



THE ROLE OF DIGITAL LEADERSHIP IN BUILDING EMPLOYEE READINESS FOR WORKPLACE AUTOMATION

Rahayu Mardikaningsih, Didit Darmawan

Universitas Sunan Giri Surabaya

correspondence: rahayumardikaningsih@gmail.com

Abstract

This study analyzes digital leadership and its influence on workforce adaptability facing automation through qualitative literature review method. Findings indicate that digital leadership affects workforce adaptability through social modeling, psychological climate for continuous learning, clear vision articulation, work system redesign, professional identity transition management, cross functional collaboration facilitation, and sustainable feedback structures. This influence is mediated by technology self efficacy and learning orientation, moderated by individual differences and organizational technology maturity. Effective digital leadership incorporates ethical dimensions and requires style adjustment to organizational development stages. The relationship between digital leadership and adaptability is reciprocal, creating a virtuous cycle that accelerates organizational adaptive capacity. Investment in digital leadership development constitutes a strategic necessity for organizational survival and growth in the automation era.

Keywords: digital leadership, workforce adaptability, automation, organizational change, technology adoption

Introduction

The development of automation technology has transformed the operational landscape of organizations across various industrial sectors. Automation systems that integrate artificial intelligence, robotics, and massive digital data processing are beginning to replace routine functions previously performed by human labor. This condition forces organizations to re-evaluate job structures and the competencies required from employees. Many companies are adopting robotic process automation software and algorithm-based management systems to increase production efficiency and reduce human error. This fundamental change in the way of working is inevitable and occurs at varying speeds across industries. The manufacturing, logistics, banking, and administrative service sectors have become areas with the highest automation penetration. Consequently, the workforce is faced with a new reality where the work they do undergoes significant changes or even disappears entirely. On the other hand, new jobs are emerging that require an understanding of digital systems and the ability to adapt to continuously evolving technology (Masriadi et al., 2023). This phenomenon creates a demand for organizations to prepare employees to remain relevant. Naturally, this makes it necessary for companies to think of new ways to manage employees so they remain aligned with today's modern technological advances (Darmawan, 2022).

Employee readiness in facing automation becomes a determining factor for the success of an organization's transition toward more digital operations (Ahmad et al., 2022). Employees who can adapt quickly to technological changes will become valuable assets, while those who are resistant or slow to adapt risk experiencing a decline in productivity. Workforce adaptability includes the ability to learn new tools, change work methods, and develop critical thinking toward automation processes. Previous research shows that employee adaptability is influenced by various organizational factors, including the leadership style applied. Leaders in the digital era can no longer rely on traditional command-and-control approaches because change happens too quickly. A leadership approach is needed that is capable of building a continuous learning ecosystem and providing clear direction amidst technological uncertainty. Organizations that fail to develop the adaptive capacity of their employees will lag behind

more agile competitors. Therefore, an understanding of how digital leadership affects workforce adaptability becomes very crucial. Besides technological matters, maintaining the health and comfort of employees at work is also very important so they remain productive (Darmawan, 2020). Moreover, every new technology used must still prioritize a sense of fairness for all workers (Radjawane & Mardikaningsih, 2022).

Digital leadership emerges as a new paradigm in the management of organizations operating in high-technology environments (Benchea & Ilie, 2023). This concept differs from conventional leadership because it emphasizes the leader's ability to utilize digital technology in decision-making processes, communication, and team development. Digital leaders are required to have adequate technological literacy, an understanding of digital system architecture, and the ability to translate technological complexity into language that is easily understood by all members of the organization. Additionally, digital leadership encompasses competencies in building virtual collaboration, managing remote teams, and creating an organizational culture that accepts technological change as something natural. Characteristics of a digital leader include a clear vision of the organization's digital future, the ability to inspire experimentation, and resilience in the face of technological failure. Such leaders act as catalysts that accelerate the process of technology adoption across all levels of the organization. Without proper leadership, large investments in automation infrastructure can be in vain due to resistance from the end users, namely the employees themselves. In this regard, a leader must be trustworthy and take full responsibility for all digital policies adopted (Gani & Darmawan, 2022). Remote work systems have now also become a common thing that must be well-managed by today's leaders (Mardikaningsih & Darmawan, 2022).

The influence of leadership on employee adaptability has long been a focus in change management literature. However, studies specifically examining the relationship between digital leadership and employee readiness to face automation are still relatively limited. Most research tends to focus on the technical aspects of automation implementation or the psychological dimensions of employees in isolation. An approach that integrates these two aspects within a digital leadership framework has not been widely developed. This gap becomes a problem because

practitioners require concrete guidance on which leadership actions are most effective in increasing adaptability. Some studies show that communicative and supportive leaders can reduce employee anxiety regarding technological change. However, communication alone is not enough when employees are faced with the need to master complex new technical skills. More structured leadership interventions are required, such as the creation of individual learning paths, reward systems based on technology mastery, and the provision of a safe space to experiment and make mistakes. The way leaders communicate digitally, including through electronic messages, still proves to be very influential in the work environment (Sinambela & Darmawan, 2021). Proper direction also assists the smooth flow of various digital service innovations so they are more easily accepted by the public (Putra et al., 2023).

