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DIGITAL LEADERSHIP TRANSFORMATION AND WORKFORCE AGILITY OF MANUFACTURING FIRMS IN SOUTH-SOUTH, NIGERIA

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ABSTRACT

This study investigates the relationship between digital leadership transformation and workforce agility among manufacturing firms in South-South, Nigeria. Using a cross-sectional research design and quantitative methodological approach, data were collected from 324 respondents across 54 manufacturing firms through structured questionnaires. The study focused on two key indicators of digital leadership transformation—strategic alignment and digital talent capabilities—and their influence on workforce adaptability. Spearman's Rank Order Correlation was employed to test the research hypotheses. Results revealed a strong and statistically significant positive relationship between strategic alignment and adaptability (Spearman's rho = 0.833, $p < 0.01$), as well as between digital talent capabilities and adaptability (Spearman's rho = 0.784, $p < 0.01$). These findings suggest that aligning organizational strategies and investing in digital skills are critical to enhancing workforce agility. The study concludes that digital leadership transformation plays a pivotal role in improving organizational responsiveness, and recommends strategic integration and digital competency development for sustained adaptability and competitiveness in the manufacturing sector.

Keywords: Digital Leadership Transformation, Strategic Alignment, Digital Talent Capabilities, Workforce Agility, Adaptability, Manufacturing Firms, South-South Nigeria.

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Introduction

The ability of organizations like manufacturing companies in South-South Nigeria to quickly adapt and respond to changes in the business environment depends on their workforce agility. Workforce agility involves having a skilled and adaptable workforce that can change with changes in consumer preferences, technological developments, and market trends (Doz et al., 2008; Bottani, 2009). Having an agile workforce is essential for long-term success in the manufacturing sector, where innovation, supply chain disruptions, and shifting consumer preferences are frequent occurrences **(**Yusuf et al., 2009; Richards, 2006; Doz et al., 2008; Cegarra-Navarro et al., 2016; Teece et al., 2016). To remain competitive, businesses need to maintain workforce agility. The Manufacturing Association of Global Industries (2021) states that initiatives to create new products, enhance existing processes, and reduce costs can be driven by a workforce that embraces innovation and is encouraged to share ideas. Increased levels of employee engagement and job satisfaction are frequently a result of an agile workforce. Employees are more likely to feel valued and committed to the company when they are given the chance to develop new skills and contribute in different ways. Manufacturing companies can change staffing levels in response to changes in demand thanks to workforce agility. This might entail bringing on temporary staff during busy times or shifting employee workloads as necessary.

Another measure of workforce agility is resilience (Petermann & Zacher, 2022). According to Koushki et al. (2019), a firm's resilience has emerged as a key determinant of its capacity to withstand and recover from disruptions in an increasingly complex and unpredictable business environment with an agile workforce. The ability of an organization to adapt, innovate, and prosper in the face of adversity is what is meant by resilience, which goes beyond simple survival (Chonko & Jones, 2005; Chaharbaghi et al., 2005; Petermann & Zacher, 2022). However, after an extensive reviewed of the literature, it was observed that very little research had been conducted on the digital leadership transformation and workforce agility of manufacturing firms in the south-south of Nigeria, which has created a gap in this area. Additionally, most of the studies on digital leadership transformation were conducted in foreign and developed countries other than developing countries like Nigeria, especially the South-South geopolitical zone. Therefore, to fill this gap, the present study examined the relationship between digital leadership transformation and workforce agility of manufacturing firms in the South-South, Nigeria using two dimensions of digital leadership transformation (strategic alignment, and digital talent capabilities). These variables were examined in relation to a measure of workforce agility (adaptability).

Statement of the Problem

Workforce agility, which encompasses adaptability which is a crucial factor for the success and competitiveness of manufacturing firms. However, in the context of manufacturing firms in South-South, Nigeria, the firms are faced with poor level of adaptability which affected workforce agility. Poor level of adaptability was manifested in the firm’s failure to involve in bring new products and services to the market thereby revolving around old products and old pattern of rendering services to customers**.** Poor level of adaptability was also seen in the inability to explore the business environment to identify business opportunities and make investment. This has made many firms to manufacture and render the same services at all times which affected the operations of manufacturing firms in terms of customer preference,

and consumer new products and services. The poor level of resilience occurred when the firms failed to bounce back from crisis of either man made of natural occurrence.

The problem of declined workforce agility was traced to lack of adopting digital leadership transformation with respect to **strategic** alignment where the policies and strategies of the organization were not aligned with the goal of the organization. Such leaders do not have a clear vision of the organization's digital future and align it with the overall business strategy. Hence, they need to articulate a compelling digital strategy that outlines how technology can create value, drive innovation, and deliver on customer expectations (Westerman et al., 2014). According to Westerman et al. (2014), when leaders failed to develop digital leadership mind-set it affects their business performance. Such leaders do not have a clear vision of the organization's digital future and align it with the overall business strategy. Hence, they need to articulate a compelling digital strategy that outlines how technology can create value, drive innovation, and deliver on customer expectations. The lack of such a mindset hampers manufacturing firms' ability to harness digital technologies effectively, hindering their adaptability, in a rapidly evolving business landscape (Olugbara & Mbohwa, 2020).

Another issue or area of concern is poor digital talent capabilities. This occurs where the use of modern technology has been learned but to implement it becomes the problem. This is the inability to use the modern technologies in data gathering and decision making which hindered the quality of decision making to pursue proactivity, adaptability and organizational resilience and ultimately affected the workforce agility. Addressing the issue of poor strategic alignment, lack of developing digital-first mindset, in manufacturing firms in the South-South region was paramount.

