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Syahida Abdullah[1]



Mohd Nasrun Mohd Nawi[2]



Mohamad Abi Sofian Abdul Halim[3]



Khatijah Omar[4]



Nur Akmal Rosli[5]



Aizul Nahar Harun[6]

# Digital Transformation for Sustainable Business Performance: A Systematic Literature Review*

## Transformación Digital para el Desempeño Empresarial Sostenible: una Revisión Sistemática de la Literatura



## 1. INTRODUCTION

Achieving sustainable performance is a challenging issue in the modern era business (Du et al., 2022). Businesses are facing increasing pressure to take sustainability into account due to global economic growth, growing social inequalities, and the depletion of natural resources which burden the environment (Broccardo et al., 2023; Yadegaridehkordi et al., 2023). The intensification of climate vulnerability, social injustice, and ecological degradation can be attributed to internal pressures from stakeholders such as employees, as well as external pressures from customers and policymaker (Broccardo et al., 2023; Dubey et al., 2019). Due to globalization and technological advancements, firms face fierce competition while also being subject to mounting external pressure to minimize the environmental impact of their business operations (S. K. Singh et al., 2022). To keep up with the intricate challenges of their environment, organizations must exhibit innovativeness (Bertello et al., 2022). Innovation plays a crucial role in addressing social and environmental issues, prompting firms to prioritize the development of sustainable innovations that generate shared social and business value (Du et al., 2022).

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## EXECUTIVE SUMMARY

In today's era, all firms face new challenges consequent to rising digitization. The urge of digital transformation has led to significant benefits including economic growth and sustainable development. However, there is limited resources on the integration between digital transformation and sustainable business performance. To address the issue, this paper presents a systematic literature review on the relationship between digital transformation and sustainable business performance, aiming to highlight the impact of digital transformation on the business performances of the entrepreneurs with particular emphasis on the sustainable aspect. Thus, this study analysed 130 academic articles from the Scopus database for the period between 2019 and 2023. By using SLR method, this paper identified the characteristics of the body of knowledge in this research: the evolution of the publications, the most cited journals, the key emerging trends, and the intellectual knowledge related to the research field. The findings of this study is helpful for the policy makers and regulators to design policies that can enhance sustainable business performance through effective digital transformation.

## RESUMEN DEL ARTÍCULO

En la era actual, todas las empresas enfrentan nuevos desafíos como consecuencia de la creciente digitalización. El impulso de la transformación digital ha generado beneficios significativos, incluido el crecimiento económico y el desarrollo sostenible. Sin embargo, hay recursos limitados en la integración entre la transformación digital y el desempeño empresarial sostenible. Para abordar el tema, este artículo presenta una revisión sistemática de la literatura sobre la relación entre la transformación digital y el desempeño empresarial sostenible, con el objetivo de resaltar el impacto de la transformación digital en el desempeño empresarial de los emprendedores con especial énfasis en el aspecto sostenible. Así, este estudio analizó 130 artículos académicos de la base de datos Scopus para el período comprendido entre 2019 y 2023. Utilizando el método SLR, este trabajo identificó las características del cuerpo de conocimiento en esta investigación: la evolución de las publicaciones, las revistas más citadas, las principales tendencias emergentes y el conocimiento intelectual relacionado con el campo de investigación. Los hallazgos de este estudio son útiles para que los responsables de la formulación de políticas y los reguladores diseñen políticas que puedan mejorar el desempeño empresarial sostenible a través de una transformación digital efectiva.

The progress in technology has brought about significant changes to the world, elevating the standard of living and causing a surge in the consumption of goods and services, which in turn, has resulted in a rise in waste and pollution generation (Kurek et al., 2023). In response, there has been a considerable rise in the number of scholarly papers on the topic, particularly those that discuss the sustainability approach to innovation in business models, which was overlooked in conventional models that only consider economic considerations (Bradley et al., 2020). At present, firms acknowledge sustainability as a fundamental issue, as well as an opportunity (Kurek et al., 2023). Previous studies have identified a wide range of business benefits that accrue to firms that prioritize sustainability, such as enhanced reputation, increased marketing opportunities, expanded firm capabilities, improved financial value, and better performance of new products (Du et al., 2022; Yadegaridehkordi et al., 2023).