Organizations in Indonesia face specific challenges in implementing digital leadership due to a workforce with diverse levels of digital literacy. Most workers in traditional sectors are not yet accustomed to digital system-based operations, while the younger generation entering the workforce already has different expectations regarding technology use. This generational gap creates additional complexity for leaders in designing appropriate approaches for each group of employees. Furthermore, uneven digital infrastructure across regions remains a practical barrier to building comprehensive organizational readiness. Digital leaders in Indonesia need to consider these local conditions without sacrificing the efficiency standards demanded by automation. Successful leadership strategies in developed countries cannot necessarily be hedonistically adopted without adjustments to the local socio-cultural reality. Therefore, a deeper understanding of the transmission mechanism of leadership influence on adaptability under conditions of limited resources is necessary. It is true that the lifestyle differences of today's youth bring their own influence to the way they work (Kurniawan & Khayru, 2021). Consequently, access to technology and digital skills must be felt by all groups equitably (Arifin & Darmawan, 2021; Ramle & Mardikaningsih, 2022).

The main problem facing organizations today is the lack of clarity in the causal relationship between specific digital leadership practices and the improvement of employee adaptability toward automation. Many companies have invested large sums to train their leaders in using

digital tools, yet the results achieved are not always proportional to expectations. Leaders are trained to use digital collaboration platforms and understand data analytics, but they struggle to translate these competencies into concrete actions that change employee behavior. As a result, employees continue to show resistance to automation even though leaders hold digital competency certifications. The gap between leaders' knowledge of technology and their ability to influence subordinates' adaptability is a serious, unsolved problem. At the operational level, employees report that they do not receive sufficient guidance on how their jobs will change alongside the implementation of automation systems. The instructions given are often technical and do not touch upon the psychological aspects of the change. This leads to confusion and anxiety, which ultimately lowers productivity. This issue must also consider the condition of female workers who often bear a heavy burden between work and household affairs (Fauzi, 2023).

Another problem lies in the absence of a systematic framework to measure the influence of digital leadership on employee adaptability. Organizations tend to use indicators that are too simple, such as the number of technology training sessions attended or employee satisfaction levels with digitalization programs. Such indicators are unable to capture the substantive behavioral changes required in facing automation. Adaptability should be measured through the employees' ability to independently modify work methods, the speed of adopting new tools, and the capacity to identify opportunities for efficiency improvement through automation. Without proper measurement tools, organizations cannot evaluate whether the leadership interventions performed provide the expected results. Furthermore, the absence of these measurement standards makes it difficult to compare the effectiveness of various digital leadership approaches across organizations. Empirical research that can identify key variables in this relationship is still very limited. Consequently, practical recommendations given to managers are often generic and not applicable to the specific conditions of their respective companies. Every step taken must be carefully considered to provide real benefits for everyone.

The urgency of this research lies in the pressing need to provide a theoretical foundation for practitioners in designing digital leadership

development programs oriented toward increasing workforce adaptability. The ever-increasing pace of automation demands that organizations move quickly in preparing their employees. Delays in building adaptability can result in significant competitive disadvantages, including a decline in market share and the loss of top talent. This research is also necessary to fill the gap in academic literature regarding the specific mechanisms linking digital leader behavior with adaptive employee responses. By understanding these mechanisms, the development of leadership theory can be enriched and directed toward constructs that are truly relevant to the automation era. Hopefully, the results of this research can serve as a simple guide that is easy for anyone in the world of work to apply.

The purpose of this research is to analyze the influence of digital leadership on workforce adaptability in the era of automation. This study aims to identify the dimensions of digital leadership that are most significant in shaping employee readiness for technological change. The results of this research are expected to provide a theoretical contribution to the development of human resource management science as well as a practical contribution in the form of recommendations for organizations in designing effective digital leadership development programs.

Method

This research utilizes a qualitative literature study approach as the primary method to address the established research questions. A literature study is a method of collecting and synthesizing knowledge from various written sources relevant to the research topic. As explained by Beins (2017), library research allows researchers to build a comprehensive understanding of a phenomenon without having to conduct primary data collection in the field. This method was chosen because the topics of digital leadership and workforce adaptability toward automation are areas that have been widely discussed in academic literature; thus, a synthesis of existing knowledge can produce meaningful new insights. Stratton (2019) emphasizes that a well-designed literature study is capable of identifying patterns of relationships between variables that might be overlooked by individual

studies. In this research, the researcher conducted a search for sources discussing digital leadership, employee adaptability, and workplace automation. These sources include scientific journal articles, textbooks, conference proceedings, and research reports from trusted institutions. The search process was conducted using structured keywords such as *digital leadership*, *workforce adaptability*, *automation readiness*, and *technology adoption behavior*.

The implementation of the literature study in this research follows a systematic procedure adapted from frameworks developed by methodology experts. Patel and Patel (2019) outline that a credible literature study must go through the stages of problem identification, literature search, source evaluation, information analysis, and synthesis of findings. The researcher followed these stages by performing a strict selection of the sources used. Inclusion criteria included the relevance of the topic to digital leadership and workforce adaptability, a publication year within the last ten years, and the reputation of the publisher or journal. Sources that did not meet methodological quality criteria or possessed arguments not supported by adequate evidence were excluded from the analysis. Barry, Merkebu, and Varpio (2022) offer a six-step approach for knowledge synthesis in literature studies: determining research questions, identifying relevant literature, assessing literature quality, extracting data, analyzing findings, and composing a narrative synthesis. This approach was applied in the research to ensure that the results of the discussion do not merely summarize previous research, but rather produce a new construction of knowledge regarding the relationship between digital leadership and workforce adaptability. The analysis was conducted using the constant comparative method to identify main themes, similarities, differences, and gaps in the existing literature. The entire analysis process was systematically documented to maintain the transparency and reproducibility of the research.

