

THE SUSTAINABILITY PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES (SMEs) WITHIN THE SERVICE SECTOR: A COMPREHENSIVE REVIEW.

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ABSTRACT

This comprehensive review investigates the sustainability performance of small and medium enterprises (SMEs) within the service sector, discussing the pressing need for a structured understanding of their contributions to sustainable development. Despite the growing recognition of SMEs as vital players in the service economy, their sustainability challenges and performance remain inadequately explored. Utilizing the PRISMA framework, we conducted an extensive literature search in reputable databases, which include Scopus as well as Web of Science (WoS), focusing on studies published in 2024. Our search yielded 33 relevant articles, which we systematically analyzed to identify key themes in sustainability performance. The findings are categorized into three main themes: (1) Digital Transformation & Innovation, highlighting the role of technological advancement in enhancing operational efficiency and sustainability; (2) Sustainable Practices & Corporate Social Responsibility (CSR), emphasizing the adoption of environmentally friendly practices and community engagement; and (3) Resilience, Strategy, & Competitiveness, which explores how SMEs navigate challenges as well as leverage strategies for sustainable growth. The review concludes that although SMEs are becoming more aware of the significance of sustainability, there is a significant variation in performance driven by factors such as industry type and organizational capacity. This research contributes to the academic discussion on sustainability in SMEs as well as offers practical insights for practitioners and policymakers focused on promoting sustainable practices within the service sector.

Keywords: Sustainability, Performance, Sustainable, SMEs, Service Sector

1.0 INTRODUCTION

The importance of Malaysian SMEs in the service sector towards sustainability performance is increasingly recognized as a critical component of the nation's economic and environmental strategy. Small and medium-sized enterprises (SMEs) are pivotal in driving economic growth and innovation, particularly in the service sector, which is a significant contributor to Malaysia's GDP. Malaysia's GDP grew by 5.9% in Q2 2024, up from 4.2% in Q1, with seasonally adjusted

growth at 2.9%. This growth was primarily driven by the Services, Manufacturing, and Construction sectors. The Services sector expanded by 5.9%, led by gains in Wholesale and retail trade (4.8%), Finance & insurance (10.1%), and Transportation and storage (10.5%), with seasonally adjusted growth of 3.3% (DOSM, 2024).

Kind of Economy Activity	2022	2023	2023				2024		1H 2023	1H 2024
			Q1	Q2	Q3	Q4	Q1	Q2		
Services	11.0	5.1	7.1	4.5	4.9	4.1	4.8	5.9	5.8	5.4
Manufacturing	8.1	0.7	3.2	0.1	-0.1	-0.3	1.9	4.7	1.7	3.3
Construction	5.1	6.1	7.4	6.2	7.2	3.6	11.9	17.3	6.8	14.6
Agriculture	1.3	0.7	1.4	-0.7	0.3	1.9	1.7	7.2	0.3	4.5
Mining & quarrying	3.5	0.5	1.6	-2.1	-1.1	3.5	5.7	2.7	-0.2	4.3
GDP	8.9	3.6	5.5	2.8	3.1	2.9	4.2	5.9	4.1	5.1

Source: Department of Statistics, Malaysia

Fig. Error! No text of specified style in document. Annual Percentage Change (%) of Malaysia's GDP by Kind of Economic Activity

The integration of sustainable practices within these enterprises is essential for achieving long-term economic, environmental, and social benefits. Small and Medium Enterprises (SMEs) in Malaysia's service sector play a crucial role in driving sustainability performance, particularly through digital transformation and innovation, sustainable practices, and Corporate Social Responsibility (CSR). The integration of digital technologies into CSR activities has been shown to significantly enhance the sustainable competitive performance of SMEs. This digitalization not only improves operational efficiency but also fosters a digital organizational culture that supports sustainable growth (Ahmad et al., 2023; Costa Melo et al., 2023). Digital transformation and innovation have become critical components in the service sector, particularly for SMEs, as they drive resilience and strategic competitiveness. Research by Chatterjee et al. (2021),

Gennari (2023) and Islam et al. (2023) emphasizes the essential role of SMEs in the global economy, though their ability to integrate sustainable practices remains a significant challenge. Barriers such as limited financial resources, insufficient skills, and resistance to change hinder their transition toward sustainable business models (Akinola & Obokoh, 2024; Al-Mutawa & Saeed Al Mubarak, 2024; de Jong & Wagenveld, 2024). Overcoming these challenges requires SMEs to adopt innovative and sustainable approaches that enhance both their resilience and competitiveness. The adoption of sustainable practices is increasingly tied to the integration of digital transformation and CSR initiatives. Digital technologies can significantly improve the operational efficiency and sustainability of SMEs, as demonstrated by Ahmad et al. (2023) and Sun et al. (2023). These technologies not only streamline processes but also facilitate the development of a culture that prioritizes sustainable practices. By embedding digital innovation within CSR activities, SMEs can enhance their ability to respond to market demands while contributing to long-term resilience and competitiveness (Awad & Martín-Rojas, 2023; Huang & Shen, 2024). This synergy reflects the principles of the dynamic capabilities theory, which underscores the importance of adapting to evolving environments through strategic resource management (Awad & Martín-Rojas, 2023).