***...firms face fierce competition while also being subject to mounting external pressure to minimize the environmental impact of their business operations.***

New digital technologies are playing a role in achieving sustainable business performance (Broccardo et al., 2023). Over the last two decades, there has been a significant shift from traditional business models to technology based business models, which is simply due to the dramatic wave of transformation brought about by emerging technologies (Hinterhuber, 2022; Jafari-Sadeghi et al., 2023). These technologies are considered the building blocks of the ongoing fourth industrial revolution and are significantly transforming how firms manufacture and provide services, facilitating their transition towards sustainability (Bressanelli et al., 2018; Moghrabi et al., 2023). Digital technology is a driving force behind the disruptions occurring at both industrial and societal levels, and it is a crucial component of digital transformation (Cheng et al., 2022). The process of digital transformation empowers firms to attain heightened levels of flexibility and efficiency, to streamline production processes, to create innovative value propositions for ecosystems, and to promptly address market demands (Feliciano-Cestero et al., 2023).

The competitive landscape of all industries has been undergoing a transformation due to the rise of digitalization and the emergence of game-changing technologies like artificial intelligence (AI), big data, 3D printing, the internet of things (IOT), and nanotechnology (Jafari-Sadeghi et al., 2023). Under the impact of digitalization, a firm's

success is determined not by the quantity of its capital or the length of time it has been in operation, but by the adaptability of the firms to the environment after going through the changes and challenges (Shkarlet et al., 2020). To remain competitive in the market and to be a leader in technological innovation, it is imperative for firms to undergo digital transformation processes (Feliciano-Cestero et al., 2023). For example, managers in business organisations view technology as an organisational asset that also helps staff members perform management and analytical tasks at work (Dandalt, 2021). It is crucial to comprehend how digital technologies can transform a firm's internal processes, practices, and strategies for internationalization (Bertello et al., 2022). Verhoef et al. (2021) have defined digital transformation for firms as a modification in their utilization of digital technologies to develop a novel digital business model that assists in creating and acquiring greater value for the firm. Based on the study conducted by Li, (2020), the researcher highlighted that to gain a competitive edge and sustain success in both national and international markets, digital transformation is imperative for firms. There are some studies that have investigated the impact of digital transformation on both private and commercial business sectors (Ahmad et al., 2021; Brodeur et al., 2022). However, this study realized that literature on digital transformation and sustainable business performance is scarce or rather missing. Therefore, this research would like to explore the significance of digital transformation on firms' sustainable business performance. This research will explore discussions related to digital transformation, antecedents, and outcomes of various products of digitalization, and analyse the impact of digital transformation towards sustainable business performance.

**KEYWORDS**
Digital Transformation, Sustainable Business Performance, Sustainability, Systematic Literature Review (SLR).

**PALABRAS CLAVE**
Transformación digital, Desempeño empresarial sostenible, Sostenibilidad, Revisión sistemática de literatura (SLR)



## 2. LITERATURE REVIEW

### 2.1. Digital Transformation

In simple terms, digitalization involves leveraging digital technologies to transform a business model and create novel opportunities for generating revenue and value as it denotes the transition towards becoming a digital business (Maroufkhani et al., 2022). The phrase "digital transformation" is widely known in today's society (Hausberg et al., 2019) as a phenomenon of transition towards digital based technology. While there is no universally accepted definition of the



term digital transformation, some scholars emphasized particular technologies to describe a shift in an organization towards utilization of big data analytics (Hausberg et al., 2019; Nwankpa & Roumani, 2016), others considered technology in general as the main driver for bringing about radical changes (Hausberg et al., 2019). However, based on the study conducted by Maroufkhani et al., (2022), digital transformation is defined as "a new development in the use of digital artifacts, systems, and symbols within and around organizations.