Result and Discussion

Digital leadership refers to a leader's ability to utilize digital technology to direct, coordinate, and develop individuals and teams in an increasingly digitized work environment. This leadership is not limited

to technological mastery but encompasses the capacity to build an adaptive work vision, encourage collaboration based on digital platforms, and create effective communication patterns in virtual workspaces. In practice, digital leadership demands that leaders be able to manage rapid change, understand the dynamics of remote work, and maintain connectivity and trust among team members even without direct physical interaction. The scope of digital leadership includes technology-based performance management, development of employee digital competencies, strengthening a work culture open to innovation, and the utilization of data in decision-making processes. Furthermore, digital leadership also covers the ability to maintain a balance between technological efficiency and the human aspects within the organization. It is indeed true that the main key to this progress is how we can combine technological plans with proper change management so that everything runs in tandem (Sinambela, 2023).

The measurement indicators of digital leadership can be seen through several dimensions that reflect the effectiveness of the leader's role in a digital environment. The first dimension is digital literacy, which indicates the extent to which a leader understands and is able to use technology appropriately to support work activities. The second dimension is digital communication capability, which includes the clarity of message delivery, openness of interaction, and the ability to build relationships through virtual media. The third dimension is innovation orientation, reflected in the drive toward the use of new technologies and the development of more efficient work methods. The fourth dimension is data-driven decision-making, which demonstrates the leader's ability to utilize digital information to generate accurate decisions. The fifth dimension is the ability to build team trust and engagement, seen from the level of member participation and commitment in a digital work environment. The sixth dimension is adaptability, reflecting the leader's readiness to face technological changes and continuously evolving work dynamics. Through these indicators, digital leadership can be comprehensively assessed in supporting organizational success in the digital era. We must also remember that behind the sophistication of technology, the human role remains irreplaceable in maintaining harmony and unity within society (Fariz, 2021). Additionally, the role of

women as agents of change is also very important to note in this social transformation process (Aisyah, 2023).

Digital leadership is defined as a leader's ability to utilize digital technology in directing, motivating, and developing employees toward achieving organizational goals in an environment fraught with technological change. This definition emphasizes that digital leadership is not merely the mastery of technological tools, but rather the capacity to integrate technology into all aspects of human resource management. Effective digital leaders demonstrate behaviors such as transparent communication through digital platforms, real-time data-driven decision-making, and granting autonomy to employees to explore new technological solutions. These behaviors differ fundamentally from traditional leadership, which relies on hierarchy and bureaucratic procedures. In organizations transforming toward automation, digital leaders are required to be role models in adopting new technologies. Employees tend to mirror the leader's attitude toward change; thus, a leader who shows enthusiasm and resilience in the face of technical difficulties will transmit a similar attitude to their team. Conversely, a leader who displays anxiety or resistance toward technology will significantly hinder employee adaptation efforts. Therefore, an understanding of the behavioral characteristics of digital leadership becomes the foundation for analyzing its influence on workforce adaptability. One way for companies to remain competitive is by continuously innovating in managing the people within them to be more creative (Abdulah et al., 2021).

The influence of digital leadership on employee adaptability can be explained through the mechanism of social modeling as put forward in social learning theory. Employees observe their leaders' behavior when facing situations involving new technology, then internalize those response patterns into their own behavioral repertoire. A leader who openly admits that they need to learn about a new automation system provides psychological permission for employees to do the same. Leaders who are willing to demonstrate their learning process, including the mistakes made during that process, create an environment where imperfection is accepted as part of development. This condition is crucial because automation often brings non-linear

changes filled with technical uncertainty. Employees working under a leader who demonstrates intellectual humility will be bolder in trying new functions of an automation system without fear of being punished for mistakes. Conversely, leaders who demand perfect mastery from the start will drive employees to avoid experimentation, which ultimately slows down the adaptation process. Thus, behavioral modeling from digital leaders becomes an important catalyst for the development of collective adaptability. This is very helpful in increasing the smoothness of work, especially in large industrial fields that already use many automated tools (Putra & Arifin, 2021).

Digital leadership also influences workforce adaptability through the creation of a psychological climate that supports continuous learning (Ayari, 2022). Leaders who consistently provide the time and resources for technology training send a signal that competency development is an organizational priority. This signal then forms employee perceptions of what is valued and expected of them. In organizations with strong digital leadership, employees feel that the organization supports them in taking calculated learning risks. This support can take the form of providing access to online courses, allocating work time for the exploration of new systems, or formal recognition of technology learning achievements. When employees feel that their efforts to adapt are appreciated, the intrinsic motivation to master new technology will increase. On the contrary, the absence of support from leaders makes employees feel that adaptation is a purely individual responsibility, which often creates a sense of burden. This psychological burden actually lowers the employees' capacity to learn because their mental energy is drained by anxiety. Effective digital leaders understand that adaptability is not an innate trait, but rather the result of the interaction between individual disposition and work environment characteristics. Furthermore, the ability to understand digital readings via social media is also an important thing that needs to be learned by young workers today (Kurniawan et al., 2021).

