCA era.
2. Studies that focus on certain sectors or industries that are not relevant to MSMEs.
3. Studies that are only available in abstract or summary form without access to the full text.
4. Studies written in languages other than English.

2.2   Literature Search Strategy

A literature search will be conducted in several major academic databases such as:

1. Scopus
2. Web of Science
3. ScienceDirect
4. EBSCOhost

5. Google Scholar

Keywords that will be used in the literature search include a combination of the following terms: "digital transformation", "MSMEs", "small and medium enterprises", "challenges", "barriers", "obstacles", "VUCA era", " volatility", "uncertainty", "complexity", "ambiguity".

A search will be conducted for literature published in the 2019-2024 timeframe to ensure that the studies discussed are still relevant to the current context. Retrieved articles were then screened and evaluated to determine whether they were eligible for inclusion in the review using inclusion and exclusion criteria. The inclusion criteria in this systematic literature review are as follows: 1) scientific work, 2) written in English, 3) published in a peer-reviewed journal, 4) research results contain elements of training and restructuring, 5) fully accessible.

2.3   Data Selection and Extraction Process

After the literature search is carried out, the selection process will be carried out through several stages:

1. Initial screening based on title and abstract to eliminate irrelevant studies.

2. Eligibility assessment based on inclusion and exclusion criteria after reading the full text.

3. Extraction of data from studies that meet the criteria, including information such as:

1) Identified digital transformation challenges
2) Context and characteristics of the MSMEs studied
3) Research methodology used
4) Key findings and proposed strategies/solutions
5) Limitations and suggestions for further research

The extracted data will be systematically organized in a suitable format to facilitate further analysis and synthesis. The data selection and extraction process will be carried out by a minimum of two researchers independently to minimize bias and ensure consistency in the application of inclusion and exclusion criteria.

3.0   Challenges of digital transformation
3.1   Infrastructure and Technology Challenges

1. Adaptation to rapid technological developments. In the VUCA era, digital technology is developing very quickly, such as the emergence of new technologies such as Artificial Intelligence, Internet of Things, and Blockchain. MSMEs often face

challenges in adapting quickly to technological developments. Failure to adapt can cause MSMEs to fall behind and lose their competitive advantage.

2. Limited access and costs of digital technology. Many MSMEs have limited financial resources to invest in adequate digital technology infrastructure. Access to infrastructure such as high-speed internet networks, sophisticated hardware and software is often limited in certain areas. The costs of implementing and maintaining digital technology can be a heavy burden for MSMEs with limited budgets.

3. Data security and privacy issues in the digital era. With increasing digital activity, MSMEs face greater risks regarding data security and information privacy. Cyber threats such as hacking, data theft and malware attacks can endanger the data security of MSMEs and their customers. MSMEs often lack the resources and expertise to implement adequate cybersecurity measures. Data security breaches can lead to loss of customer trust and serious legal consequences.

These infrastructure and technology challenges are significant obstacles for MSMEs in carrying out digital transformation in the VUCA era. To overcome these challenges, efforts such as providing affordable infrastructure, cybersecurity training, and financial support for the adoption of new technologies are needed.

3.2 Human Resources Challenges

1. Lack of digital skills and resistance to change. Many MSME employees, especially more senior ones, have limited digital skills and are less familiar with new technologies. This creates a digital skills gap that can hinder the digital transformation process. In addition, resistance to change often arises among employees who are used to traditional ways of working. Changing established mindsets and work habits can be a big challenge for MSMEs.

2. Lack of training and digital skills development. MSMEs often have limited resources to provide training and digital skills development to their employees. Lack of formal training can slow down the process of digital technology adoption and hinder the effective use of technology. In addition, digital skills need to be continuously updated along with rapid technological developments in the VUCA era.

3. Management of limited resources under conditions of uncertainty. MSMEs tend to have limited human resources, both in terms of number of employees and available expertise. In the uncertain conditions of the VUCA era, it becomes a challenge to manage human resources efficiently and allocate them appropriately. Rapid changes in market demand and fluctuating economic conditions can make planning and managing human resources difficult.