Aim and Objectives of the Study

The aim of the study was to examine the relationship between digital leadership transformation and workforce agility of manufacturing firms in South-South, Nigeria. The objectives of the study were to:

1. Determine the relationship between strategic alignment and adaptability of manufacturing firms in South-South, Nigeria.
2. Ascertain the relationship between digital talent capabilities and adaptability of manufacturing firms in South-South, Nigeria.

Research Questions

The study developed the following research questions which guided the study.

1. How does strategic alignment relate to adaptability of manufacturing firms in South-South, Nigeria?
2. How does digital talent capabilities relate to adaptability of manufacturing firms in South-South, Nigeria?

The following null research hypotheses guided the study

$H0_1$: There is no significant relationship between strategic alignment and adaptability of manufacturing firms in South-South, Nigeria.

$H0_2$: There is no significant relationship between digital talent capabilities and adaptability of manufacturing firms in South-South, Nigeria.

Significance of the Study

Studying digital leadership transformation and workforce agility in manufacturing firms in South-South Nigeria is vital for enhancing economic growth, innovation, and competitiveness. It helps manufacturing firms improve operational efficiency, resilience, and adaptability in the face of disruptions. The research supports informed decision-making for sustainable development and aligns firms with global digital trends. For policymakers and industry leaders, it provides insights for promoting technology adoption and workforce training, thus attracting investment. Academically, the study guides curriculum development and future research by identifying skill needs and knowledge gaps. Overall, it contributes to regional development and positions manufacturing firms for long-term success.

LITERATURE REVIEW

Conceptual Framework

The Conceptual framework was constructed for the purpose of ascertaining the relationship between digital transformation and workforce agility of manufacturing firms in South-South, Nigeria. Figure 2.1 displayed the conceptual framework for this study.

Conceptual Framework

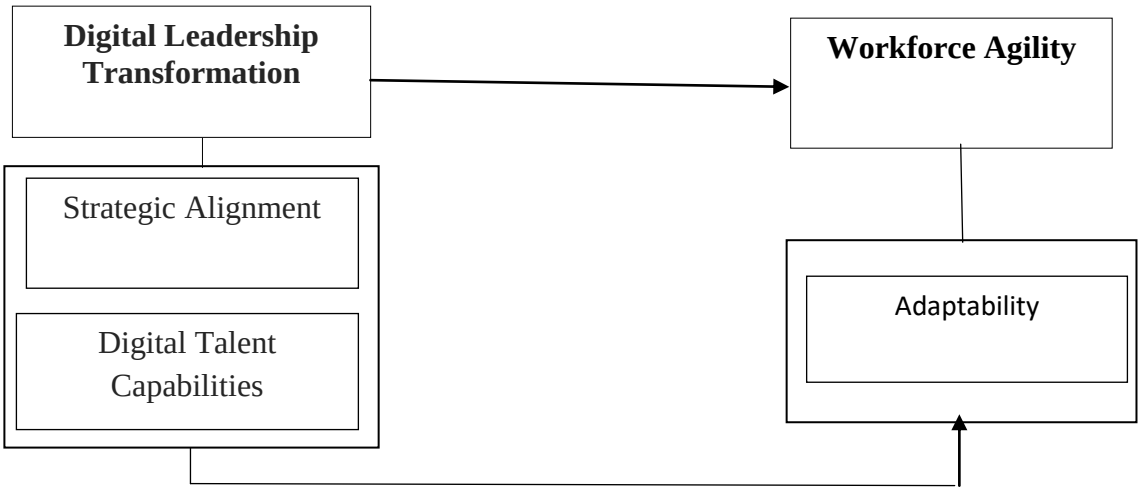


Figure 1. Conceptual Framework of Digital Leadership Transformation and Workforce Agility.

Source: Independent variables adapted from Westerman et al. (2014); Kane et al. (2016); Wade and Hulland (2020). Dependent variable adapted from Petermann and Zacher (2022).

Concept of Digital Leadership Transformation

According to Anderson et al. (2018), new digital-age companies like Amazon, Facebook, and Apple are now posing a threat to the established ICT enterprises. There are several definitions and explanations of digital transformation since so many business executives and organizations are engaged in it. Oestreicher-Singer & Zalmanson (2011) define digital

transformation as the ongoing process of changing the way that existing businesses run their operations. A digital transformation path is supported by three pillars: client centricity, experience, and simplicity. All of this is made possible by an open, collaborative, sharing culture with organizational agility that is supported by cutting-edge modern technology. As the Digital Transformation is altering industries, businesses must act swiftly to capture new business opportunities, launch successful new businesses, and protect their present revenue streams, which will ultimately grow into new ecosystems and platforms. Businesses that successfully migrated are roughly 26% more profitable than their non-digital equivalents, according to Westerman and McAfee (2015).

Many digital transformation efforts concentrate on changing the organization's structure and business model in order to better serve present customers and draw in new ones (El Sawy et al., 2016, Haffke et al., 2017). This is made possible by using both recent and old digital technologies. What about leadership in digital transformation? Little is known about the role leadership plays in a digital transformation endeavor since the literature has not yet provided a complete understanding of Digital leadership transformation (DTL). In the little literature that does exist, DTL is described as "doing the right things for the strategic success of digitalization for the enterprise and its business ecosystem" (El Sawy, 2016). Less than 30% of digital transformation programs are successful, according to a survey of the sector (cf. McKinsey, 2018), and one of the five success determinants is "having the right, digital-savvy leaders in place" (p. 4). But what does this really imply? It has been said that it is crucial to create new leadership roles, such as the Chief Digital Officer (CDO) (Haffke et al., 2016; Horlacher et al., 2016). Therefore, less than one-third of firms have employed a CDO to aid their transformations, despite the fact that having certain digitally savvy leaders in place is linked to transformation success (McKinsey, 2018). Despite this, the growth of the chief digital officer (CDO) underscores the commonly held opinion that a specialist should be chosen to oversee a company's digital transformation (Haffke, 2017).