One key dimension of digital leadership is the ability to provide a clear vision of the organization's future post-automation. This vision serves as a compass guiding employees through the uncertainty of technological change. Without a clear vision, employees tend to develop

pessimistic narratives about automation, for example, that machines will replace all human jobs. The digital leader's task is to construct a more constructive alternative narrative, where automation is positioned as a tool that frees employees from routine work and opens space for higher value-added tasks. This narrative must be delivered consistently through various digital communication channels. Employees who understand why automation is necessary and how they fit into the organization's big picture will demonstrate a higher level of adaptability. They no longer see automation as a threat, but rather as an opportunity to develop new skills. Digital leaders who succeed in transforming the perception of threat into a perception of opportunity will gain voluntary commitment from employees to adapt, rather than just forced compliance. The difference between commitment and compliance is decisive for the speed and quality of long-term adaptation. It is also important for us to be cautious so that the technology used is not biased and continues to treat everyone fairly (Mardikaningsih & Oluwatoyin, 2023).

Digital leaders also contribute to employee adaptability through the redesign of work systems that accommodate automation. This redesign includes adjustments to job descriptions, process flows, and performance evaluation metrics. In many organizations, automation implementation fails because job structures are not modified to accommodate new technologies. Employees are still expected to perform the same jobs in the same ways, even though automation should fundamentally change the way work is done. Competent digital leaders understand that automation requires simultaneous job redesign. They involve employees in the redesign process to ensure that the resulting solutions align with operational realities. This involvement itself is a leadership intervention that increases adaptability because employees feel a sense of ownership over the change process. When employees are involved in decisions about which tasks will be automated and how they will interact with automation systems, a sense of psychological ownership toward the change is built. This sense of ownership encourages employees to proactively seek ways to improve the effectiveness of automation systems rather than simply following established procedures. Naturally, changing old ways of working to be more modern will certainly have a major influence on

management habits in the office (Darmawan, 2023). Ultimately, all this hard work is expected to reduce fatigue and burnout for workers who serve the general public (Khayru & Darmawan, 2023).

Another aspect of digital leadership that influences adaptability is the ability to manage the transition of employees' professional identities. Automation often threatens worker identities that have been built over many years, especially for employees who take pride in their manual or routine skills. An accountant accustomed to performing manual data reconciliation might feel a loss of identity when that work is taken over by software. Digital leaders need to help employees reconstruct their professional identities in the era of automation. This reconstruction process involves acknowledging employees' past contributions, validating the anxiety they feel, and assisting them in finding new sources of pride in technological mastery. Leaders who ignore this identity dimension will face resistance that cannot be explained by rational factors alone. Employees may intellectually understand the benefits of automation but still emotionally resist it because their identity is threatened (Araujo et al., 2021). Effective leadership interventions include open reflection sessions on the meaning of work, the formation of cross-generational communities of practice, and the celebration of technological adaptation achievements. This human-centered approach complements the technical approach in building adaptability.

Digital leadership also influences adaptability through the creation of continuous feedback structures. Automation systems generate large amounts of performance data that can be used to provide real-time feedback to employees. Digital leaders utilize this data not to monitor employees in a threatening manner, but to identify specific areas for development. The feedback provided must be constructive, focused on changeable behaviors, and delivered in a way that supports employee autonomy. When feedback is linked to competence mastery goals rather than social comparisons between employees, its effect on adaptability will be more positive. Digital leaders also need to ensure that feedback does not only come from the top down, but also from the automation system itself and from peers. This multi-source approach provides a richer picture of the employee's adaptation progress. Employees who receive specific and timely feedback will be better able

to adjust their learning strategies compared to employees who only receive annual evaluations (Kahfi, 2022). Thus, the feedback structure designed by the digital leader becomes the cognitive infrastructure that supports the acceleration of adaptation.

The next dimension of digital leadership relevant to adaptability is the facilitation of cross-functional collaboration. Automation often erases traditional boundaries between departments because data flows digitally across organizational units. Employees who previously worked in functional silos must learn to collaborate with colleagues from different backgrounds to optimize the utilization of automation systems. Digital leaders facilitate this collaboration by creating virtual platforms for knowledge sharing, holding joint problem-solving forums, and providing rewards for cross-functional team achievements. When employees become accustomed to collaborating across boundaries, they develop cognitive flexibility, which is a vital component of adaptability. This flexibility allows them to quickly switch between different perspectives when facing complex problems. Furthermore, cross-functional collaboration creates a social support network that employees can rely on when they encounter technical difficulties. The existence of this network reduces the individual psychological burden because problems can be discussed and solved together. Effective digital leaders actively nurture a sense of togetherness amidst technological changes that often make employees feel isolated.