Digitalization arises from the vast availability of data, the utilization of cloud-based data storage, and the application of data mining and machine learning techniques for making decisions within organizations (Maroufkhani et al., 2022; Murphy et al., 2019). Similarly, digital transformation is often described as a change process primarily driven by technology, which is rooted in the abundance of data, connectivity, and the ability to make non-intuitive decisions (Ebert et al., 2018). It should be highlighted that digital transformation not only involves technological modifications but also takes into account its impact on the organization as a whole. (Hinings et al., 2018). According to Albukhitan (2020), digital transformation causes significant changes in critical business operations, influencing products and processes, as well as organizational structures and management principles. Digital transformation brings about changes that affect individuals, society, communication, and overall business environment (Jung et al., 2018; Song, 2022).

Digital transformation is generally perceived as the extensive use of digital technologies to enhance organizational performance and operational efficiency. Essentially, organizations use digital technologies to upgrade their traditional value-creation paths and maintain their competitiveness in the market (Vial, 2019). Successful digital transformation, leading to improved operational performance, requires organizations to innovate with digital technologies by implementing meaningful changes in their business processes and models, and adopting strategies and policies that facilitate this transformation (Maroufkhani et al., 2022). For firms in the resource and energy sectors, successful digital transformation can enhance their digital capabilities and sociotechnical capacity, as it has the potential to fundamentally transform every aspect of

their business (Young et al., 2019). For example, according to Di Silvestre et al., (2018) the use of cloud technology enhances business agility and, in combination with big data analytics (BDA), creates more opportunities for market prediction. Mobile technology for instance, has allowed businesses to connect with customers in a prompt, direct, and cost-effective manner (Maroufkhani et al., 2022). Wamba-Taguimdje et al., (2020) suggested that artificial intelligence technology facilitates entrepreneurs to have better understanding of business environment that enable them to make strategic decisions, which result in improved performance at both the operational and process levels.

In short, the digital transformation of businesses results in three significant changes namely digitally integrated and interconnected processes, digital communication enabled by technology, and novel means of generating value via digital data or innovations (Hausberg et al., 2019). Digital transformation has resulted in significant changes in all industrial sectors globally, and has given rise to electronically based businesses such as e-government, e-banking, e-marketing, e-tourism, and quite recently e-health, which combined all the different sectors with information systems.





## 2.2. Sustainable Business Performance

Business today are confronted with dual challenges of intensifying competition driven by globalization and rapid technological advancements, and sustaining business performances (Ikram et al., 2021). According to Zhai et al., (2018), achieving success requires sustaining performance by optimizing values of the integrated goals: finance, social, and environment. The importance of addressing social and environmental issues has led firms to prioritize innovation as a key driver in creating sustainable solutions, thereby generating shared social and business value (Du et al., 2022). The subject of sustainable business performance has been a persistent topic of discussion in scholarly literature over the past few decades, with the focus shifting from financial performance to non-financial performance over time (Hadi et al., 2021).

Singh et al., (2020) noted the importance of SMEs to meet the global standards on quality, technology, sustainability, and pricing that are important to become globally competitive for the purpose

of availing emerging opportunities. Therefore, the implementation of digital technologies may allow the firm to enrich its database and improve communication, increasing user retention and promoting sustainable business (Kang et al., 2019). Previous studies have demonstrated that firms that prioritize sustainability can reap numerous advantages, including but not limited to: exploring untapped markets, building a stronger reputation, enhancing organizational capabilities, generating greater financial value, and achieving superior performance in new product development (Du et al., 2022; Papadas et al., 2017). Their integration with production systems generates opportunities for sustainable business models aligned with ethical principles of corporate social responsibility (Kumar et al., 2020).