The COVID-19 pandemic has underscored the importance of digital transformation and CSR in building organizational resilience. SMEs have increasingly leveraged digital technologies to strengthen CSR initiatives, enabling them to navigate uncertainty and maintain their competitive edge in dynamic markets (Awad & Martín-Rojas, 2023; Gregurec et al., 2021). Furthermore, sustainable supply chain management has been recognized as a crucial

element in improving SME performance across environmental, social, and business dimensions. In this context, CSR practices combined with digital innovation have proven to be pivotal in enhancing resilience and sustainability within SMEs. Incorporating CSR-driven strategies also fosters sustainable competitive advantages. Studies by Ay and Yilmaz (2024) and Kumar et al. (2024) indicate that CSR activities can directly enhance organizational performance by fostering a competitive edge. This advantage is further amplified when CSR efforts are integrated with digital transformation, as this combination enables SMEs to innovate and adapt more effectively to changing market dynamics (Ahmad et al., 2022; Zhang et al., 2024). In Malaysia, service sector SMEs are encouraged to adopt digital transformation strategies that align with CSR initiatives, supporting broader sustainability goals while driving economic growth (Mukhtar et al., 2023; Zahid et al., 2024). Promoting a green organizational culture and integrating ESG disclosures can also foster innovation, enabling SMEs to achieve sustainable development objectives (Mukhtar et al., 2023).

In summary, the integration of digital transformation, CSR, and sustainable practices is essential for enhancing the resilience and strategic competitiveness of SMEs in Malaysia's service sector. This holistic approach not only supports business growth but also contributes to the broader goal of sustainability.

1.1 Research Questions

Establishing Research Questions (RQs) is a fundamental step in the planning phase of any systematic literature review (SLR), as it shapes the review's approach and methodology (Kitchenham, 2007). To meet the objective of assessing and analyzing current research, this study applied the PICO framework—a tool often recommended for formulating RQs in qualitative research (Lockwood et al., 2015). PICO, representing Population, Interest, and Context, structures research questions to ensure clarity, guiding the study in formulating its three main questions.

1. How do digital transformation and innovation affect the sustainability performance of Small and Medium Enterprises (SMEs) within the service sector?
2. What impact do sustainable practices and Corporate Social Responsibility (CSR) initiatives have on the long-term sustainability of SMEs in the service sector?
3. How do resilience and strategic competitiveness influence the sustainability outcomes of SMEs in the service sector?

1.2 Research Objectives

The research objectives of this study are designed to investigate the key factors influencing the sustainability performance of Small and Medium Enterprises (SMEs) in the service sector. The following objectives have been developed to address these critical areas:

1. To examine the impact of digital transformation and innovation on the sustainability performance of SMEs in the service sector.
2. To assess the effect of sustainable practices and Corporate Social Responsibility (CSR) initiatives on the long-term sustainability of SMEs in the service sector.
3. To investigate how resilience and strategic competitiveness influence the sustainability outcomes of SMEs in the service sector.

2.0 LITERATURE REVIEW

SME sustainability in the service sector is vital for economic growth and employment yet challenging to implement. Key factors supporting SME sustainability include external support, technology, and flexible planning. Duffett et al. (2023) report that student-run marketing agencies (SRMAs) boost SME awareness and customer loyalty. Lopez-Torres et al. (2024)

find that information technology strengthens innovation and visibility. Amoah et al. (2021) show that social media helps SMEs in developing regions overcome marketing challenges, and Ebrahimi (2022) underscores adaptable strategies in renewable energy SMEs, where joint ventures and knowledge management support decision-making. Additionally, ambidextrous innovation (AI), as well as market orientation capability (MOC), are critical. Akbari et al. (2022) argue that MOC aligns resources with market insights, aiding SMEs in tourism, but warn that over-reliance may impede performance. Funding mechanisms, particularly Islamic microfinance, offer essential support, as noted by Hussein Kakembo et al. (2021). Majid et al. (2020) highlight that eco-efficiency can drive growth but also result in higher costs. Despite privacy concerns, Msomi and Kandolo (2023) and Al-Mutawa and Saeed Al Mubarak (2024) emphasize how digital finance and cloud computing improve productivity. Kusumawati (2021) notes that while these sustainability initiatives can increase turnover, they may not lead to immediate financial gains. Additionally, Alhamawndi and Almahmoud (2020) highlight the role of business incubators in Iraq in promoting sustainable entrepreneurship by supporting green initiatives, which often face financial challenges. These studies collectively emphasize that SMEs must balance market orientation, innovation, financial planning, and eco-efficiency to ensure long-term sustainability. Sustainable financing is crucial for resilience. Hussein Kakembo et al. (2021) find that Islamic microfinance fosters inclusivity in Uganda et al. (2023) emphasize digital finance and financial literacy for resource management. Stakeholder pressure and CSR are vital for SME sustainability, with Khan et al. (2024) and Ali et al. (2021) noted the impact of green practices in Pakistani SMEs, while Nasir et al. (2024) highlighted green innovation in Malaysia. Digital tools also aid sustainability, with Borcoşi et al. (2023) showing digital signatures reduce costs and Lee et al. (2021) promoting an ECF recommendation system for better digital capability. Together, these studies reveal the importance of technology, finance, and adaptable strategies for sustainable SME development.