This human resource challenge can be a major obstacle in the digital transformation of MSMEs in the VUCA era. To overcome this, efforts are needed such as ongoing

digital skills training programs, effective communication to reduce resistance to change, as well as flexible and adaptive human resource management strategies.

3.3   Organizational Challenges and Business Processes

1. Lack of digital transformation strategy and planning. Many MSMEs carry out digital transformation in an ad-hoc or partial manner, without a comprehensive strategy and plan. A lack of understanding of the benefits and implications of digital transformation can lead to an unstructured approach. Without a clear strategy, MSMEs can face the risk of ineffective technology investments and failure to achieve transformation goals.

2. Integration and interoperability of legacy systems and processes with digital. MSMEs often have established business systems and processes before adopting digital technology. Integrating legacy systems and processes with new digital technologies can be a significant technical and organizational challenge. Interoperability and compatibility issues between old and new systems can hinder data flow and operational efficiency.

3. Changes in organizational culture and leadership style are required. Digital transformation not only involves changes in technology, but also changes in organizational culture and leadership style. An organizational culture that is rigid and resistant to change can hinder the effective adoption of digital technology. A leadership style that is authoritarian and does not support innovation can also be an obstacle in the transformation process. MSMEs need to develop a culture that is open to change, collaborative and learning-oriented.

These organizational and business process challenges can become major obstacles in the digital transformation of MSMEs in the VUCA era. To overcome this, efforts such as mature strategic planning, effective change management, and leadership that supports and encourages sustainable adoption of digital technology are needed.

3.4   External Challenges

1. Dynamic government regulations and policies related to digitalization. MSMEs must face dynamic changes in regulations and government policies related to digitalization, such as data privacy regulations, electronic commerce and digital taxation. Rapid regulatory changes can create uncertainty and compliance challenges for MSMEs. Lack of understanding of new regulations and their impact on business operations can hinder MSMEs' digital transformation.

2. Competition with large companies that are more advanced digitally. In the VUCA era, MSMEs must compete with large companies that have greater resources to invest in digital technology. Large companies often have advantages in terms of digital infrastructure, human resource skills, and the ability to adopt new technologies more

quickly. This competition can make it difficult for MSMEs to maintain their market share and competitive advantage.

3. Evolving cyber threats and cyber attacks. As digital activity increases, MSMEs are becoming more vulnerable to cyber threats such as hacking, data theft and malware attacks. Cyberattacks can cause operational disruption, loss of critical data, and loss of customer trust. MSMEs often lack the resources and expertise to protect their systems from ever-evolving cyber threats.

These external challenges can become significant obstacles for MSMEs in carrying out digital transformation in the VUCA era. To overcome this, efforts are needed such as compliance with regulations, increasing cyber security, as well as collaboration and partnerships with other parties to increase competitiveness.

4.0   Strategies and Solutions to Overcome Challenges

1. Adopt flexible and adaptable technology. In the dynamic VUCA era, MSMEs need to adopt digital technology that is flexible and can be easily adapted to changing business needs. Cloud computing technology, mobile applications and scalable digital platforms can help MSMEs adapt more quickly to change. An "agile" approach to technology adoption can also help MSMEs respond quickly to changes in the market and consumer preferences.

2. Ongoing digital skills training and capacity building. MSMEs need to invest in training and digital skills development programs for their employees on an ongoing basis. This training includes not only the use of new technology, but also critical thinking skills, problem solving, and adaptation to change. Developing the internal capacity of MSMEs in terms of human resources, business processes and organizational culture is also important to support digital transformation.

3. Phased approach and priority scale in digital transformation. MSMEs with limited resources can adopt a gradual approach to digital transformation, prioritizing the most critical areas or business processes first. This can help MSMEs better manage risks and resources, as well as enable adaptation and learning from each stage of the transformation. Priority scale is also important to ensure that technology investment is carried out strategically and in line with MSME business goals.

