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# The Impact of Digital Leadership Skills and Digital Leadership Capabilities on Sustainable Performance in Malaysian Manufacturing Companies

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**Abstract**

There is a considerable sign from empirical research that many factors influence sustainable performance. This conceptual paper aims to assess the effects of digital leadership skills on the sustainable performance of manufacturing companies working in Malaysia using the digital leadership capabilities as mediator. The conceptual framework was developed after a systematic review of earlier literature. The present paper found the important impact of the study's variables on sustainable performance. Moreover, the study provided some discussion of how digital leadership skills influence manufacturing companies' sustainable performance in Malaysia and how digital leadership capability mediate the relationship between them. These independent variables are important in influencing Manufacturing companies' sustainable performance. The paper highlights the essential value of digital leadership skills and digital leadership capabilities for manufacturing companies' owner/managers consideration when acting on behalf of their company; failing which the Malaysian

manufacturing sector could experience poor sustainable performance. Resource-Based View (RBV) theory and Dynamic Capability Theory (DCT) theories were used to point out the conceptual framework. In addition, some suggestions of this conceptual model for theory and practice are addressed.
**Keywords:** Digital Leadership Skills, Sustainable Performance, Digital Leadership Capabilities, Dynamic Capability Theory, Resources-Based View Theory, Manufacturing Companies.

## Introduction

Leaders today are like digital drivers, coordinating a group of people, technology, and procedures (Karakose et al., 2023). Moreover, if they are to be successful in this capacity, leaders must show a complete knowledge of how to balance these various components to achieve long-term, sustainable success rather than simply short- term advantages (Qahtani & Alsmairat, 2023). The impact of digital leadership on long-term performance is one area that warrants further investigation (Abbu et al., 2022). In this context, sustainable performance encompasses both environmental and social aspects of a firm's activities, in addition to financial aspects (Büyükbeşe et al., 2022). Hence, to align a company's goals with the values of environmental sustainability, leaders must be aware of their company's overall influence. For example, equipped with advanced data analytics, the digital leader can expertly navigate these complexities, making well-informed decisions that balance goals and profits (Erhan et al., 2022). The digital leader's skill to navigate the complex technological landscape is critical to this change (Quaquebeke & Gerpott, 2023). While digital technologies have changed the way businesses deal with uncertainty, simply introducing modern technologies is insufficient to transform the industry because other businesses can easily copy them. The success of the transformation will be achieved by the firm's ability to integrate processes, technologies, applications, and data (for example, creating a multichannel customer experience and a single view of the customer. Digital leaders are naturally enthusiastic and integrative, they are the right people to lead the integration efforts (Weill & Woerner, 2018).

Earlier research has shown that companies that have taken significant digital technology steps will earn 32% of their total revenue in 2022, and industries that have made considerable progress in digital technology are expected to generate 48% of their revenue through digital channels (Kamalaldin et al., 2020). In order to remain competitive in this digital age, organizations must transition from traditional leadership to digital leadership. In addition, to ensure long-term sustainability, it is necessary to improve technological skills and organizational growth ability. Furthermore, Zada (2022), said that the most recent digital technological advancements, as well as the COVID-19 pandemic, have a significant impact on the demand for digital transformation for efficient decision-making systems. As suggest by Amelda et al (2021), digital leadership entails integrating digital skills and competencies to maximize the benefits of digitalized technology in improving organizational performance. According to Hensellek (2020), the adoption of digital technologies in German organizations can lead to an establishment's growth of up to 60% percent when digital leadership is applied. Past study found that digital leadership skills encompass a variety of digital skills, market and business skills (product and customer understanding), and strategic leadership skills (intrapersonal and social abilities to create business value through guiding behaviors, strategic mindset, and decision making) required for implementing the firm's digital transformation (Husing et al., 2015). For example, digital skills may help with the integration of IT infrastructure and data, market and business skills may be necessary to identify, design, and integrate the firm's key business processes, and strategic leadership skills may be