Performance metrics play a critical role in advancing environmental sustainability in SMEs. Banelienė (2021) suggests a KPI model that includes sustainability-focused indicators across operations, aiding in tracking environmental impact. Ali et al. (2021) support this with evidence that lean and Six Sigma practices complement Banelienė's model by reducing waste and facilitating structured monitoring for sustainable growth. Ahmad et al. (2024) also link CSR digitalization to improved competitiveness in Pakistani SMEs, especially with digital-friendly organizational cultures. Türkeş (2024) adds that Romanian SMEs benefit from integrating e-marketing with sustainability and technology. Strategic tools like the Dynamic Balanced Scorecard (DBSC) enhance adaptability and innovation, as Yanine et al. (2020) explain, while Ferreira & Silva (2022) emphasize sustainability-oriented supplier selection for strengthening supply chains. Collectively, these studies advocate for digital integration, strategic tools, and performance metrics to foster sustainable SME practices. SME sustainability in developing countries faces major barriers, including political instability, corruption, and COVID-19 disruptions, as seen in Ethiopian SMEs, which need policy reform for stability (Abdissa et al., 2022). Al Junaid Industrial Group's pandemic response in the UAE HVAC industry underscores the value of strategic marketing and adaptive planning for resilience (Al Suwaidi & Ahmad, 2021). Green dynamic capabilities (GDC) are vital for SME agility, as GDC fosters creativity to meet market shifts, as illustrated by Thai SMEs (Kiranantawat & Ahmad, 2023). International growth via digital platforms, like Malaysian SMEs' co-creation with service providers, aids sustainability abroad (Mohamad et al., 2022). Additionally, the need for transparent reporting is evident, as financial cooperatives disclose more than SMEs, suggesting regulations could improve SME transparency (Yakar & Çalıyurt, 2021).

In summary, sustainability in service-sector SMEs depends on adaptability, digital transformation, green innovation, and alternative financing. Strategic capabilities like MOC, AI, and digital finance enable SMEs to meet market demands. At the same time, green practices and CSR contribute to social and environmental objectives, helping SMEs build resilience and compete globally despite eco-efficiency costs in developing regions.

3.0 MATERIAL AND METHODS

Systematic literature reviews often utilize the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, referred to as enhancing transparency and consistency in the review process (Page et al., 2021). Using PRISMA guidelines offers a structured way to identify, screen, and select studies, emphasizing randomized studies for reduced bias. This analysis, drawing from Scopus as well as WoS, guarantees an extensive and credible synthesis through four stages: identification, screening, eligibility, and data extraction.

3.1 Identification

This study followed key steps in the systematic review process, starting with the selection of keywords and related terms from dictionaries, thesauri, and prior research, then creating search strings for Scopus as well as WoS, yielding 1110 relevant publications (see Table 1).

Table 1. The search string

Scopus	TITLE-ABS-KEY ((sustainability OR sustainable) AND (service* OR tertiary) AND (sme* OR "mid-sized") AND (performance* OR outcome* OR impact OR achievement*)) AND PUBYEAR > 2022 AND PUBYEAR < 2025 AND PUBYEAR = 2024 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))
Date of Access: October 2024	
WoS	(sustainability OR sustainable) AND (service* OR tertiary) AND (sme* OR "mid-sized") AND (performance* OR outcome* OR impact OR achievement*) (Topic) and 2024 or 2023 (Publication Years) and Article (Document Types) and English (Languages) and Article (Document Types) and Article (Document Types) and English (Languages) and 2024 (Publication Years)
Date of Access: October 2024	

3.2 Screening

In the screening phase, studies were assessed for relevance to the research questions using topic keywords, and duplicates were omitted. At first, 1,016 publications were excluded, resulting in 94 papers selected for further review relying on the inclusion criteria, as outlined in Table 2. The review focused on literature types likely to provide insights, excluding sources like book series, book reviews, meta-syntheses, meta-analyses, conference proceedings, and chapters. Only English-language publications from 2024 were included, with 21 additional papers removed as duplicates.