The implementation of business process innovation may have an impact on firm performance during the initial stages (Shashi et al., 2019) whereas digital technologies in manufacturing can enhance the sustainability and efficiency of operations (Chen et al., 2023). Manufacturing firms can enhance their productivity, flexibility, and responsiveness by utilizing digital technologies (Kumar et al., 2020) thus can lead to improvements in resource utilization, reductions in operational costs, additional revenue generation, the development of long-term customer relationships, and the assessment of risk associated with current product or service offerings (Chen et al., 2023). In a study conducted by Mani et al. (2020), the performance of a firm is impacted by sustainability. Yadav et al., (2020) found that the combination of Industry 4.0 technologies and a circular economy approach can provide a competitive advantage to supply chain. Emphasizing the social aspects of sustainability can enhance job satisfaction and overall performance (Sangwan et al., 2019). The adoption of technology can enhance the efficiency processes and lead to energy savings (Nascimento et al., 2019). Indeed, the effective utilization of process digitization and quality control tools can lead to the efficiency and sustainability of manufacturing processes (Shivajee et al., 2019). Ghobakhloo, (2020) noted that the implementation of Industry 4.0 technologies can lead to improvement in production efficiency, process innovation, and sustainability.

## 3. RESEARCH METHOD

The aim of this study is to explore relevant literature related in the fields of "sustainable business performance" and "digital transformation" through SLR methodology (Kraus et al., 2022) and (Lombardi et al., 2021). This study aims to identify emerging trends and growth patterns in this integrated area, and potential future development. This study will therefore assess relevant literature to identify most prominent authors, top publishing journals, and significant keywords.

### 3.1. Systematic Review Process

#### *3.1.1. Definition of the research questions*





The first stage in SLR is to identify research questions; This study identified three (3) research questions:

RQ1. What is the evolution of the articles during the period under study and what are the most cited journals?

RQ2. What are the key emerging trends related to digital transformation and sustainable business performance?

RQ3. What is the intellectual knowledge related to the integration of digital transformation and sustainable business performance?

RQ1 seeks to explore the evolution of literature on the topic from 2019 to 2023, and the journals that have mostly published papers on this topic. RQ2 aims to identify the trend of the papers published on the topic. RQ3 finally provides important insights on the integration of digital transformation and sustainable business performance.

#### *3.1.2. Write the research protocol*

The second stage of the SLR involves developing a research protocol that outlines the information sources, methods, and tools that will be used to identify and analyze relevant studies, as well as how the results will be summarized (Lombardi et al., 2021). To ensure a comprehensive analysis, the study conducted an in-depth examination of the most significant articles in the integrated fields of digital transformation and sustainable business performance.

### *3.1.3. Determine the papers to analyse*

At this stage, the objective is to determine the appropriate database and search criteria for selecting articles to include in the literature review. The Scopus database is chosen as it provides comprehensive coverage of articles across 20,000 peer-reviewed journals (Mishra et al., 2017). Scopus is widely considered as a leading database due to its advanced search capabilities, user-friendly interface, and analytical tools.

For this study, a specific research string was chosen to identify relevant articles in the Scopus database. The search string used was "digital transformation sustainability" or "digital transformation business performance" and "digital transformation sustainable business performance". The search was limited to the "Title/Abstract/Keywords" field as to acquire non-generic result. After retrieving the results, the titles and abstracts of the study were screened to determine their relevance to the research objectives. This was combined with the application of a quality threshold for journal section, in which 140 journal papers were initially extracted from the existing literature over 5 years (2019-2023) and 130 papers were considered based on the criteria in the **Table 1**.