essential to lead the integration efforts (Weill & Ross, 2009). Earlier research shows that firms can speed up digital transformation by using digital leaders, improving digital literacy, creating a suitable environment, and encouraging exploration (Kane et al., 2019; Wasono & Furinto, 2018). One of the main Asian banks, DBS Bank, highlights the significance of fostering leadership in its digital transformation plan. Past studies have found a positive correlation between digital leadership capability and innovation performance, leading to the conclusion that business leaders must develop digital leadership skills to digitize the platform for innovation and performance (Benitez et al., 2022; Wasono & Furinto, 2018). According to Westerman et al (2012), top management and leadership in organizations going through change view the processes of digital transformation as a significant challenge. These processes demand for leadership have digital age skills, such as strong leadership abilities, as well as digital literacy and capabilities (Berman & Marshall, 2014). El-Sawy et al (2016) examine the foundations for improving firm digital leadership capabilities in their study. Digital leadership capability is necessary to ease digital transformation; however, in modern firms, it is rare, even though it has the potential to generate business value (Benitez et al., 2022).

## Review of Literature

### Sustainable Performance

Malaysia's manufacturing industry is essential to the nation's economy, producing a significant amount of GDP, jobs, and exports (Mustafa et al., 2020). Sustainable practices and digital leadership are becoming gradually combined as the industry changes. The Malaysian manufacturing sector's relationships with digital leadership capabilities, skills, and sustainable performance discussed in this literature review. Sustainable performance refers to a company's ability to work in a sustainable manner from an ecological, social, and economic perspective (Afum et al., 2020). In this regard, financial performance must balance with environmental supervision and social responsibility. Manufacturing practices that promote sustainability include, for example, using environmentally friendly production techniques, minimizing waste by making the best use of available resources, and adhering to environmentally conscious practices. Past study have shown that the adoption of sustainable practices can lead to improved business outcomes, including improved levels of customer loyalty, enhanced brand recognition, and improved operational efficiency (Mihardjo et al., 2019). Earlier research has shown that Malaysia's manufacturing industry faces some challenges, such as organizational inflexibility and resistance to recent technologies, a lack of qualified digital leaders, and limited resources both human and financial for digital initiatives (Haseeb et al., 2019; Iqbal et al., 2020).

Malaysia's manufacturing industry needs to combine sustainable performance, digital leadership capabilities, and skills to grow and compete. Furthermore, Companies that promote these aspects of resources have the potential for long-term success and can contribute to Malaysia's overall economic development. Furthermore, this study investigates the impact of digital leadership skills and capabilities on long-term performance in Malaysian manufacturing industries. Industry 4.0 has significantly changed Malaysia's manufacturing sector, especially in terms of operations (Salamzadeh et al., 2021). Thus, to in order to stay competitive in the market, however, the industry is only obligingly embracing the opportunities that digital technology presents (Salamzadeh et al., 2021). The company has a lack of motivation to change with the times, and digital technology presents new businesses with better flexibility and resilience in creating new products, markets, and consumer

preferences all of which could pose a threat to set up businesses (Wasono & Furinto, 2018). Earlier research has shown that firms struggle to stay in business because they are unable to adapt to change in the digital era (Mihardjo et al., 2019). Previous research has shown that such transformation is needed to expand present capabilities and transform them into new business model innovations by requiring the ability to integrate digital initiatives with business goals, assessing the current state of digital capabilities within an organization, and developing structured methods for developing digital capabilities (Oberer & Erkollar, 2018; Teece, 2014). The level of readiness for Industry 4.0 implementation varies depending on the nation, industry, or even a single company, even though manufacturers understand its significance for future competitiveness opportunities and improvements (Ling et al., 2020). In Malaysia, only 30% of manufacturers are familiar with the term Industry 4.0,however, Malaysian leaders stay enthusiastic about entering the fourth industrial revolution (Ling et al., 2020). According to the Global Competitiveness Index 2017-2018, Malaysia's global competitiveness is improving from 25th (2016-2017) to 23$^{rd}$ (2017-2018) among 137 economies. Malaysia leads 17 East Asian and Pacific economies, including the Korean Republic (26), China (27), Thailand (32) and Indonesia (36) (World Bank Group, 2018). In Malaysia, the manufacturing sector accounted for 23% of GDP (gross domestic product) (MITI, 2021a).