Scholars have categorized digital leadership in a variety of ways depending on digital technology and digitalization, creative behavior, the location or context in which it is employed, and pre-existing leadership theories and styles. Digital leadership, according to Mihardjo and Sasmoko (2019), is the fusion of a leader's culture and capacity to successfully use digital technology to provide value to the organization. In order to accomplish a goal that relies on ICT, De Waal et al. (2016) define digital leadership as the management of human assistants and ICT use. The success of a company's strategic digitization is what "digital leadership," as defined by El Sawy et al. (2016), means working in the organization's and its business ecosystem's best interests. This word emphasizes the contrast between management and leadership, according to El Sawy et al. (2016). Bennis (1989) asserts that whereas leadership concentrates on doing the right thing for the organization's success, management focuses on doing the right thing.

Strategic Alignment

Strategic alignment refers to the process of harmonizing an organization’s strategy with its internal capabilities and external environment to achieve long-term goals effectively. It involves aligning the organization's vision, objectives, resources, processes, and technologies in a coherent manner to respond proactively to environmental changes and digital demands (Tiersky, 2017; Acur et al., 2012; Chen & Huang, 2008). In order to meet the digital needs of their customers, organizations must have a clear vision, set objectives based on that vision, and then carry out those goals in accordance with the schedule and plan (Tiersky, 2017). If an organization's objectives, rationale, and timeframes are not made clear, it may not succeed in

digital transformation or fail to progress. According to Tiersky (2017), a business beginning its digital transformation without a vision is like someone driving aimlessly. The concept of strategic alignment is based on the management contingency theory. Its core assumption is that performance is greatly influenced by how well an organization's strategy and its external environment mesh. This context is reflected in both the organization's internal and external environments (Acur et al., 2012; Chen & Huang, 2008). Therefore, organizations—whether private or public—function in a particular context by fusing organizational resources, technical capabilities, organizational processes, and strategy. Corporate strategies should also be integrated with the goals, objectives, and plans of the company (Chi et al., 2020). McAdam et al. (2019) assert that changes in strategy alignment occur throughout time. It was consequently characterized as a dynamic process of bringing about adaptation given environmental change and unpredictability. Even if it is developed, strategic alignment cannot be maintained due to the ongoing changes that firms face in the business environment (Price, 2016).

Previous research has shown that the concept of strategic alignment belongs to the context of the science of management information systems because it was first introduced by Henderson and Venkatraman (1993), who defined it as the level of consistency and integration between the organization's strategies and its information technology strategies. Although there is a lack of study on strategic alignment in the public sector (Jacobsen & Johnsen, 2020), this issue is not exclusive to the IT industry (Angulo-Ruiz et al., 2019). This is because understanding the complexity of institutional factors that influence companies' strategic choices depends on interconnected institutional constructions. The "operations" (Alcoba, 2014; Acur et al., 2012), "employees" (Biggs et al., 2014; Brush and Manolova, 2005), and "customers" (McAdam et al., 2019) SA dimensions have therefore been employed in several research. It is important to acknowledge the fact that those research and others have combined two or more aspects. By including a variety of characteristics that provide a more fullfuller picture, the current study aims to analyze the SA from a larger viewpoint. These components include people, customers, business processes, and information technology.

Digital Talent Capabilities

Digital talent capabilities refer to the collective skills, knowledge, behaviors, and attitudes that individuals and organizations need to effectively operate, innovate, and compete in a digital environment. These capabilities enable employees to adopt and leverage digital tools, platforms, and data to enhance business processes, customer experiences, and organizational performance. Digital capabilities are a relatively new idea. The majority of the concept is related to the competitiveness of the private sector, as businesses use digital tools and techniques to upskill their workforce, modernize their infrastructure, improve the quality and delivery of their products, and compete for a larger market share (Brynjolfsson & McAfee, 2014). However, the idea is still somewhat fresh in the public sector. What organizational requirements must be met for a government, ministry, college, or municipality to be deemed "digitally capable"? This extends beyond an individual's capacity or competence, even those at the highest level of management. It necessitates taking into account structural concerns like leadership and strategy, innovation and engagement cultures, staff development and reward, as well as how the digital environment encourages people to express and advance their digital skills (Meihem, 2020).

According to Barney (1991), one of the company's resources is its human capital. The knowledge, abilities, contacts, intelligence, and insight of the employee are among these assets, in Barney's opinion. According to Barney, managerial competence is the most crucial

resource that organizations may employ to carry out their existing strategies. According to the resource-based theory (RBT) method, individuals may be a source of sustained competitive advantage that is not of significant value, is unique, and is challenging to reproduce (Luna-Arocas et al., 2020). As a result, talented individuals have important and strategic roles inside the company (Ibrahim & Al Omari, 2020; Kaewsaeng-on et al., 2021; Kravariti et al., 2022). Numerous academic studies have shown how important and necessary digital talent is to firms as a result of the impact of digital transformation. People must be at the heart of developing organizational core competencies if digital transformation is to occur, which is heavily dependent on technology adoption by the workers within the firm (Almeida et al., 2020; Fahmi et al., 2020).