Table 2. The selection criterion of searching.

Criterion	Inclusion	Exclusion
Language	English	Non- English
Timeline	2024	<2024
Literature Type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

3.3 Eligibility

In the third stage, which is called the eligibility phase, 66 articles were shortlisted for further review. At this stage, each article's titles as well as main content were carefully reviewed to

ensure they met the inclusion criteria and aligned with the objectives of the current research. As a result, 40 articles were excluded due to factors such as being outside the field of interest, lacking relevance in title, having abstracts irrelevant to the study's objectives, lacking full-text availability, or not empirically supported. Thus, 33 articles were retained for the next stage of review.

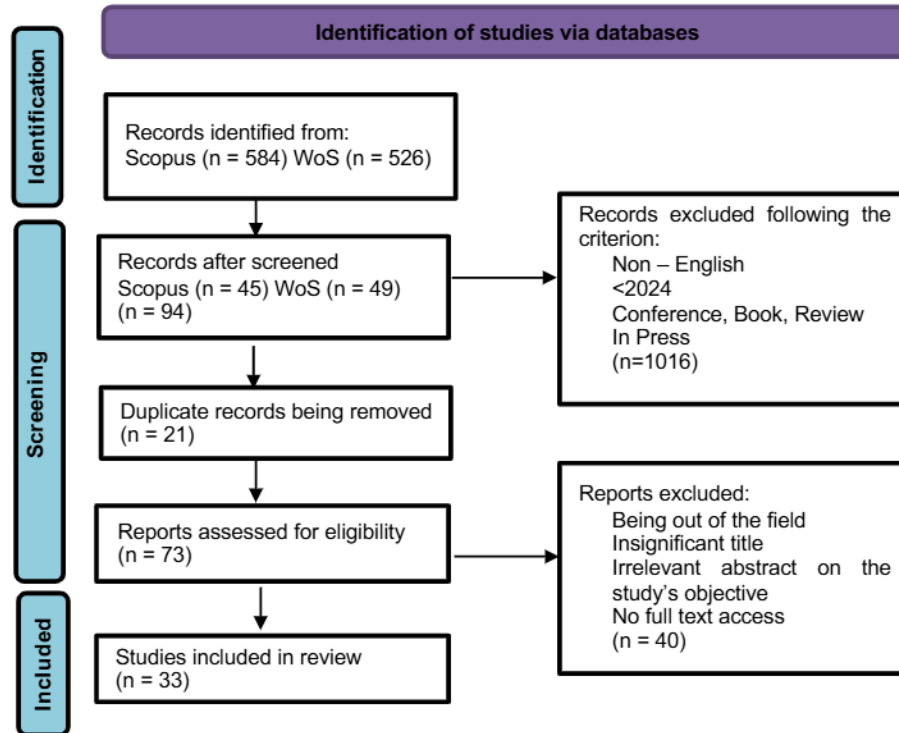


Fig. 2 Flow diagram of the suggested searching study

3.4 Data Abstraction and Analysis

This research employed an integrative analysis to combine multiple research designs, concentrating on quantitative approaches to identify relevant topics and subtopics. Data collection began with a review of 33 publications related to the study's themes. Key studies on the SMEs' sustainability performance in the service sector were examined for their methodologies and findings. The authors developed themes based on the evidence, keeping a log to document interpretations and insights. Finally, they compared findings to identify inconsistencies in theme development and discussed any conceptual disagreements among co-authors.

Table 3. Number and Details of Primary Studies Database

No	Authors	Scopus	WoS	Theme
1	(Al-Somali et al., 2024)	/	/	Digital Transformation & Innovation
2	(S. A. R. Khan et al., 2024)	/	/	Digital Transformation & Innovation
3	(Svanberg & Ståhlberg, 2024)	/	/	Sustainable Practices & CSR
4	(Restrepo-Morales et al., 2024)	/	/	Digital Transformation & Innovation
5	(Dong & Zhang, 2024)	/	/	Sustainable Practices & CSR
6	(Valdez-Juárez et al., 2024)	/	/	Digital Transformation & Innovation
7	(Ingaldi & Ulewicz, 2024)	/	/	Sustainable Practices & CSR