Despite its lack of awareness of Industry 4.0, Malaysia is still a strong and competitive player in the global market, however, Malaysia is not ready to enter Industry 4.0 in terms of people and facilities so that effect negatively on the sustainable performance (Ling et al., 2020). Furthermore, a slowdown in the digital economy's expansion and a lack of adoption of fourth-generation technologies have an impact on economic sustainability (Mubarak et al., 2021). Past studies have revealed that the sustainability performance of the Malaysian manufacturing sector has also been noticeably declining (Alfawaire & Atan, 2021; Hassan et al., 2018; Iqbal et al., 2020). When the Industry 4.0 system is first implemented in Malaysian manufacturing sector, leadership the ones who are the driver to confront the challenge of accepting this new revolution, admitting that implementation is necessary, and preparing the company's transformation processes. Management considers several factors before starting a transformation, including the potential risks associated with the practices (shortage of talent in information technology) as well as the expected revenue after Industry 4.0 is implemented. These worries are the obstacles to the technology's adoption. In order to address this, gap this study, discuss the impact of digital leadership skills and digital leadership capabilities on sustainable performance in Malaysian’s manufacturing industry.

**Research Design and Methods**

A comprehensive literature review was used to make this conceptual paper. Moreover, the literature review has synthesized based on scholarly literature related to digital leadership skills, digital leadership capabilities and its influence on sustainable performance as presented in (Figure 1). Four (4) hypotheses have developed in the current conceptual paper to examine how the variables relate to sustainable performance. Additionally, future researchers may have employed a quantitative method (based on analyses) to collect the study's data. Likewise, the research framework underpinned by resources-based view theory (RBV) and the dynamic capability theory (DCT) theory. During the preparation of the conceptual paper, a reliable, consistent method for conducting a systematic review used. In the future, the

quantitative approach may use to empirically evaluate the recommended conceptual framework