Table 1. **Main SLR criteria adopted**

| CRITERIA | DESCRIPTION |
|---|---|
| Field | Business, Management and Accounting |
| Article | All open access |
| Literature Language | English |
| Period | 2019-2023 (past 5 years) |
| Keywords | Group of keywords by digital transformation |
| Screening | Article title, abstract, keywords |

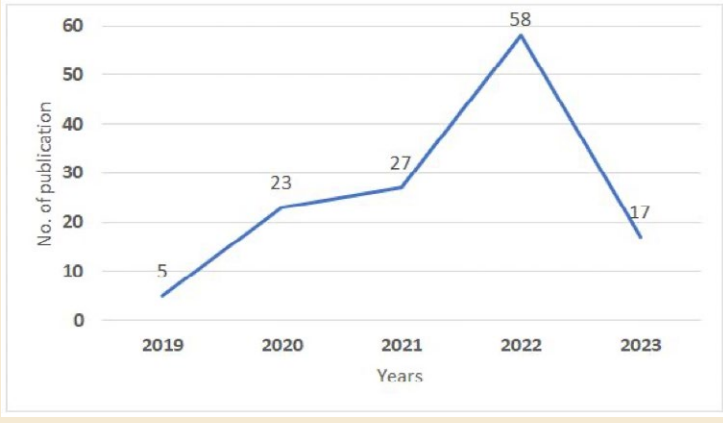
## 4. RESULTS AND DISCUSSION

Based on the methodology described, this section presents the results of systematic literature review of scientific publications related to digital transformation and sustainable business performance. The results are disclosed according the research questions as presented in section 3.1.1 above.

### 4.1. Evolution of Articles during the period 2019 and 2023

**Figure 1** depicts the trend of published articles from the year 2019 to 2023. The graph illustrates the number of articles that were published each year during the period between 2019 and 2013. It provides an overview of the evolution of research papers in the field. As demonstrated in the graph, there was a notable increase in the number of papers published from 2019 to 2022. This trend indicates a growing interest in the topic among researchers and underscores the need for further exploration in future studies. The increase in the number of published articles suggests that digital transformation has become an increasingly critical aspect of business performance. As the data for 2023 is incomplete, the number of articles is still low. However, this study believes that there is a high possibility that the number of papers in this field will increase. This is simply due to the trend of previous years publication as well as the significance of the topic at present which is still relevant.

Figure 1. **Article Evolution over time**



## 4.2. Most Cited Journals

Researchers and authors are considered a significant indicator that represents the quantity of publications on particular topics (Dumay et al., 2015). This study has gathered 130 papers that demonstrated the relevancy of this paper's research topic. The 130 papers were analysed in term of journal publication, and the result indicated that the publications are scattered, in other words they were published in various journals. There are a total of 95 journals that have published these papers, and 5 journals have received citations exceeding 100 (**Table 2**).



Table 2. **Most cited Journal**

| STHISCE TITLE | NO. OF CITATION | NO OF PUBLICATION |
|---|---|---|
| International Journal of Logistics Management | 102 | 1 |
| International Journal of Production Economics | 143 | 2 |
| Journal of Business Research | 657 | 2 |
| Journal of Manufacturing Technology Management | 170 | 1 |
| Technological Forecasting and Social Change | 107 | 5 |

The increase in the number of citations and authors who have involved in this related topic indicates the importance of the topic, as well the increasing recognition by the governments on the importance of digital transformation to economic development and to the technological advancement which is very rapid.

## 4.3. The Key Emerging Trends

This part of the discussion answers the research question 2 on the key emerging trends related to digital transformation and sustainable business performance.

One of the main trends in the literature is the focus on how digital transformation help businesses to improve their resource efficiency and reduce their environmental impact. Some examples of recent studies that illustrate these trends are: Guo et al., (2021) who found that digital transformation was positively associated with firm performance, both financial and non-financial, by reducing costs, improving efficiency, and fostering innovation; Xu et al., (2023)

discovered that digital transformation was positively associated with sustainable performance by reducing waste and carbon emission; Ha (2022) discussed the socioeconomic and resource-efficient influences of digital transformation in the public sector.

The next focus is on the social aspects of sustainable business performance, particularly on the role of digital transformation in enhancing the working conditions, social inclusion, and stakeholder engagement. The article by Wang et al., (2020) who investigated whether and how board independence and institutional ownership moderate the relationship between digital transformation and corporate social performance. Van (2022) proposed a novel framework that specifically investigated the role of society and included the drivers of digital transformation.