4. Collaboration and strategic partnerships with other stakeholders. MSMEs can take advantage of collaboration and strategic partnerships with other stakeholders, such as technology companies, research institutions, governments and MSME support organizations. This partnership can help MSMEs access the technology, expertise and resources needed for digital transformation. Collaboration can also encourage knowledge exchange, share best practices, and increase the collective competitiveness of MSMEs.

These strategies and solutions are designed to help MSMEs overcome the challenges of digital transformation in the VUCA era in a more effective and sustainable way. A flexible approach, capacity building, clear priorities, and strategic collaboration and partnerships can facilitate MSMEs in navigating a dynamic and complex business landscape.

5.0   Journal Publication

The next step of this systematic literature review is to examine journals that publish articles related to artificial intelligence in human resource management. Almost all journals in the search strategy have quartiles between Q1, Q2, and Q3 and Q4. The most dominant scope of the journal is management. And the rest is spread across journals such as health, industry, sustainability and education. The journal used is also indexed by Web of Science and Scopus, where the data cannot be doubted.

Table 1. Journals and number of publications

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
1	Susanti, Evi; Mulyanti, Rita Yuni; Wati, Lela Nurlaela (2023)	MSMEs performance and competitive advantage : Evidence from women's MSMEs in Indonesia	Competitive advantages of MSME women on performance, digital transformation, limitations of innovation, performance of MSME women in developing countries	Using a sample of 246 female MSMEs, data analysis using structural equations (SEM).	Innovation and competitive advantage can improve the performance of women's MSMEs and play a mediating role in the digital transformation of women's MSMEs in Indonesia	The findings of this study show that the performance of women-owned MSMEs is not directly impacted by digital transformation
2	Anatan,	Micro,	Fourth	101 MSMEs	A	

N o	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
	Lina; Nur. (2023)	Small, and Medium Enterprises' Readiness for Digital Transformation in Indonesia.	Industrial Revolution (IR4), finance, human resources, marketing, operations, administration and organizational management, digitalization readiness, types of knowledge transfer activities	were selected through convenience sampling and collected via an online survey	theoretical contribution to the strategic management literature to fill the lack of studies on the e-readiness of MSMEs in developing countries and a practical contribution to assist decision makers in formulating strategies to support MSMEs	
3	Saffira Annisa Bening 1; Dachyar, Muhammad 1 ; Pratama, Novandra Rhezza 1 ; Park, Jaehyun 2	E-Commerce Technologies Adoption Strategy Selection in Indonesian SMEs	Criteria that influence the adoption of E-commerce by Indonesian retail SMEs, the best strategy using the	Using a combination of DEMATEL-based Analytic Network Process (ANP) and Complex Proportiona	This research shows important criteria for adopting E-commerce technology in retail SMEs, IT Knowledge,	This research shows important criteria for adopting E-commerce technology in retail SMEs, IT Knowledge,

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
	; Chang, Younghoon 3 (2023)	Using the Decision-Makers, Technological Organizational and Environmental (DTOE) Framework	Decision Maker, Technology, Organization and Environment (DTOE) Framework and the Diffusion of Innovation (DOI) theory.	l Assessment (COPRAS) methods to determine the best alternative strategy to increase E-commerce adoption among SMEs.	Innovation, and Decision Maker Complexity. Additionally, Information Technology (IT) and E-commerce skills development or training were identified as the best strategies to increase E-commerce adoption	Innovation, and Decision Maker Complexity.
4	Enjang Pera Irawan; Suwandi Sumartias; Priyatna, Soeganda; Agus Rahmat (2022)	A Review on Digitalization of CSR during the COVID-19 Pandemic in Indonesia: Opportunities and Challenges	CSR before and during the COVID-19 Pandemic in Indonesia, Opportunities and Challenges on CSR Digitalization during the COVID-19 Pandemic,	Study of literature	CSR digitalization practices aim to empower micro, small and medium enterprises (MSMEs) to master digital competencies and	Introducing a new paradigm to industry players regarding the importance of CSR digitalization and future opportunities due to