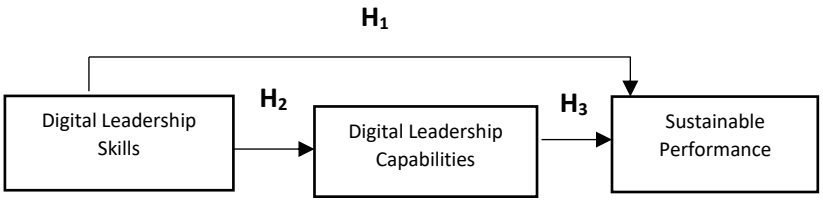


Figure 1: Conceptual Framework

**Digital Leadership Skills and Sustainable Performance**

Leadership skills for digital transformation include an understanding of digital technologies and data analytics and the ability to foster innovation within an organization (Zeike et al., 2019). In this context, leadership transcends hierarchy, resulting in active participation, involvement, and contribution by all organization members (Saddique et al., 2023). Digital leadership involves strategically employing a company's digital resources to reach its business goals where this responsibility can carry out at an organizational and individual level (Phakamach et al., 2023). In the contemporary era, organizations prioritize staffing employees with digital competencies, developing their internal information technology infrastructure, and building organizational learning and supporting capabilities. It is digital leadership that helps in achieving sustained performance by fostering innovation and ensuring enduring operational efficacy (Borah et al., 2022). According to the authors, social platform usage restrains the link between sustainable performance SMEs sustainability. Furthermore, digital leadership emphasizes communication, collaboration, and innovation in a fast-paced, collaborative, and collaborative environment (Oberer & Erkollar, 2018). Prior research showed that digital technology demands that leaders have a thorough understanding of technological developments and how they are applied (Mihardjo et al., 2019). In the digital age, digital leadership skills play a crucial role. However, it is important to understand how a firm's resources and performance are related. The capability dynamic theory and the based resource view provide insights into the relationship between them. In line with RBV principles, organizational resources that have value, non-substitutability, rarity, and inimitable properties contribute to sustainable performance. Furthermore, the RBV has been used in earlier studies to demonstrate how digital technology competencies can be employed to enhance organizational skills and improve long-term performance (Saddique et al., 2023). According to Amelda et al (2021), the impact of digital leadership on organizational performance is determined by the mediating role of digital marketing capabilities in the banking sector. Furthermore, in Pakistan's manufacturing sector, digital leadership protects employees' long-term performance and dynamic capabilities (Sarfraz et al., 2022). Another study suggested that digital leadership is critical to transforming the digital workplace (Chatterjee et al., 2023). Benitez et al (2022) suggest, digital leadership skills significantly impact European organization’s innovation performance. Moreover, another study indicates a positive relationship between digital leaders and the performance of organizations (Shin et al., 2023). According to recent research conducted by Sheshadri et al (2023), it was found that the successful adoption and use of digital technology can have a significant impact on organizational performance. Hence, this research proposed the following hypothesis.

**$H_1$**: There is a positive relationship between digital leadership skills and sustainable performance

**Digital Leadership Skills and Digital Leadership Capabilities**

When it comes to digital leadership, the idea developed by integrating digital capability with leadership skills to maximize the advantages of digital technology and boost business performance (Wasono & Furinto, 2018). The effectiveness of the company's digital leadership abilities and the availability of a suitable talent pool for digital work will affect its capacity to create and implement a transformative digital business plan (Carcary et al., 2016). Past studies showed that digital leadership capabilities empower a leader to lead an organization by using technology and data (Khurniawan & Irmawaty, 2024). Furthermore, digital leaders are in the role of guiding the business through Industry 4.0 and its evolution to a digital organization by navigating disruptive changes and motivating employees (Staffen & Schoenwald, 2016). Past studies mentioned that leadership skills are becoming increasingly important in the digital transformation process Burmeister et al (2016) and a priority (Schwab, 2017). Prior research confirmed that a digital leader's goal is to lead a company through digital transformation, but it goes beyond that, a digital leader must also set up new methods for leading high-performing teams and innovate in the workplace (Bawany, 2019). Digital capabilities have been defined as the amounts invested in technology-enabled initiatives intended to alter the way the organization works Westerman et al (2014), where digital leadership capabilities set up the necessary conditions needed to drive transformation, and how leading change (Westerman et al., 2014). Benitez et al (2022), highlight the importance of leaders being able to cope with technology changes, which needs them to gain recent skills and capabilities, such as digital literacy and data analytics. Consequently, an increasing amount of scholarly work has focused on finding the qualities and abilities of leadership needed for successful digital leadership. For instance, Li et al (2016), highlights the significance of hybrid skills for e-leaders who responsible to drive organizational practice and change. Similarly, past study has underlined the significance of leaders continually learning and adapting to modern technologies and developments, as well as having a different set of managers, marketplace, ICT, and business-specific skills (Şişu, 2023). The author revealed, future research could go deeper into specific strategies and approaches that can help people and organizations improve their digital leadership capabilities. In order to ensure long-term growth and success in the digital age, organizations should prioritize the development of digital leadership skills and capabilities where leaders must master and develop digital skills and competencies to create strong dynamic capabilities that enable organizations to transform digitally (Mohamed, 2022). Hence, this research proposed the following hypothesis.