8	(Lapalikar et al., 2024)	/		Sustainable Practices & CSR
9	(Saiful-Haq et al., 2024)	/		Resilience, Strategy & Competitiveness
10	(Moraga et al., 2024)	/		Resilience, Strategy & Competitiveness
11	(Yildiz et al., 2024)	/		Sustainable Practices & CSR
12	(Manta & Mansi, 2024)	/	/	Resilience, Strategy & Competitiveness
13	(Carreira et al., 2024)	/		Sustainable Practices & CSR
14	(Asiri et al., 2024)	/	/	Digital Transformation & Innovation
15	(Gazi et al., 2024)	/	/	Sustainable Practices & CSR
16	(Shava, 2024)	/	/	Resilience, Strategy & Competitiveness
17	(Creazza et al., 2024)	/		Sustainable Practices & CSR
18	(Gomes et al., 2024)	/		Sustainable Practices & CSR
19	(Metaxas, 2024)	/		Resilience, Strategy & Competitiveness
20	(Islam Bhuiyan et al., 2024)	/		Digital Transformation & Innovation
21	(Al-Mutawa & Saeed Al Mubarak, 2024)	/		Digital Transformation & Innovation
22	(Sang et al., 2024)	/		Sustainable Practices & CSR
23	(F. A. Khan et al., 2024)	/		Resilience, Strategy & Competitiveness
24	(Ramadan et al., 2024)	/		Resilience, Strategy & Competitiveness
25	(Michalakopoulou et al., 2024)	/		Digital Transformation & Innovation
26	(da Silva & Marques Cardoso, 2024)	/		Resilience, Strategy & Competitiveness
27	(Elfaki & Ahmed, 2024)	/	/	Resilience, Strategy & Competitiveness
28	(Suchek et al., 2024)	/		Sustainable Practices & CSR
29	(Borrero & Yousafzai, 2024)	/	/	Sustainable Practices & CSR
30	(A. N. Khan et al., 2024)	/	/	Digital Transformation & Innovation
31	(M Ahmad et al., 2024)	/		Sustainable Practices & CSR
32	(Türkeş, 2024)	/	/	Digital Transformation & Innovation
33	(Tohari et al., 2024)	/		Resilience, Strategy & Competitiveness

4.0 QUALITY OF APPRAISAL

In line with the guidelines outlined by Kitchenham (2007), once we had identified primary studies, we proceeded to evaluate the research quality discussed as well as contrast them quantitatively. In this research, we employed the quality assessment criteria by Anas Abouzahra et al. (2020), which include six quality attributes specific to our systematic literature review.

5.0 RESULT AND FINDING

Table 4 presents the performance assessment results for the chosen primary studies. The table outlines a quality assessment method where reviewers independently evaluate studies using set criteria, scoring each as 'Yes' (Y), 'Partly' (P), or 'No' (N). Scores are combined, and only studies with a total score above 3.0 proceed to the next stage, ensuring a basic quality standard for further analysis. The assessment criteria are rated using a three-point scale: 'Yes' (Y) receives a score of 1 if the criterion is fully met, 'Partly' (P) gets 0.5 if it is only partially fulfilled and has certain limitations, and 'No' (N) is assigned a score of 0 if the criterion is not met at all. Below is the quality assessment table for the selected papers:

- QA1. Is the purpose of the study clearly stated?
- QA2. Is the interest and the usefulness of the work clearly presented?
- QA3. Is the study methodology clearly established?
- QA4. Are the concepts of the approach clearly defined?
- QA5. Is the work compared and measured with other similar work?

- QA6. Are the limitations of the work clearly mentioned?

Table 4. Assessment Performance

Data	QA1	QA2	QA3	QA4	QA5	QA6	Total Mark	(%)
PS1	Y	Y	Y	Y	P	Y	5.5	91.67%
PS2	Y	Y	Y	Y	P	Y	5.5	91.67%
PS3	Y	Y	P	Y	P	P	4.5	75%
PS4	Y	Y	Y	Y	P	Y	5.5	91.67%
PS5	Y	Y	Y	Y	P	P	5	83.33%
PS6	Y	Y	Y	Y	Y	Y	6	100%
PS7	Y	Y	Y	Y	P	P	5	83.33%
PS8	Y	Y	Y	Y	P	P	5	83.30%
PS9	Y	Y	Y	Y	P	Y	5.5	91.70%
PS10	Y	Y	Y	Y	P	P	5	83.30%
PS11	Y	Y	Y	Y	P	Y	5.5	91.70%
PS12	Y	Y	Y	P	P	N	4	66.70%
PS13	Y	Y	Y	P	N	N	3.5	58.30%
PS14	Y	Y	Y	Y	Y	Y	6	100%
PS15	Y	Y	Y	Y	P	Y	5.5	91.70%
PS16	Y	Y	Y	Y	P	P	5	83.33%
PS17	Y	Y	Y	Y	Y	P	5.5	91.67%
PS18	Y	Y	Y	Y	Y	Y	6	100%
PS19	Y	Y	Y	Y	P	Y	5.5	91.67%
PS20	Y	Y	P	Y	Y	P	5	83.33%
PS21	Y	Y	Y	Y	P	Y	5.5	91.67%
PS22	Y	Y	Y	P	P	P	4.5	75%
PS23	Y	Y	Y	Y	Y	P	5.5	91.70%
PS24	Y	Y	Y	Y	Y	P	5.5	91.70%
PS25	Y	Y	Y	Y	Y	Y	6	100%
PS26	Y	Y	Y	Y	Y	Y	6	100%
PS27	Y	Y	Y	P	P	P	4.5	75%
PS28	Y	Y	Y	Y	P	P	5	83.30%
PS29	Y	Y	Y	Y	Y	Y	6	100%
PS30	Y	Y	Y	Y	Y	Y	6	100%
PS31	Y	Y	Y	Y	Y	P	5.5	91.67%
PS32	Y	Y	Y	Y	Y	P	5.5	91.67%
PS33	Y	Y	Y	Y	Y	P	5.5	91.67%