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
					improve the economic conditions of those affected by the pandemic.	changes in people's behavior after the pandemic.
5	Pranoto (2024)	BUSINESS DIGITAL TRANSFORMATION IN THE PERSPECTIVE OF BUSINESS COMPETITION LAW	Digital transformation, digital technology, business efficiency and provided companies with a new perspective on profit management	A normative and descriptive study approach.	The digital transformation enhanced business efficiency and provided companies with a new perspective on profit management. The prevalence of digital competition became apparent through the widespread establishment of marketplaces and platform-based businesses,	The emergence of digital business transformation has had various impacts, including both favorable and unfavorable outcomes, so it requires careful consideration

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
					which are aimed at providing consumers with attractive bargains in order to achieve their intended profit objectives.	
6	Khananda, Rr Woeri Vive; Setyawati, Sri Murni; Purnomo, Ratno. (2024)	The Role of VUCA Intelligence in Padang Restaurant Entrepreneurs: Improving Resilience to Maintain Performance During Crisis	Factors that influence entrepreneur performance during a crisis. Strategic management literature regarding the psychological theory of entrepreneurship through the explanation of psychological factors that	The sample consisted of 224 Padang restaurant entrepreneurs. Using SEM-AMOS to analyze data and test configurations for further discussion.	Entrepreneurial resilience has a positive effect on entrepreneurial performance. VUCA intelligence significantly moderates the relationship between resilience and entrepreneurial performance. Based on	This research provides an explanation of how Padang restaurant entrepreneurs make attributions for events and use their intelligence to overcome emerging crises.

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
			influence the resilience of entrepreneurs		configuration testing, educated female entrepreneurs have significantly more VUCA intelligence than male entrepreneurs	
7	Gati Gayatri; I Gede Nyoman Mindra Jaya; Vience Mutiara Rumata. (2023)	The Indonesian Digital Workforce Gaps in 2021–2025	(1) digital and internet infrastructure development; (2) a digital transformation roadmap in strategic sectors, such as public services, social services, education, health, commerce, industry, and broadcasting; (3) the developmen	This study applies Bayesian analysis techniques that are well designed for relatively small sample sizes and the possibility of missing data values	IT programming/developer/administrator/systems analyst and IT web designer/developer will remain popular job roles during this time.	This study addresses the gap between digital labor supply and demand in 2021–2025 by conducting Bayesian analysis of 2018 Central Bureau of Statistics data and 2020 ILO ICT job demand estimates

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
			t of a national data center; (4) the development of digitally skilled human resources; and (5) digital regulatory and funding schemes			
8	Windi Dwi Nanda; Widianingsih, Ida; Ahmad Zaini Miftah (2023)	The Linkage of Digital Transformation and Tourism Development Policies in Indonesia from 1879–2022: Trends and Implications for the Future	Digital Transformation, Tourism Information Center (TIC) and Tourism Information System (TIS), ICT Infrastructure Development in Tourism Areas, Sustainable development	The method uses content analysis by analyzing policy texts quantitatively (number of policies in a certain time period) and qualitatively (topics and content). The dataset analyzed contains 87 digital transformat	There is a link between digital transformation policies and tourism development, especially tourism development policies towards digital transformation.	Digital transformation and tourism development policies, especially tourism development policies towards digital transformation, reached the highest figures compared to previous years. The emergence

N o	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
				ion and tourism development policies with various policy forms.		of policies that will be more supportive in the coming years and provide opportunities to establish policies regarding the use of technology in tourism management.
9	Kurniawan; Maulana, Agung; Iskandar, Yusuf. (2023)	The Effect of Technology Adaptation and Government Financial Support on Sustainable Performance of MSMEs during the	Technology Adaptation, Preferential Policies of Banks, Financial Support from the Government, Innovative Financial Practice, Perceived Policy Effectiveness,	Data were analyzed using PLS-SEM techniques via SMARTPLS version 3 software. Samples were selected and collected through purposive sampling	MSMEs' agility in adapting technology and innovative financial practices has had a significant impact on their sustainable financial performance during the COVID-19	Research with this title specifically explores the context of the COVID-19 pandemic and its impact on MSME performance