**$H_2$**: There is a positive relationship between digital leadership skills and digital leadership capabilities

**Digital leadership capabilities and sustainable performance**

An organization's total capacity to use digital technologies efficiently referred to as its "digital leadership capability", it led to incorporating digital leadership capabilities at all levels of the organization (Benitez et al., 2022). As the heart of the dynamic capability and resource-based theories, it is critical to study how companies foster and change their capabilities to achieve sustainability. The dynamic capabilities help the company strategically transform its business

activity, accordingly, achieving sustainable performance (Chen et al., 2024). Digital mindset capabilities, such as digital knowledge and experience, linked to visionary and transformational leadership through digital leadership capabilities (Wahyuningsih & Asri, 2024). A leader's ability to master digitalization tools needed for effective digital leadership (Petry, 2018). Moreover, Benitez et al (2022), found that digital leadership capabilities positively affected organizational innovation performance in European firms. In the digital transformation time, technology directly and indirectly affects business and service practices, market share, policies, and strategies for competitive advantages (Artüz & Bayraktar, 2021). Therefore, digital leadership capabilities, such as virtual team effectiveness, need to be linked with the existing system and implement modern IT capabilities (Mollah et al., 2023). Digital technology has been incorporated into every aspect of the business over the years as part of the process of evaluating the firms' abilities and business practices where effect the goals attainment and performance (Benitez et al., 2022). Moreover, meeting the demands of customers depends critically on the dynamic framework of digital transformation that supports shifts in digital capabilities, like leadership (Sarfraz et al., 2023). Digital leadership capabilities are important in regulation of IT infrastructure and firms' sustainable performance (Shin et al., 2023). Furthermore, digital leadership capability is a leading direction for organizations seeking to remain agile in today's changing business landscape (Chatterjee et al., 2023). Past study has pointed out that as there are more important digital drivers of sustainable performance, future scholars can grow their knowledge by investigating them empirically in their studies (Chen et al., 2024). Consequently, this research proposed the following hypothesis.

**$H_3$**: There is a positive relationship between digital leadership capabilities and sustainable performance

**Digital Leadership Capabilities Mediate the Relationship between Digital Leadership Skills and Sustainable Performance**

Past research showed that digital leadership is positively related to sustainable performance (Cortellazzo et al., 2019). Previous study confirms that the favorable impacts of digital leadership have the potential to develop management advance capabilities and sustainable performance inside organizations (Khaw et al., 2022). Past research proved that digital leadership is positively correlated to sustainable performance (Mai et al., 2022). Furthermore, the digital capabilities allowing digital leaders to use their knowledge of existing or emerging technologies to lead digital or business transformation initiatives in their companies (Valentine & Stewart 2015; Valentine, 2016). The digital leader's ability to understand primary business goals and deliver a technology transformation that supports them becomes a significant factor in recruiting and assessing them (Brett 2019; Weiner et al., 2016). For example, past research found a positive relationship between digital leadership and digital analytics, as well as a positive and meaningful relationship between digital leadership and organizational performance (Lathabhavan, & Moovendhan, 2024). A leader assumed to have essential digital leadership capabilities and skills to guide the team toward the organization's goals (Senadjki et al., 2023).

Past discussions propose that the successful deployment of digital leadership capabilities is a precondition for a firm's digital transformation and a positive indicator of increased financial performance (Persson & Manas, 2021). Past studies suggested that further research could be done to explore whether digital platform management and the right vision, strategy, and skills

of digital leaders can improve sustainable organizational performance (Mollah et al., 2023). According to Hayes and Preacher (2014), when there are positive, causal and consistent relationships between the variables of a research, a mediation effect may exist. Therefore, there is a high possibility that digital leadership capabilities mediate the relationship between digital leadership skills and sustainable performance.

$H_4$: Digital leadership capabilities mediate the relationship between digital leadership skills and sustainable performance.