Upon reviewing the table, it is evident that most of the studies performed well in the quality assessment, with scores ranging from 4.5 to 6, indicating that they met the quality criteria. Studies such as PS6, PS14, PS18, PS25, PS26, PS29, and PS30 achieved the highest possible score of 6, demonstrating they fully met all six criteria. These studies are considered to be of the highest quality, with a clear purpose, robust methodology, well-defined concepts, relevant comparisons with other research, and acknowledgment of study limitations. The few studies with lower scores, such as PS12 (score: 4) and PS13 (score: 3.5), still met the

minimum inclusion threshold. Only studies with scores below 3.0 would be excluded. Overall, most studies are of high quality and will proceed to the next stage of the analysis.

The developed themes were revised for consistency and underwent a thorough selection process to assess relevance and validity. During the expert review, the clarity, significance, and domain relevance of each sub-theme were evaluated. Any inconsistencies were addressed through comparison and collaboration, leading to further refinement of the themes based on expert feedback. The studies were categorized into three distinct themes: (1) Digital Transformation and Innovation, (2) Sustainable Practices and CSR and (3) Resilience, Strategy, and Competitiveness.

5.1 Theme 1: Digital Transformation and Innovation

The digital transformation of SMEs in the service sector serves a substantial role in enhancing sustainability performance, especially following the COVID-19 pandemic. As per Al-Somali et al. (2024), robust cybersecurity is essential for SMEs in Saudi Arabia, as it contributes to resilience and sustainability, irrespective of cultural factors. Khan et al. (2024) discuss how blockchain technology can improve sustainable supply chain performance by integrating sustainable service quality attributes, indicating that innovative technologies are critical for meeting sustainability goals amid environmental challenges. Restrepo-Morales et al. (2024) highlight that the financial difficulties caused by the pandemic have spurred innovation among Latin American SMEs, showing that crises can drive transformative actions that enhance competitiveness. Moreover, Valdez-Juárez et al. (2024) investigate the complex relationship between financial performance as well as digital transformation, finding that while digital initiatives foster innovation, their immediate financial gains may be limited without a clear alignment with sustainability objectives. Asiri et al. (2024) emphasize the value of sustainable technologies like big data analytics in improving business performance, pointing out that perceived ease of use, as well as management support, are crucial for successful adoption.

Research by Bhuiyan et al. (2024) highlights the benefits of digital transformation for SMEs like improved operational efficiency as well as customer service, which lead to reduced operational and marketing costs. This transformation allows SMEs to concentrate on value-adding activities and foster technological innovation despite facing challenges in technology adoption and strategic planning. Al-Mutawa and Saeed Al Mubarak (2024) further emphasize the importance of cloud computing in improving sustainability, with factors like cost reduction and reliability significantly affecting performance. Similarly, Michalakopoulou et al. (2024) note that even conservative sectors like legal services can leverage digital tools for growth. Knowledge management, as well as artificial intelligence (AI), are vital for supporting innovation in SMEs alongside operational improvements. Khan et al. (2024) show that effective knowledge management frameworks aid AI adoption in construction SMEs, emphasizing the need for openness to innovation and knowledge integration. Similarly, Türkeş (2024) illustrates how sustainability, e-marketing, as well as technology orientation may improve online business performance in the post-pandemic e-commerce landscape. However, SMEs face challenges such as cybersecurity threats, inadequate training, and limited resources, which can impede innovation. Khan et al. (2024) highlight the necessity of addressing these barriers to develop strategies for smoother transitions to technology-enhanced operations, stressing the importance of continuous employee training and a culture of ongoing learning.

In summary, digital transformation and innovation are vital for improving the SMEs' sustainability performance in the service sector by enhancing operational efficiency and customer relationships. Effective management of this transformation requires continuous innovation, strategic planning, and proper training, along with strong technological infrastructures to meet sustainability demands in a digital economy.