Digital talent is crucial to developing a company's management strategy (Cabot & Gagnon, 2021; Capgemini, 2017), guaranteeing its long-term survival and success (Gilch & Sieweke, 2021), and bridging the present digital skills gap (Karaboga et al., 2020). Any organization's human resource (HR) managers would agree that managing corporate staff and identifying skill shortages are challenging responsibilities (Cabot & Gagnon, 2021). Since people are the driving force behind change (Fahmi et al., 2020), digitalization must be focused on them (Dini et al., 2011). Executives must also invest in their personnel, especially in soft skills, to guarantee that technology is successful (Frankiewicz & Chamorro-Premuzic, 2020). The academic community is concerned about the problem of person-based digitization, as shown by certain works. Talent retention, talent development, and digital talent have all been covered in earlier research (Akter et al., 2020; Gilch et al., 2021; Karaboga, 2020; Rusly et al., 2021). Prior studies have shown and highlighted the significance of organizational competency via digital talent development.

Concept of Workforce Agility

Workforce agility refers to the ability of employees and teams within an organization to quickly adapt, respond, and remain productive amid change, uncertainty, or disruption. It encompasses a combination of skills, mindsets, and organizational practices that enable the workforce to be flexible, resilient, innovative, and proactive in the face of evolving business environments, technological advancements, and customer demands. The business environment has traditionally been impacted by well-known factors that may be potential opportunities or threats, such as new technologies, new business models, new strategies for handling competition, digitalization, market deregulation and fragmentation, economic uncertainties, shifting demographics, and ongoing social and political unrest (Björkdahl, 2020; Felipe et al., 2020; Holbeche, 2018; Zitkiene & Deksnys, 2018). Customers are now more than just the users of products; they are also an essential component of the production process (Yang & Liu, 2012). The idea of agility was conceived through research carried out at the Iacocca Institute in 1991 with funding from the US government. At the beginning of the 1990s, a new approach to managing dynamic circumstances appeared. This novel concept was referred to as "organizational agility". Numerous literary works have made use of the term "organizational agility" (Bottani, 2009; Yusuf et al., 2009). The upshot of substantial research in this field is that there are many different definitions of agility. For instance, according to Goldman and Nagel (1993), agility is the ability to run a business economically in a market where customer prospects are continually and unpredictably changing.

In order to succeed in the competitive context of continual and unexpected change, agility has also been defined as the ability to adapt quickly and efficiently to altering markets, driven by specifically produced products and services (Gunasekeran, 1999). The term was coined by researchers at the Iacocca Institute of Lehigh University (USA) who defined it as "a

manufacturing system with capabilities (hard and soft technologies, human resources, educated management, information) to meet the rapidly changing needs of the marketplace" (speed, flexibility, customers, competitors, suppliers, infrastructure, responsiveness) (Yusuf et al., 2009). Early in the 1990s, the manufacturing sector helped popularize the idea of agility, which was quickly applied to a wider range of business situations. Agility was developed in the 1950s for use in air warfare. Richards (2006) defined agility as "an air craft's ability to change maneuver state, or, put another way, as the time derivative of maneuverability." In order to endure exceptional risks from the business environment, agility has been characterized as an organization-wide skill to respond swiftly to market changes and to cope flexibly with unanticipated change (Huang, 2009). Agility is a corporate strategy for adjusting to a competitive and dynamic business environment. It is the ability to run a successful firm in a competitive market with unpredictable and continually altering customer prospects (Goldman et al., 2005).

Many authors point to agility as a key critical business success factor in the modern competitive environment (Doz et al., 2008; Cegarra-Navarro et al., 2016; Teece et al., 2016). The idea of workforce agility has become very popular. Workforce agility is the ability of an organization to quickly and effectively adapt to changing conditions by making the most of its human resources (Holbeche, 2018). The manufacturing sector is rapidly changing, according to Smith (2020), as a result of developments in automation, artificial intelligence, and other technologies. A workforce that is adaptable can pick up new skills and methods quickly, keeping the business competitive and effective as technology advances. Rapid shifts in consumer preferences necessitate quick adjustments by manufacturers to their production methods and product lines. Manufacturing companies can quickly retrain or redeploy workers to meet these new demands thanks to workforce agility, which avoids delays and ensures customer satisfaction (Johnson & Martinez, 2019). When faced with disruptions, manufacturing companies can pivot with the aid of an agile workforce by altering their production strategies, sourcing materials locally, or locating different suppliers (Deloitte, 2018).

Adaptability

The notion of adaptability receives a lot of attention in the study literature (Chaharbaghi et al., 2005; Kotter & Heskitt, 1992; Kotter & Heskitt, 1992). Simsek (2009) defines adaptability as an organization's capacity to "reconfigure activities quickly to meet changing demands." According to Basadur et al. (2014), adaptability is excellent at altering routine in the company, implying that change is disruptive. They propose that adaptability be thought of as a four-stage process that includes creating, envisioning, and solving challenges, followed by implementing solutions. Adaptability is the ability to transition from one activity to another and the capacity to adapt to change (Dyer & Shafer, 2003; Sohrabi et al., 2014). According to Oreg (2006), openness to change is critical to fostering workplace adaptation. These variables help people adapt to their jobs, allowing them to flourish in dynamic and changing circumstances. Organizations may increase worker agility via adaptation by combining these characteristics

Theoretical Review

The theoretical Review of this study centered on Transformational Leadership Theory which provide a foundation for better understanding of how organizations lead, and adapt in

contemporary environments when using digital leadership transformation to achieve workforce agility.

Transformational Leadership Theory

One of the core principles of transformational leadership is the emphasis on creating a supportive and empowered corporate culture. Bass and Riggio (2006) claim that transformational leaders may create an atmosphere where employees feel valued, empowered, and motivated to contribute to the company's success. This positive culture is characterized by open communication, trust, and a strong sense of purpose (Bass & Riggio, 2006). The transformational leadership theory contends that leaders may have a significant impact on the organizational culture, improving employee engagement and productivity. This style of leadership is characterized by managers who inspire and motivate their staff to go above and beyond what is expected of them. Within the organization, these leaders foster a culture of creativity, shared vision, and constant learning. Four fundamental characteristics that transformational leaders must exhibit in order to influence the corporate culture were outlined by Avolio and Bass (1991). Idealized influence, motivation that inspires, intellectual stimulation, and focused attention are these.