Continuously, the trend is showing that several papers have discussed on the need for a holistic and integrative approach to digital transformation and sustainable business performance with consideration on the social, environmental, and economic impacts of digital transformation initiatives towards sustainable value creation. The paper by Trenerry et al., (2021) provided an integrative review and framework of multi-level factors important for an organization's overarching digital transformation. Hausberg et al., (2019) analyzed the development of the digital transformation field from a holistic business perspective.

## 4.4. The Intellectual Knowledge

Responding to research question 3, this part of the paper discusses the intellectual knowledge related to the integration of digital transformation and sustainable business performance. Digital transformation is understood to enhance sustainable business performance by enabling innovation, efficiency, transparency, and stakeholder engagement through optimization of resources, improvement of energy efficiencies, better management of waste, and effective engagement with the stakeholders. The integration of digital transformation and sustainable business performance considers the environmental, social, and economic dimensions of sustainability in digital transformation processes and outcomes (Khaw et al. 2022), (Nadkarni et al. 2020), (Goni et al. 2021), and (Zhang et al. 2022). It helps organizations identify the opportunities

and challenges of digital transformation for sustainability and design appropriate solutions and strategies.

Business performances is often related to cost-driven and revenue-driven measures that can be achieved through digital transformation. Firms adopt holistic and strategic approaches to align digital transformation initiatives with sustainable business performance objectives and values, which then enable firms to acquire more opportunities to flourish and sustain their performances. Therefore, the findings from the study confirms that digital transformation has a significant impact on business performances and requires firms to optimize the transformation to be competitive as well as to enhance and sustain business performances.





## 5. CONCLUSION AND RECOMMENDATION

A comprehensive review was carried out that enable a systematisation of the body of knowledge on digital transformation and sustainable business performance. Based on the results of the review analysis, the evolution of articles was presented, and the most cited journals were identified, and the key emerging trends were discussed, confirming that the integrated research field of digital transformation and sustainable business performance is gaining increasing interest among scholars and entrepreneurs.

The SLR analysis resulted in the key trends that are of interest to the scholars and entrepreneurs. The most discussed topic dealt with the positive effect of digital transformation on businesses which is improvement of resource efficiency and reduction in the environmental impact. Besides looking at the positive effect, scholars also have shown interest on the importance of digital transformation in enhancing the working conditions, social inclusion, and stakeholder engagement. The SLR also discovered that holistic and integrative approach is needed for effective digital transformation and sustainable business performance.

Hence, the study concludes that digital transformation has significant positive impact on sustainable business performance, social, environment and economy. Firms that embrace digital transformation optimally and use it to their advantage will be

well-positioned to achieve high return and sustain their business performances.

In term of study limitations, this study uses only the publications indexed in the SCOPUS database, and it only referred to journal articles, and excluded books, book chapters, proceeding papers and other reports. As such, future studies can explore other databases like Web of Science (WoS) and refer to other types of publications. In addition, the potentiality of integrating artificial intelligence techniques can be explored.





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## NOTES

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1. Centre for Fundamental and Continuing Education, Universiti Malaysia Terengganu, Malaysia. ✉ syahida.abdullah@umt.edu.my
2. Disaster Management Institute (DMI), School of Technology Management and Logistics, Universiti Utara Malaysia, Malaysia. ✉ nasrun@uum.edu.my
3. Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Malaysia. ✉ abi.sofian@umt.edu.my
4. Institute of Tropical Biodiversity and Sustainable Development, Universiti Malaysia Terengganu, Malaysia. ✉ khatijah@umt.edu.my
5. Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Malaysia. ✉ nurakmalrosli@gmail.com
6. YU-MJIIT International Joint Intellectual Property Laboratory, Malaysia-Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia, Malaysia. ✉ aizulnahar.kl@utm.my