5.2 Theme 2: Sustainable Practices and CSR

The SMEs' sustainability performance in the service sector highlights the importance of integrating sustainable practices and CSR into their operations. Transitioning to a circular economy allows SMEs to cut waste, improve resource efficiency, and foster innovation, leading to economic benefits from savings in material and waste management (Carreira et al., 2024; Ingaldi & Ulewicz, 2024). However, SMEs face challenges like complex regulations and shifting consumer expectations. For example, the employment of the Goods and Services Tax (GST) in India has raised compliance requirements, highlighting the need for supportive frameworks and educational resources (Lapalikar et al., 2024). Consumer perceptions significantly impact sustainability efforts, particularly in the hospitality sector, making effective communication of sustainability initiatives crucial (Yildiz et al., 2024). While supply chain finance can improve sustainability, it may also increase vulnerabilities due to reliance on larger firms (Dong & Zhang, 2024). Gazi et al. (2024) note that CSR enhances environmental performance, with green capabilities and transformational leadership as key mediators. They emphasize that perceived organizational support can strengthen CSR initiatives, suggesting that SMEs should develop CSR strategies aligned with sustainability goals while navigating regulatory complexities (Ahmad et al., 2024; Gazi et al., 2024). In logistics, Creazza et al. (2024) find that strong communication and shared goals between shippers and logistics service providers are essential for successful green logistics, indicating the need for robust partnerships to advance sustainability (Creazza et al., 2024; Gomes et al., 2024). Suchek et al. (2024) explore how Industry 4.0 technologies, as well as participation in global value chains (GVCs), may assist the implementation of circular economy practices among SMEs, cautioning that improper integration may impede sustainability efforts (Borrero & Yousafzai, 2024; Suchek et al., 2024).

In summary, the SMEs' sustainability performance in the service sector is influenced by regulatory challenges, consumer perceptions, and supply chain dynamics. Integrating CSR is essential for improving environmental outcomes and relies heavily on organizational support. Additionally, collaboration in logistics and the strategic use of Industry 4.0 technologies can enhance sustainability initiatives, but addressing compliance issues and managing supply chain complexities is critical for fostering sustainable growth.

5.3 Theme 3: Resilience, Strategy, and Competitiveness

The SMEs' sustainability in the service sector has become a substantial topic, particularly in the wake of disruptions caused by COVID-19. In addition, it is vital to enforce efficient strategies to foster resilience and facilitate economic recovery. Saiful-Haq et al. (2024) explore Jakarta's initiatives to assist SMEs through collaborative governance, improving access to finance, and addressing gaps in digital infrastructure via Small and Medium Enterprise Cooperative Banks (SCBs). In the Philippines, Moraga et al. (2024) emphasize the significance of organizational resilience in the restaurant industry for economic sustainability, noting that sense-making and problem-solving are vital, while crisis anticipation yields mixed outcomes. Globalization offers additional avenues, with Moraga et al. (2024) advocating for circular economy principles in procurement to enhance resource efficiency and competitiveness. Shava (2024) underscores the fundamentals of robust information and communication technology (ICT) in areas with limited resources, suggesting that ICT failures can impede SME growth; thus, government support for ICT is critical for improving transaction efficiency and customer satisfaction.

Territorial assets contribute to SME competitiveness as Metaxas (2024) demonstrates the value of local resources in Thessaloniki, Greece, such as labour and agglomeration, which benefit commercial enterprises. Furthermore, F. A. Khan et al. (2024) emphasize the influence of tactical green marketing in managing stakeholder expectations and CSR for sustainable success. Ramadan et al. (2024) investigate how effective managerial skills and advanced

inventory management, for instance, Activity-Based Costing (ABC) as well as Economic Order Quantity (EOQ), can enhance profitability for SMEs in Hungary, indicating that investments in managerial training and efficient inventory practices are vital for growth. Competition also plays a role in promoting SME sustainability, as Da Silva and Cardoso (2024)) da Silva and Cardoso (2024) demonstrate in their study of Portugal's ornamental stone industry, where collaboration among competitors increases efficiency and aligns with Sustainable Development Goals (SDGs). They recommend further exploration of coopetition's advantages across different sectors. Technological innovation is another critical factor in achieving sustainability, illustrated by (Elfaki & Ahmed, 2024), who connects technological advancements with financial development as well as the decrease of income inequality in Asia via the Technological Kuznets Curve (TKC). Here, this framework supports SDG 10, indicating that targeted policies in research and development, alongside supportive financial environments, can benefit SMEs. Lastly, Tohari et al. (2024) emphasized the significance of incentives, and quality services play a critical role in encouraging compliance, highlighting the need for favourable tax policies and education to support small, micro, as well as medium enterprises in Kediri City.

In summary, the sustainability performance of SMEs is shaped by factors such as stakeholder engagement, managerial skills, innovation, competition, technology, and tax compliance. To achieve sustainable growth, a comprehensive strategy integrating these elements is essential. Moreover, resilience strategies, local resources, and external influences, along with collaborative governance and effective ICT initiatives, are critical for SMEs to navigate obstacles and seize opportunities in a dynamic economic landscape.