Assumptions of Transformational Leadership Theory

Leadership is a Process of Influence: Transformational leadership assumes that leadership is not merely about authority or formal position but about influencing and inspiring others to achieve shared goals (Bass, 1985; Northouse, 2019).

Followers are Motivated Beyond Basic Needs: It is assumed that individuals can achieve higher levels of motivation and performance when their values, self-concepts, and personal goals are aligned with those of the organization (Bass & Riggio, 2006).

Leaders and Followers Elevate Each Other: Burns (1978) posits that transformational leadership involves a mutual process of elevating both leaders and followers to higher levels of motivation and morality.

Leadership is Based on Charisma, Inspiration, and Vision: Transformational leaders are expected to be visionary and charismatic, inspiring their followers with a clear and compelling future direction (Bass, 1985; Avolio & Bass, 1995).

Individual Differences Matter: The theory assumes that followers are individuals with unique needs and potentials, and leaders must offer personalized support and development, a principle known as individualized consideration (Bass & Riggio, 2006).

Change is Inevitable and Desirable: Transformational leadership presupposes that organizational and personal change is both necessary and positive. Leaders must act as agents of change in dynamic environments (Avolio & Yammarino, 2013).

Leadership is Ethical and Values-Driven: Ethical behavior and moral integrity are central to transformational leadership, with leaders serving as role models who guide followers through value-based decision-making (Burns, 1978; Bass & Steidlmeier, 1999).

Emotional Intelligence is Critical: Leaders must possess emotional intelligence to manage relationships, empathize with followers, and inspire trust and confidence (Goleman, 1998;

Avolio & Gardner, 2005).Transformational leaders inspire admiration and respect in their followers by setting an example for them through idealized influence. They foster a culture of integrity and devotion by upholding high ethical standards and showing attention to the organization's goals, which encourages their followers to emulate similar behaviors (Bass & Riggio, 2006). By inventing a compelling future vision and skilfully communicating it, great leaders motivate and excite their team members. This fosters a culture of enthusiasm, shared purpose, and perseverance in achieving challenging goals, claim Avolio and Bass (1991). Transformational leaders encourage their followers' creativity and invention by challenging their minds. By questioning accepted beliefs and promoting critical thinking, they promote a culture of continual learning, adaptation, and intellectual advancement (Podsakoff et al., 1990). Leaders who demonstrate tailored attention take into consideration the unique needs and objectives of their followers. By offering tailored support and guidance, they promote a culture where employees feel valued, inspired, and motivated to reach their greatest potential (Judge & Piccolo, 2004).

In academic research, the impacts of transformational leadership on worker engagement and productivity are extensively documented. A study by Podsakoff et al. (1990) found a positive correlation between transformational leadership approaches and employee engagement, motivation, and satisfaction. In a different study, Judge and Piccolo (2004) discovered a strong link between transformational leadership and individual performance. As a result, the idea of transformational leadership highlights the important role that leaders play in establishing corporate culture. By promoting a pleasant and empowering environment, this kind of leadership encourages employee engagement and enhances performance. By creating a culture of shared objectives, inspiration, intellectual stimulation, and individual concern, transformational leaders aid the company's success and growth.

Empirical Review

In a survey research, Ghonim et al. (2022) investigated how strategic orientation affects the quality of decisions. Using a self-completed questionnaire, 383 employees of the Directorate of Health Affairs in the Dakahlia Governorate of Egypt provided primary data. The gathered data were examined using the PLS-SEM method. The findings demonstrated that strategic alignment significantly and favorably affects decision effectiveness and its components. It underlined the significance of taking into account all four aspects of strategic alignment in an integrated model to maximize the efficacy of decisions. Since the research is being applied to a developing nation, a comparison between developing and developed nations would be necessary. Second, because the study only included nonprofit organizations, more research may focus on nonprofits.

McCarthy et al. (2021) look at DTL's characteristics. They thoroughly review the information systems literature in order to accomplish this aim. A systematic methodology was used to find 87 research papers. These articles were tagged as part of the content analysis, producing 600 coded excerpts that reflected the "who" and "what" of DTL. They identify eight leadership characteristics for digital transformation: digital strategist, digital culturalist, digital architect, customer-centric, organizational agile, data champion, business process optimizer, and digital workplace landscaper. Additionally, they provide a taxonomy based on the literature review and outline an early DTL feature to C-suite job mapping. Since the study identifies areas for future and ongoing research focus as well as research gaps, it is relevant to both academics and practitioners. It adds to a better understanding of the role and focus of leadership in the context of digital business transformation based on an empirical analysis of

eight Finnish service organizations. A qualitative content analysis of the information from 46 interviews reveals the four primary leadership emphases of digital business transformation: strategic vision and action, leading cultural change, enabling, and leading networks. The findings were evaluated in light of prior research on leadership and digital business growth.

Thuda et al. (2023) examine the effect of digital talent and digital aptitude on bank performance. 344 employees of the North Sulawesi and Gorontalo Regional Development Bank from various departments and locations participated in this quantitative survey as respondents. The data is processed using SmartPLS 4.0.8.4. The results show that digital skill and capacity have a positive and significant influence on bank performance. In contrast, digital competency rather than digital talent has a greater impact on improving bank performance. This research expands on existing theoretical frameworks to examine digital talent and skills. This research may also assist the Indonesia Regional Development Bank in accelerating its digital transformation and enhancing the skill and capability of the digital sector, which would improve bank performance. In order to increase regional development banks' competitiveness in the Indonesian banking sector, this study delivers digital talent and digital capabilities research in banking.