Digital leadership also influences adaptability through the management of organizational learning resources (Taneja, 2021). Adaptation to automation requires access to learning materials that are relevant, up-to-date, and presented in an easy-to-digest format. Digital leaders are responsible for identifying employee learning needs, evaluating the quality of available resources, and allocating budgets for the development of new resources. In practice, many organizations provide vast but unstructured online course libraries, leaving employees overwhelmed in choosing materials that suit their needs. Good digital leaders curate personalized learning based on job roles, current skill levels, and the career paths desired by employees. This curation can be done with the help of artificial intelligence-based recommendation systems that track employee learning progress. Additionally, digital

leaders need to ensure that learning is not limited to formal formats but also includes informal learning through daily interactions with automation systems. Creating an environment where employees can learn from their mistakes without fear of sanctions is one of the most crucial leadership responsibilities. This psychologically safe environment allows employees to develop adaptability through a natural process of trial and error.

The influence of digital leadership on adaptability is not direct but is mediated by intervening variables such as technological self-efficacy and employee learning orientation. Technological self-efficacy refers to employees' beliefs about their ability to successfully use new technological systems to complete work tasks. Digital leaders build this self-efficacy through experiences of gradual success, providing relevant role models, and convincing verbal persuasion. When employees have high technological self-efficacy, they tend to view new tasks as surmountable challenges rather than threats to be avoided. High self-efficacy also increases employee persistence when facing difficulties in using automation systems. Conversely, employees with low self-efficacy will give up quickly and look for shortcuts that do not follow procedures (Trenerry et al., 2021). Learning orientation, as another mediator, refers to the tendency of employees to focus on developing new competencies rather than on demonstrating already possessed competencies. Digital leaders who provide rewards for the learning process, not just for the final result, will encourage a stronger learning orientation. Employees with a high learning orientation voluntarily seek feedback, explore new strategies, and reflect on their experiences for future improvement.

Individual differences among employees moderate the influence of digital leadership on adaptability. Employees with a personality disposition open to new experiences tend to respond more positively to digital leadership interventions compared to more rigid employees (Neumeyer & Liu, 2021). Similarly, employees with prior technological experience will more easily internalize modeling behaviors from digital leaders. The practical implication of this finding is that digital leaders need to adopt different approaches for different groups of employees. For employees who are more resistant to change, a gradual approach with

intensive support may be necessary. For employees who already possess high openness, leaders can provide greater autonomy in determining their own adaptation paths. Effective digital leadership does not mean applying the same recipe to everyone, but rather adjusting the leadership style to the specific needs of each employee. The ability to make these adjustments itself requires a good understanding of individual psychology, which is a core competence of digital leadership. In other words, digital leaders must become adaptive learners before they can help others become adaptive. The circular nature of this relationship indicates that the development of digital leadership and workforce adaptability are processes that mutually reinforce each other over time.

Organizations that successfully develop digital leadership demonstrate certain structural characteristics that support employee adaptability (Kahfi, 2022). These characteristics include a flat organizational structure with a wide span of control, a decentralized decision-making system, and an unobstructed flow of information. A flat structure allows digital leaders to interact directly with employees at various levels, ensuring that messages about the importance of adaptation are delivered without bureaucratic distortion. A wide span of control requires leaders to empower employees rather than monitor them strictly, which in turn increases autonomy and adaptability. Decentralized decision-making enables employees to respond to technological changes with the necessary speed without having to wait for approval from the upper hierarchy. An unobstructed flow of information ensures that knowledge about best practices in using automation systems can spread rapidly throughout the organization. Digital leaders act as the architects of these structures, not merely occupants of positions within an existing structure. They actively redesign the organization to reduce the friction that hinders adaptation. Without supporting structural changes, individual leadership interventions will have limited impact because employees remain trapped in outdated procedures and rules.

The application of digital leadership in transforming organizations faces challenges in the form of established systemic inertia (Klein, 2020). Traditional performance management systems, for example, often measure things that are easy to quantify but irrelevant to adaptability. The number of training hours attended or test scores on automation

system knowledge do not reflect an employee's ability to apply that knowledge in dynamic work situations. Digital leaders need to advocate for changes in performance measurement systems so they align with the values of adaptability. This struggle often clashes with entrenched interests, particularly from middle-level leaders who feel comfortable with the old system. Resistance from this middle level becomes one of the greatest obstacles in the dissemination of digital leadership throughout the organization. Top leaders must realize that developing digital leadership is not enough by just training executives; it must also reach every layer of management. Digital leadership development programs must be designed to overcome this resistance by building coalitions for change, identifying early adopters among middle managers, and creating inspiring success stories. Changing the organizational culture toward adaptability values is a long-term process that requires patience and consistency from digital leaders.

The impact of digital leadership on employee adaptability will ultimately be reflected in overall organizational performance. Organizations with an adaptive workforce will be faster in implementing new automation systems, reach the break-even point of technology investment earlier, and respond to market changes more agilely (Klein, 2020). The competitive advantage derived from this adaptability is difficult for competitors to imitate because it is intangible and embedded within the organization's dynamic capabilities. Digital leaders who successfully build collective adaptability have created a strategic asset that transcends the value of any individual technology. This asset becomes the foundation for long-term organizational sustainability, regardless of the specific fluctuations of the technology used. Conversely, organizations that ignore the development of digital leadership will continuously struggle with every new wave of automation. They will always lag behind, reacting to change rather than leading it. The gap between adaptive and non-adaptive organizations will only widen as the pace of technological innovation accelerates. Therefore, investment in digital leadership is not a discretionary cost, but a strategic necessity for any organization wishing to survive in the era of automation. This argument reinforces the finding that the

relationship between digital leadership and workforce adaptability has very real consequences for the survival of the organization.