No	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
		COVID-19 Pandemic	Sustainable Financial Performance,	by setting criteria and distributing them online and offline	pandemic. Innovative financial practices also positively moderate the relationship between technology adaptation and sustainable financial performance	
10	Rupeika-Apoga, Ramona; Petrovska, Kristine (2022)	Barriers to Sustainable Digital Transformation in Micro-, Small-, and Medium-Sized Enterprises	Sustainable digital transformation, Barriers to Transformation	The study is based on a representative survey of 425 Latvian MSMEs conducted in spring 2021. Researchers combined the MSME survey with qualitative comparative analysis	It found the biggest obstacles for MSMEs were IT security issues and a lack of specialists in the external labor market. Some barriers vary depending on company	The findings of this research can help MSME managers and owners, policy makers and practitioners understand what obstacles hinder the sustainable

N o	Researcher (Years)	Research Title	Variable	Analysis Method	Research result	Different from this research
					attributes, such as number of employees, revenue, and ability to implement digital transformation independently.	digital transformation of MSMEs.

6.0   Conclusion

This systematic literature review identifies four main categories of challenges faced by Micro, Small and Medium Enterprises (MSMEs) in carrying out digital transformation in the VUCA era (Volatility, Uncertainty, Complexity, and Ambiguity). These challenges include aspects of infrastructure and technology, human resources, organization and business processes, as well as external challenges. To overcome these challenges, several strategies and solutions have been proposed in the literature, such as flexible technology adoption, continuous digital skills training, a phased approach to transformation, and strategic collaboration and partnerships with other stakeholders.

The aim of this research is to review the literature on the challenges of digital transformation in MSMEs. First, this review aims to synthesize the literature on the challenges of digital transformation in MSMEs and examine its development over time. Second, the aim of this research is to present a conceptual framework based on the literature synthesis carried out. Therefore, a conceptual framework was developed. Future research in the domain of digital transformation challenges in MSMEs aims to examine in depth the extent of the negative impact of artificial intelligence on human resource management such as data security, privacy and ethics.

7.0   Implications for Policy Makers, MSME Organizations, and Further Research.

The findings from this literature review have important implications for policy makers, MSME support organizations, and the academic community:

1. Policy Maker: Policies and regulations are needed that support the digital transformation of MSMEs, such as fiscal incentives, provision of digital infrastructure, and digital skills training programs. Collaboration between the government, the private sector and MSME support organizations is very important to create an ecosystem that is conducive to the digital transformation of MSMEs.

2. MSME Organizations: MSMEs need to develop a comprehensive and future-oriented digital transformation strategy. Investments in digital skills training for employees, flexible technology adoption, and organizational change management are key to successful digital transformation. Collaboration and partnerships with other stakeholders can help MSMEs access the resources and expertise they need.

Further Research:

Further research is needed on best practices and case studies of digital transformation of MSMEs in various contexts and industries. Research on the impact of digital transformation on the business performance, sustainability and growth of MSMEs can provide valuable insights. Exploration of the role of new technologies such as Artificial Intelligence, Internet of Things, and Blockchain in the context of MSMEs is also important to research.

8.0 Limitations of the Literature Review and Future Research Directions

This literature review has several limitations, such as limited literature coverage to studies published within a certain time period and only in English. Additionally, the context of MSMEs varies widely across countries and sectors, so the findings of this review may not be completely generalizable. For future research, it is recommended to conduct more in-depth empirical studies and case studies on the challenges and strategies of digital transformation of MSMEs in specific contexts. In addition, research on the role of new technologies such as Artificial Intelligence, Internet of Things, and Blockchain in supporting the digital transformation of MSMEs is also an interesting area for further exploration.

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