Gap in Literature and Summary

Despite the growing body of research on digital leadership and strategic alignment, gaps remain. First, one study focuses solely on nonprofit organizations in a developing country, suggesting a need for comparative studies across sectors and regions, especially in for-profit and manufacturing contexts. Another study offers a robust taxonomy of digital transformational leadership (DTL) traits but relies heavily on literature reviews and qualitative data from service organizations in a developed country, limiting generalizability to other industries and geographical contexts such as sub-Saharan Africa. A third study highlights the role of digital talent and competencies in banking, yet findings are sector-specific and do not explore the interplay between digital leadership traits, strategic alignment, and workforce agility, especially within manufacturing firms. Overall, empirical research integrating DTL, strategic alignment, and workforce agility in manufacturing settings, particularly in developing economies, is limited. Empirical studies emphasize the roles of strategic alignment, digital transformational leadership traits, and digital talent in enhancing decision quality and organizational performance. One study underscores strategic alignment's role in decision-making within nonprofit settings, while another provides a taxonomy of DTL traits based on qualitative data from service firms. A third study focuses on digital competency’s impact on banking performance. However, a critical gap exists in integrating these constructs—particularly DTL, strategic alignment, and workforce agility—within manufacturing firms in developing countries, warranting further research.

Methodology

The study adopted a cross-sectional research design with a quantitative methodological approach, targeting 54 manufacturing firms in South-South Nigeria. A judgmental sampling technique was used to select these firms, with 324 respondents comprising top, middle, and lower-level managers (averaging six per firm). The primary data collection instrument was a structured questionnaire distributed via email, allowing respondents adequate time to provide thoughtful responses. The study examined three categories of variables: digital leadership transformation (independent variable), workforce agility (dependent variable), and a moderating variable. Validity was ensured through face and content assessments by experts,

while reliability was confirmed using Cronbach's Alpha, with a threshold of 0.70. Data analysis was conducted in three phases: demographic analysis using frequency tables and charts; descriptive statistics (mean and standard deviation) to address research questions; and inferential statistics using Spearman's Rank Order Correlation to test hypotheses. SPSS version 26.0 was used for the data analysis.

Univariate Analysis of Items on Questionnaire

Univariate analysis of mean scores and standard deviations on Strategic Alignment is a powerful tool for organizations seeking to understand, evaluate, and improve the alignment of employee perceptions with strategic goals. It offers actionable insights that can inform targeted interventions, fostering a more cohesive and strategically aligned workforce. Table 1 contained the result.

Table 1 Analysis of Items Strategic Alignment

Descriptive Statistics

	N	Sum	Mean	Std. Deviation
Our organization's digital initiatives are directly aligned with our overall business objectives.	172	647.00	3.7616	1.34039
Top-level management provides clear guidance on how digital strategies contribute to the achievement of our long-term goals.	172	688.00	4.0000	1.22355
The digital projects we undertake are chosen based on their potential to enhance our competitive position in the market	172	662.00	3.8488	1.48692
Our organization consistently reallocates resources to support digital initiatives that show promise for strategic alignment.	172	743.00	4.3198	1.16331
The communication between our digital teams and other departments is effective in ensuring that everyone is on the same page.	172	658.00	3.8256	1.47646
Our organization prioritizes collaboration and knowledge sharing between digital teams and other departments	172	624.00	3.6279	1.53361
We regularly review and update our digital strategies to ensure their relevance in a rapidly changing business environment.	172	680.00	3.9535	1.32812
Our digital initiatives consider customer feedback and preferences to enhance the overall customer experience.	172	731.00	4.2500	1.20002
The success of our digital projects is celebrated across the organization, reinforcing their importance.	172	681.00	3.9593	1.45641
Valid N (listwise)	172			

Source: Researcher's Desk (2024)

The analysis of Table 1 reveals varied perceptions regarding the alignment and execution of digital strategies within the organization. Item 1 indicates a moderate alignment between digital initiatives and business objectives, with notable variability in responses, suggesting

the need for improved communication and strategy integration. Item 2 shows strong consensus that top-level management provides clear digital direction, reflecting effective leadership communication and shared strategic understanding. Item 3 highlights moderate agreement on the role of digital project selection in market competitiveness, but a high standard deviation suggests diverse views, pointing to the need for refined selection criteria and enhanced stakeholder communication. Item 4 shows strong agreement and consistency regarding the reallocation of resources for aligned digital initiatives. Items 5 and 6 show moderate agreement but wide variability in opinions on interdepartmental communication and collaboration, indicating areas for improvement in cross-functional engagement. Item 7 suggests moderate agreement on the regular review of digital strategies, with some variation, underscoring the need for agility. Item 8 reveals strong and consistent support for customer-centric digital initiatives, while Item 9 shows moderate agreement on recognizing digital project successes, with varied responses, indicating a need to strengthen recognition practices. Overall, the findings underscore both strengths and improvement areas in strategic alignment, communication, and collaboration around digital transformation.

Table 2 Analysis of Items of Digital Talent Capabilities

Descriptive Statistics

	N	Sum	Mean	Std. Deviation
Our organization has a clearly defined strategy for attracting and retaining digital talent.	172	636.00	3.6977	1.37709
Our organization actively recruits individuals with expertise in emerging digital technologies.	172	687.00	3.9942	1.22592
Our organization invests in continuous training and skill development to keep up with the evolving digital landscape	172	658.00	3.8256	1.49222
Digital skills and competencies are integrated into our performance evaluation and development plans.	172	737.00	4.2849	1.18726
We have a diverse and inclusive workforce that contributes to a wide range of digital perspectives.	172	653.00	3.7965	1.48260
We provide opportunities for cross-functional collaboration to promote knowledge sharing among digital teams.	172	619.00	3.5988	1.54337
Our digital teams are well-equipped with the necessary resources to execute their projects effectively.	172	675.00	3.9244	1.38077
Valid N (listwise)	172			

Source: Researcher's Desk (2025).