The discussion of digital leadership cannot be separated from the evolution of technology itself. Along with the development of generative artificial intelligence, automation systems are no longer static but continue to learn and adapt. This condition demands that employees not only adapt to the automation system but also adapt to the changes within the automation system itself. Future digital leaders need to have an understanding of machine learning principles to anticipate how automation systems will evolve. This understanding allows leaders to prepare employees for new capabilities that systems will possess in the future. For example, a leader who knows that pattern recognition systems will continue to improve in accuracy can design training programs focusing on tasks requiring human judgment, which are difficult to automate. In this way, digital leaders do not just respond to changes that have already occurred but proactively prepare the organization for changes to come. This proactive approach requires systematic scanning of the technological environment and continuous dialogue with technology experts. Visionary digital leadership is able to look beyond the hustle and bustle of daily changes and focus the organization on core competencies that will remain relevant in the long term. These core competencies include unstructured problem solving, creativity, emotional intelligence, and the ability for human-to-human collaboration. Moving forward, we also need to prepare clear rules regarding the use of this smart technology so that the worlds of education and work remain safe for everyone (Darmawan, 2023).

One important finding in this literature synthesis is that digital leadership cannot be separated from ethical leadership. Automation brings with it new ethical questions regarding data privacy, employee surveillance, and the fair distribution of benefits from increased productivity (Taneja, 2021). Digital leaders must be able to navigate these ethical questions with clear and transparent principles. Employees who feel that automation is implemented unfairly—for instance, by terminating workers without adequate compensation—will show resistance that cannot be overcome by any amount of technological training. Trust in the leader is a prerequisite for the acceptance of change,

and this trust is built through consistency between the leader's words and actions regarding ethical issues. A digital leader who prioritizes efficiency alone without considering employee welfare will reap passive resistance that is difficult to detect but highly destructive. This passive resistance can take the form of minimal compliance, subtle sabotage of automation systems, or the spread of negative rumors regarding organizational intentions. Therefore, the ethical dimension of digital leadership must receive equal attention to its technical dimension. Digital leadership development programs need to include training on ethical decision-making in the context of automation, not just training on the use of digital tools. It is very important to maintain honesty and ethics in managing technology so that our business continues to look good and is trusted on the internet (Arifin et al., 2021).

Workforce adaptability built through digital leadership has a ripple effect on organizational innovation (Newton, 2022). Adaptive employees are not only able to follow changes dictated from the top but also proactively propose improvements to existing automation systems. They become a source of ideas for further automation or for the reconfiguration of more efficient work processes. In organizations with strong digital leadership, these employee ideas are listened to, tested, and implemented if proven beneficial (Benchea & Ilie, 2023). This cycle of adaptation-innovation-adaptation creates a learning dynamic that accelerates the organization's competitive advantage. Digital leaders act as catalysts for this cycle by providing mechanisms for capturing ideas, allocating resources for trials, and recognizing employees' innovative contributions. When employees see that their ideas are actually implemented and produce real improvements, the motivation to continue adapting and innovating will increase exponentially. Conversely, if employee ideas are always ignored, they will learn to be passive and merely follow existing procedures. Effective digital leadership breaks this cycle of passivity by actively encouraging the employee's voice and showing that their contributions are valued. Thus, adaptability is not the end goal, but rather the starting point of a continuous innovation process. The right technological strategy greatly assists companies in creating new products that can compete in the global market (Mardikaningsih & Hariani, 2023). Even in the health sector, these

digital technological advances have begun to bring many major changes that help many people (Khayru, 2022).

The influence of digital leadership on workforce adaptability also depends on the overall technological maturity of the organization (Araujo et al., 2021). Organizations just starting their digitalization journey face different challenges compared to those that already possess a mature digital infrastructure. In novice organizations, digital leaders need to focus on building basic technological literacy and reducing anxiety toward technology. Leadership interventions at this stage may be more directive and provide a clear structure for learning. In organizations with intermediate technological maturity, digital leaders can begin delegating more adaptation responsibilities to employees. In organizations with high technological maturity, the digital leader's role shifts toward being a facilitator of experimentation and a guardian of strategic vision. Failure to adjust leadership style to the stage of technological maturity will reduce the effectiveness of the intervention. A leader who continues to use a directive approach in a mature organization will be seen as interfering with employee autonomy. Conversely, a leader who immediately grants full autonomy in a novice organization will leave employees feeling abandoned without adequate guidance. Therefore, an accurate assessment of the organization's technological maturity is a prerequisite for designing targeted digital leadership interventions. This assessment includes not only the availability of technical infrastructure but also skill levels, attitudes toward technology, and social norms that support learning. Additionally, workplace diversity must also be maintained so that the office atmosphere becomes more harmonious and open to everyone (Irfan & Hariani, 2023). Social media has also now become a very powerful place to introduce a business more broadly to others (Infante & Mardikaningsih, 2022).