**Underpinning Theories**

**Dynamic Capability Theory (DCT) and Resource-Based View (RBV) Theory**

Dynamic capability theory (DCT) explains the "ability to continuously improve and adjust organizational capabilities to cope with the rapidly changing environments" (Teece et al., 1997). This study used the dynamic capabilities theory, which developed as an extension of the RBV (Chung et al., 2019). Thus, operational efficiency determined by how firms constantly adapt and improve their resources and skills (Teece et al., 1997). Furthermore, dynamic capacities can be considered as a useful integrated framework; however, more work needs to be done. Moreover, despite earlier obstacles, measurement is continually changing (Lin et al., 2020; Weaven et al., 2021). According to the dynamic capability theory framework, digital leadership competencies and skills are essential for long-term success (Azzam et al., 2023). Fostering innovation, leveraging technology for strategic advantage, and guiding organizations through digital transformations are all parts of digital leadership (Sasmoko et al., 2019). Leaders who possess robust digital skills can identify potential advantages and risks, promptly adapt resources to capitalize on them, and sustain their competitive edge in quickly constantly changing environments (Chatterjee et al., 2023).

RBV theory holds that a company's resources and capabilities are critical to gaining and supporting a competitive advantage, which leads to long-term performance (Chatterjee et al., 2023). RBV highlights the unique nature and inimitability of resources, including skills within an organization, intellectual property, and brand reputation (Civelek et al., 2023). These resources, when valuable, rare, inimitable, and non-substitutable (VRIN), have the potential to enable a company to outperform competitors over time. When businesses use these resources wisely to produce value that is hard for competitors to match, sustainable performance results (Sasmoko et al., 2019).This entails ongoing investment in developing and protecting core competencies, encouraging innovation, and adapting to changing environmental conditions ( Chatterjee., et al., 2023).

**Design/Method/Approach**

The conceptual paper developed by carefully reviewing journal articles, conference materials, conference proceedings, and books related to the subject topic and keywords. The theoretical framework shown in Figure 1 was developed based on the size of the literature review and the differences between studies. The review of the literature indicates that past studies have indicated a positive relationship between digital leadership skills and capacities and sustainable performance. Therefore, as digital leadership skills and capabilities develop, accordingly the sustainable performance of Malaysian manufacturing companies will improve.

**Results and Discussion**

The conceptual paper developed by carefully reviewing journal articles, conference materials, conference proceedings, and books related to the subject topic and keywords. The theoretical framework shown in Figure 1 developed based on the size of the literature review and the differences between studies. The review of the literature shows that past studies have revealed a positive relationship between digital leadership skills and capacities and sustainable performance. Therefore, as digital leadership skills and capabilities develop, accordingly the sustainable performance of Malaysian manufacturing companies will improve.

**Study Implication and Future Research**

This paper provides an opportunity for manufacturing companies and the Malaysian government to place a renewed emphasis on sustainable performance. Based on the findings of earlier study, the empirical evidence indicate that this research is essential for policymakers in Malaysia to make a suitable strategy for strengthening digital transformation skills, sustainable performance, and human capital skills. Therefore, according to this conceptual paper, digital leadership skills and capability is an essential digital dynamic capabilities and resources that facilitate meeting firm's sustainable performance indicators. The conceptual framework has not empirically examined. Future research may have incorporated more impacting factors, such as networking capabilities and sustainable competitive advantage. Moreover, future study might examine and evaluate other independent variable, such as digital human resource management, and mediating variables, such as innovation capability or market orientation which could be used to enhance the theoretical model showed in this paper. In the future, a comparative study of management capability on environmental issues such as environmental performance can conducted. Present paper may claim that digital leadership skills is the key antecedent of corporate sustainable performance and future study could examine decision making capability and the relationship with technology implementation.

**Conclusion**

This theoretical paper assessed the importance of digital leadership skills and capabilities and their impact on sustainable performance. Digital leadership skills and capabilities investment in Malaysian's manufacturing companies will motivate other firms to make efficient use of the firm's resources. This theoretical paper described how digital leadership skills and capabilities can be utilized to enhance performance. Enterprises must properly use their resources in order to achieve sustainable performance. As a result of rapidly changing technology and a competitive market, manufacturing firms must apply different approaches to gain a competitive advantage and meet the requirements of their clients with superior products or services. This paper would foster manufacturing companies' owner/managers and the Malaysian government to specify more and renewed attention to the areas of sustainable performance and its influencing factors.

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