The analysis of the seven items reveals a generally moderate to high level of agreement among respondents regarding the organization's digital talent management practices. High mean values on items such as recruitment of digital experts and integration of digital skills into performance evaluations indicate strengths in proactive hiring and alignment of competencies with performance goals. However, moderate mean scores and relatively high standard deviations across several items—particularly those related to strategy clarity, training effectiveness, diversity, collaboration, and resource adequacy—suggest varying perceptions among employees. These variations point to the need for the organization to

review and enhance its current strategies by incorporating employee feedback, improving communication, and fostering a more inclusive and collaborative digital culture. Overall, the findings emphasize the importance of continuous evaluation and adaptation to strengthen the organization's digital capabilities and workforce readiness.

Table 3 Analysis of Items of Adaptability

Descriptive Statistics

	N	Sum	Mean	Std. Deviation
Our workforce is comfortable adapting to changing circumstances and embracing new challenges.	172	663.00	3.8547	1.17321
Team members are quick to adapt to new technologies and tools to enhance their productivity.	172	676.00	3.9302	1.34025
Our organization embraces change and views it as an opportunity for growth.	172	664.00	3.8605	1.44419
When faced with unexpected changes, our team members remain flexible and adjust their plans.	172	685.00	3.9826	1.36143
Our organization encourages continuous learning and development to stay relevant in a changing environment.	172	678.00	3.9419	1.30545
Our organization seeks feedback from employees on changes and values their input.	172	643.00	3.7384	1.43316
Our workforce actively seeks opportunities to collaborate with other teams to achieve common goals.	172	676.00	3.9302	1.37471
Valid N (listwise)	172			

Source: Researcher's Desk (2025).

The analysis of the items reveals a generally positive perception among respondents regarding the organization's adaptability and openness to change. Mean scores ranging from moderate to high across the seven items indicate that employees recognize efforts toward adaptability, technological adoption, flexibility, continuous learning, and collaboration. For instance, workforce adaptability and technological responsiveness are viewed favorably, though slight variations in perceptions—reflected by standard deviations—suggest differing levels of experience and comfort among employees. Similarly, while the organization is seen as encouraging learning and collaboration, inconsistencies in feedback mechanisms and openness to change highlight areas for improvement. To address these, the organization can implement targeted strategies such as celebrating adaptability, offering tailored training, fostering supportive leadership, encouraging feedback loops, and strengthening communication.

Bivariate Analysis

The bivariate analysis focused on testing the stated research hypotheses formulated to guide the study. The main aim of the test was to examine the relationship between all the dimensions of digital leadership transformation and measures of workforce agility adopted in

this study in order to generate findings. Bivariate analysis testing the relationship between digital leadership transformation dimensions and workforce agility is instrumental in providing actionable insights for organizations. The findings contribute to evidence-based decision-making, strategic alignment, and continuous improvement efforts, ultimately enhancing organizational effectiveness in the digital age.

Test of Research Hypotheses One

$H0_1$: There is no significant relationship between strategic alignment and adaptabilityof manufacturing firms in South-South, Nigeria.

Table 4 Correlation between Strategic Alignment and Adaptability

Correlations

			Strategic Alignment	Adaptability
Spearman's rho	Strategic Alignment	Correlation Coefficient	1.000	.833**
		Sig. (2-tailed)	.	.000
		N	172	172
	Adaptability	Correlation Coefficient	.833**	1.000
		Sig. (2-tailed)	.000	.
		N	172	172

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Researcher's Desk (2025).

The correlation analysis presented in Table 4 reveals a statistically significant and strong positive relationship between strategic alignment and adaptability (Spearman's rho = 0.833, $p < 0.01$). This implies that organizations with higher levels of strategic alignment tend to exhibit greater adaptability. The strength and significance of the correlation suggest that strategic alignment is a key factor in enhancing an organization's ability to respond effectively to change.

Test of Research Hypotheses Two

$H0_2$: There is no significant relationship between digital talent capabilities and adaptability of manufacturing firms in South-South, Nigeria.

Table 5 Correlation between Digital Talent Capabilities and Adaptability

Correlations

			Digital Talent Capabilities	Adaptability
Spearman's rho	Digital Talent Capabilities	Correlation Coefficient	1.000	.784**
		Sig. (2-tailed)	.	.000
		N	172	172
	Adaptability	Correlation Coefficient	.784**	1.000
		Sig. (2-tailed)	.000	.
		N	172	172

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Researcher's Desk (2025).

The correlation result in Table 5 shows a statistically significant and strong positive relationship between digital talent capabilities and adaptability (Spearman's rho = 0.784, $p < 0.01$). This indicates that organizations with higher levels of digital talent capabilities are more likely to be adaptable in dynamic environments. The strength of the correlation suggests that investing in and developing digital skills and competencies within the workforce can significantly enhance an organization's capacity to adjust to changes, innovations, and emerging challenges. Thus, digital talent capabilities play a vital role in fostering organizational adaptability.

Findings of the Study

The findings of this study reveal that strategic alignment and digital talent capabilities are both significantly and positively related to the adaptability of manufacturing firms in South-South, Nigeria. Specifically, the analysis shows a strong positive correlation between strategic alignment and adaptability (Spearman's rho = 0.833, $p < 0.01$), indicating that firms that align their strategies effectively are more likely to adapt successfully to environmental changes. Additionally, there is a statistically significant and strong positive relationship between digital talent capabilities and adaptability (Spearman's rho = 0.784, $p < 0.01$), suggesting that firms with well-developed digital competencies within their workforce are better positioned to navigate dynamic business conditions. These results underscore the importance of strategic focus and digital workforce readiness as critical drivers of organizational adaptability in the manufacturing sector.