The implication of the discussion above is that digital leadership development must become a priority in organizational human resource planning. Digital leadership development programs cannot be one-time training sessions; rather, they must be continuous processes integrated with the leader's career path (Araujo et al., 2021). The development curriculum must cover technical, interpersonal, and strategic competencies. Technical competencies include an understanding of digital system architecture, data analytics, and cybersecurity principles.

Interpersonal competencies include virtual communication skills, empathy in digital interactions, and the facilitation of remote collaboration. Strategic competencies include the ability to scan the technological environment, formulate a digital vision, and allocate resources for transformation initiatives. These three competency groups must be developed simultaneously because a deficiency in one area will limit overall effectiveness. Development programs also need to include hands-on experience with automation implementation, for example, through project assignments or internships in units undergoing digital transformation. Direct experience builds tactical understanding that cannot be obtained from classroom training alone. Organizations serious about building digital leadership will allocate significant budgets for these programs and periodically evaluate their impact on workforce adaptability indicators. This is very important because the experience of working in an all-digital office will certainly leave a different impression on each employee (Putra et al., 2022). We must also prepare to welcome the younger generation, who are more tech-savvy, as they begin to enter the workforce later on (Gani & Darmawan, 2023).

This discussion shows that the relationship between digital leadership and workforce adaptability is reciprocal. Effective digital leaders build employee adaptability, and adaptive employees, in turn, enable the leader to become more effective. When employees proactively propose improvements and share knowledge about automation systems, the leader's cognitive load is reduced. The leader can then shift their attention from solving day-to-day operational problems to long-term strategic issues. Feedback from adaptive employees also provides valuable data for leaders to refine their leadership approach. In other words, adaptability is not just an outcome of digital leadership, but also an input that strengthens the capacity of digital leadership itself. This reciprocal nature creates a virtuous cycle that accelerates the organization's adaptation capability over time. Leaders who understand this dynamic will actively seek ways to empower employees rather than merely directing them. They view employees as partners in the adaptation process, not as objects of leadership intervention. The shift in perspective from the leader as the sole agent of change toward the leader as a facilitator of collective

change is a hallmark of mature digital leadership. Awareness of this reciprocal relationship distinguishes digital leaders who are merely technically competent from those who are transformational. We must not forget that many challenges remain regarding equal opportunities for young entrepreneurs in today's digital economy (Sinambela et al., 2022). Furthermore, trends in social media influence also help shape the way we perceive authenticity in communication within the digital world (Hariani & Mardikaningsih, 2022).

Conclusion

Digital leadership exerts a significant influence on workforce adaptability in the face of automation through mechanisms of social modeling, the creation of a psychological climate that supports learning, the provision of a clear vision regarding the organization's future, the redesign of work systems, the management of professional identity transitions, the facilitation of cross-functional collaboration, and the provision of continuous feedback structures. This influence is mediated by technology self-efficacy and employee learning orientation, and is moderated by individual differences and the organization's technological maturity. Effective digital leadership cannot be separated from ethical dimensions and requires stylistic adjustments according to the organization's developmental stage. The relationship between digital leadership and adaptability is reciprocal, where each reinforces the other in a virtuous cycle that accelerates organizational adaptive capacity. Investment in digital leadership development is a strategic necessity for organizations wishing to survive and thrive in the era of automation.

The practical implications of this research are that organizations need to design digital leadership development programs that simultaneously encompass technical, interpersonal, and strategic competencies, accompanied by the creation of organizational structures that support adaptability, such as flat hierarchies, decentralized decision-making, and the seamless flow of information. Further research is suggested to empirically test the relationship model constructed in this literature study using quantitative or mixed methods, by developing valid measurement instruments for the constructs of digital leadership and workforce adaptability. Organizations are advised to conduct periodic assessments of

technological maturity and digital leadership readiness before designing development interventions, as well as to evaluate the impact of development programs on employee adaptability indicators longitudinally.