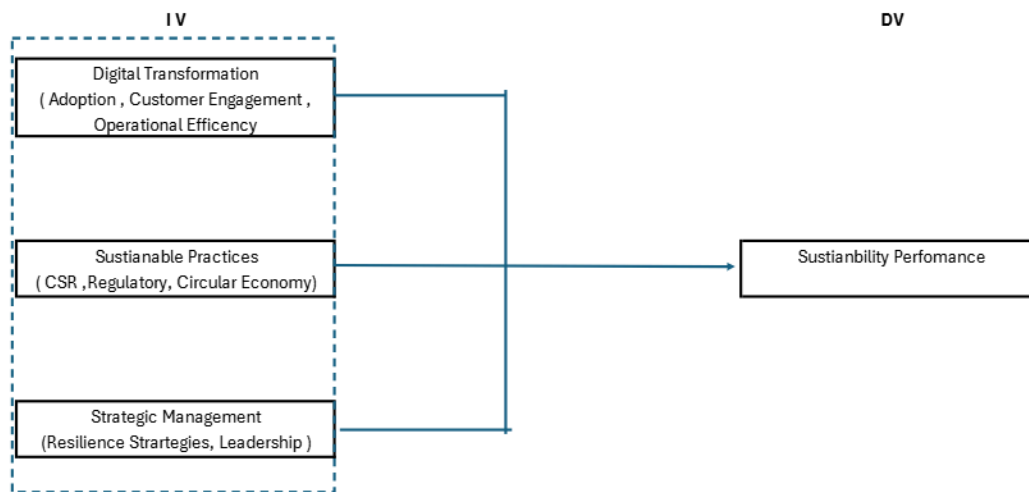


Fig. 3 Proposed Framework

This framework highlights the key independent variables digital transformation, sustainable practices and strategic management that drive the sustainability and competitiveness of SMEs. By adopting advanced technologies, implementing sustainable operations, and developing effective resilience strategies, SMEs can enhance their overall performance, remain competitive in the market, and achieve long-term sustainable growth. The dependent variable, sustainability performance captures the holistic outcome of these efforts.

6.0 DISCUSSION

Digital transformation plays a vital role in enhancing the sustainability performance of SMEs in the service sector, particularly following the challenges posed by the COVID-19 pandemic. Technologies such as blockchain, AI, and cloud computing help SMEs improve operational

efficiency, customer service, and innovation, all while reducing costs and fostering sustainability. However, the successful adoption of these technologies is not without challenges. SMEs often face barriers such as cybersecurity risks, limited resources, and inadequate employee training. Effective management support, continuous innovation, and robust technological infrastructures are essential for overcoming these obstacles and ensuring that digital initiatives align with broader sustainability goals.

Sustainable practices and Corporate Social Responsibility (CSR) are crucial for improving the environmental performance of SMEs. Transitioning to a circular economy, adopting green logistics, and implementing Industry 4.0 technologies can foster resource efficiency and innovation, but these efforts are often hindered by regulatory complexities and shifting consumer expectations. SMEs must also address compliance challenges and communicate their sustainability initiatives effectively to stakeholders. CSR strategies, supported by organizational commitment and leadership, help SMEs navigate these hurdles and enhance their environmental impact. Collaborative efforts, such as partnerships in logistics and participation in global value chains, are key to advancing sustainability goals and improving overall business performance.

Resilience, strategy, and competitiveness are essential for SMEs to thrive in a rapidly changing economic landscape. Following disruptions like the COVID-19 pandemic, SMEs must adopt strategies that foster resilience and ensure long-term sustainability. Collaborative governance, efficient ICT infrastructure, and leveraging local resources contribute to SME recovery and growth. Furthermore, investments in managerial skills, innovation, and green marketing help SMEs manage stakeholder expectations and improve their competitiveness. A comprehensive strategy that integrates these elements, including effective tax policies and supportive financial environments, is necessary for SMEs to overcome challenges and seize opportunities for sustainable development and growth.

7.0 CONCLUSION

In conclusion, the sustainability and competitiveness of SMEs in the service sector are heavily influenced by the integration of digital transformation, sustainable practices, and resilience strategies. Digital technologies enable SMEs to improve efficiency and innovation while aligning with sustainability goals, though challenges such as cybersecurity risks and resource constraints must be addressed. Incorporating CSR and sustainable practices, such as circular economy principles and green logistics, can enhance environmental outcomes, but regulatory complexities and shifting consumer expectations require careful management. Additionally, resilience strategies, such as leveraging local resources, investing in ICT infrastructure, and adopting effective management practices, are crucial for SMEs to navigate disruptions and remain competitive. A holistic approach combining these elements is essential for SMEs to achieve long-term growth and sustainability in a dynamic economic environment.

CONFLICT OF INTEREST

The authors state they have no conflicts of interest to disclose concerning this research.

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