Discussion of Findings

In this section the study discussed the findings from the tested hypotheses.

Relationship between Strategic Alignment and Adaptability

Strategic alignment is crucial for adaptability as it ensures that organizational goals and actions are adjusted in response to changing circumstances. The above finding is supported by the work of Oyadomari et al. (2023). They examined the relationships among strategically aligned performance indicators, controls, and performance. They investigated if planning and cost controls and strategically aligned performance indicators (SAPI) are necessary and sufficient conditions to achieve a high level of organizational performance (OP). Their findings showed the reduced importance of planning controls and the great importance of aligning priorities and indicators to achieve high levels of performance. They used a quantitative methodology based on contingency theory in a survey of 89 Brazilian firms. The relationships were tested using partial least squares structural equations modeling (PLS-SEM), and necessary condition analysis (NCA) was applied to identify the management controls that are sufficient and necessary conditions for superior performance. The results of the study suggest that a high level of strategically aligned indicators is necessary to achieve a high level of performance. Results also suggest the importance of aligning strategic priorities with appropriated performance indicators, primarily defended in the normative (balanced scorecard) and empirical literature. Hence, strategic alignment positively influences an organization's ability to adapt to environmental changes. Strategic alignment enables organizations to adapt their business strategies in response to market shifts. This may involve entering new markets, introducing innovative products, or restructuring operations to align with strategic goals.

Relationship between Digital Talent Capabilities and Adaptability

This finding is similar to the study conducted by Fahmi et al. (2020) on the digital talent capabilities model, with a focus on attitudes toward change, can have meaningful implications for manufacturing firms undergoing digital transformation. The central premise of the study underscores the significance of human resources in driving digital transformation. This perspective is applicable to manufacturing firms as they too rely heavily on their workforce to adapt to and implement new technologies in their processes. Manufacturing firms aiming to stay competitive in the modern business environment need to identify and cultivate digital talent competencies. The study provides a conceptual model that emphasizes the attitudes toward change as a crucial component. Manufacturing organizations can adapt and apply this model to identify and foster digital talent competencies within their workforce. The study suggests that certain digital talent competencies have the potential to accelerate digital transformation. For manufacturing firms, this implies that by focusing on developing specific competencies related to digital literacy, attitudes toward change, and performance culture, they can expedite their digital transformation initiatives. The conceptual model proposed by the study can serve as a guide for manufacturing firms as they navigate digital transformation. The model emphasizes not only technical skills but also attitudes toward change as a crucial element. This holistic approach aligns with the multifaceted nature of digital transformation in manufacturing.

Conclusion

Given that the research examined the connection between digital leadership transformation and workforce agility, the results it produced, becomes critical to reach reliable conclusions in order to allow the findings based on the issue investigated to be applied more broadly. Through this study, it iis discovered that one element of the issues facing manufacturing companies in south-south Nigeria was identified. As a result, the research discovered a significant relationship between worker agility and digital transformation leadership. This

implies that workforce agility may be improved via digital transformation leadership. According to the study's results, digital leadership transformation and workforce agility are significantly correlated in south-south Nigerian manufacturing firms. In detail, strategic alignment relates to adaptability. The study concluded that digital talent capabilities relate to adaptability of manufacturing firms in South-South, Nigeria.

Recommendations

Based on the findings, the study suggested the following recommendations:

i. Manufacturing firms should ensure that their organizational goals, departmental activities, and employee responsibilities are aligned with the broader strategic vision of the company. This can be achieved by involving all levels of management in strategic planning, regularly communicating strategic objectives across departments, and reviewing alignment periodically to respond to market or policy changes. A well-aligned workforce is better positioned to respond flexibly to external changes.

ii. Firms should prioritize continuous learning and upskilling of their workforce in digital tools, data analytics, and emerging technologies. This could involve setting up in-house digital training programs, sponsoring professional certifications, or partnering with digital training institutions. By building digital talent internally, firms can boost agility and innovation, enabling employees to respond more effectively to digital disruptions and competitive pressures.

Contributions to Knowledge

This study contributes significantly to existing knowledge by providing empirical evidence on the influence of digital leadership transformation on workforce agility within manufacturing firms in South-South Nigeria. While much of the prior literature has focused on developed economies and service-oriented sectors, this research expands the discourse by contextualizing digital leadership in a regional manufacturing setting characterized by infrastructural and operational challenges. The study establishes a strong positive relationship between digital leadership transformation on workforce agility within manufacturing firms in South-South Nigeria. By developing and validating a sector-specific conceptual framework, the study offers a useful model for both academic inquiry and practical assessment. Furthermore, it provides actionable insights for managers and policymakers on how to foster agile workforces through digital leadership and human capital development initiatives.

Suggestions for Further Research

The investigation of the relationship between digital leadership transformation and workforce agility of manufacturing firms in South-South, Nigeria opens up several avenues for further research. Further research should compare the outcomes of transformational leadership, transactional leadership, and other leadership styles to understand which is most effective in promoting workforce agility. Further studies can explore the employee perspective by conducting surveys or interviews to understand how employees perceive and respond to digital leadership transformation initiatives. This could provide valuable insights into the factors that contribute to or hinder workforce agility from the employee's point of view. There is need to extend the research to include other industries beyond manufacturing to see if the findings are consistent across different sectors. This could provide a broader understanding of the generalizability of the relationship between digital leadership transformation and workforce agility.

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