References

- Abdulah, M. H. A. B., Gardi, B., & Darmawan, D. 2021. Innovation in Human Resource Management to enhance Organizational Competitiveness in the Era of Globalization. *Journal of Social Science Studies*, 1(1), 51-58.
- Ahmad, N. A. S. B. W. A. B., Seman, N. A. A., & Azman, N. A. 2022. The Semi-Skilled Manufacturing Worker Readiness On Automation Implementation In Industry 4.0. *Nucleation And Atmospheric Aerosols*. 244, 03003.
- Aisyah, N. 2023. Social Movements and Social Change: Women's Role as Agents of Transformation. *Studi Ilmu Sosial Indonesia*, 3(1), 321-342.
- Araujo, L. M. De, Priadana, S., Paramarta, V., & Sunarsi, D. 2021. *Digital Leadership In Business Organizations*. 45-56.
- Arifin, S, Y. R. Al Hakim, D. Darmawan, M. Irfan, & D. S. Sigita. 2021. Technical and Ethical Dimensions of Search Engine Optimization in Managing Online Business Visibility, *Studi Ilmu Sosial Indonesia*, 1(1), 193-208.
- Arifin, S., & Darmawan, D. 2021. Technology Access and Digital Skills: Bridging the Gaps in Education and Employment Opportunities in the Age of Technology 4.0. *Journal of Social Science Studies*, 1(1), 163-168.
- Ayari, A. 2022. *Review Of Leadership In The Digitalized World*. 1-25.
- Barry, E. S., Merkebu, J., & Varpio, L. 2022. State-Of-The-Art Literature Review Methodology: A Six-Step Approach For Knowledge Synthesis. *Perspectives On Medical Education*, 11(5), 281-288.
- Beins, B. C. 2017. *Research Method: A Tool For Life*. Cambridge University Press.
- Benchea, L., & Ilie, A. G. 2023. Preparing For A New World Of Work: Leadership Styles Reconfigured In The Digital Age. *European Journal Of Interdisciplinary Studies*. 15(1), 135-143
- Darmawan, D. 2020. Health, Well-Being, and Productivity of Senior Employees in the Era of Artificial Intelligence. *Journal of Science, Technology and Society (SICO)*, 1(2), 43-50.
- Darmawan, D. 2022. Posthuman Human Resource Management in Organizations using Generative Artificial Intelligence, *Studi Ilmu Sosial Indonesia*, 2(2), 97-124.
- Darmawan, D. 2023. Developing Pedagogical Standards and AI Policies for Adaptive Learning in Equitable and Safe School Education. *Journal of Practice Learning and Educational Development*, 3(4), 400-413.
- Darmawan, D. 2023. Job Design Changes Due to Automation and Consequences for Human Resource Management Practices, *Studi Ilmu Sosial Indonesia*, 3(1), 343-366.

- Fariz, F. A. B. M. 2021. Populist Ethno-Religious Nationalism: Challenges to Global Governance and Domestic Social Integration, *Studi Ilmu Sosial Indonesia*, 1(2), 75-92.
- Fauzi, A. 2023. Career Women and Double Burden in Feminist Sociological Perspective Today. *Studi Ilmu Sosial Indonesia*, 3(1), 269-292.
- Gani, A., & Darmawan, D. 2022. Ethics and Accountability in Artificial Intelligence-Based Managerial Decision Making. *Journal of Social Science Studies*, 2(1), 147-152.
- Gani, A., & Darmawan, D. 2023. Human Resource Readiness for Generation Alpha Entering Digital Workplaces. *Studi Ilmu Sosial Indonesia*, 3(1), 185-210.
- Hariani, M. & R. Mardikaningsih. 2022. The Performance of Authenticity and the Commodification of Parasocial Bonds: Twin Pillars of Influencer Culture on Social Media, *Studi Ilmu Sosial Indonesia*, 2(2), 385-412.
- Infante, A., & Mardikaningsih, R. 2022. The Potential of social media as a Means of Online Business Promotion. *Journal of Social Science Studies*, 2(2), 45-49.
- Irfan, M., & Hariani, M. 2023. Organizational Diversity and Inclusion as Social Order in Contemporary Workplaces. *Studi Ilmu Sosial Indonesia*, 3(1), 211-236.
- Kahfi, F. 2022. Exploring The Impact Of Digital Technology On Employee Adaptation And Organizational Performance. *Journal Of Management And Administration Provision*, 2(2), 37-43.
- Khayru, R. K. 2022. Transforming healthcare: the power of artificial intelligence. *Bulletin of Science, Technology and Society*, 1(3), 15-19.
- Khayru, R. K., & Darmawan, D. 2023. Collective Empathy Fatigue Governance in Public Service Care Workforces and Systems. *Studi Ilmu Sosial Indonesia*, 3(1), 237-268.
- Klein, M. 2020. Leadership Characteristics In The Era Of Digital Transformation. *Business And Management Studies: An International Journal*, 8(1), 883-902.
- Kurniawan, Y, D. Darmawan, & R. K. Khayru. 2021. Social Media and Contemporary Youth Digital Literature, *Studi Ilmu Sosial Indonesia*, 1(2), 109-124.
- Kurniawan, Y. & R. K. Khayru. 2021. Popular Culture and Youth: Value, Attitude, and Behavior Formation Through Music, Film, and Digital Content, *Studi Ilmu Sosial Indonesia*, 1(1), 303-324.
- Mardikaningsih, R. & D. Darmawan. 2022. Digital Human Resource Practices in Remote Work Systems, *Studi Ilmu Sosial Indonesia*, 2(1), 357-388.
- Mardikaningsih, R., & Hariani, M. 2023. Technology Strategy in Product Development for Sustainable Innovation in Global Markets. *Journal of Social Science Studies*, 3(2), 71-76.
- Mardikaningsih, R., & Oluwatoyin, F. 2023. Analyzing Algorithmic Bias, Automated Justice, and Social Transformation in Artificial Intelligence Implementation. *Studi Ilmu Sosial Indonesia*, 3(1), 107-128.

- Masriadi, Dasmadi, Ekaningrum, N. E., Hidayat, M. S., & Yuliati, F. 2023. Exploring The Future Of Work: Impact Of Automation And Artificial Intelligence On Employment. *ENDLESS*, 6(1), 125-136.
- Neumeyer, X., & Liu, M. 2021. Managerial Competencies And Development In The Digital Age. *IEEE Engineering Management Review*, 49(3), 49-55.
- Newton, L. 2022. *What Effect Does Technology Have On A Responsive Leadership Style?* 23-44.
- Patel, M., & Patel, N. 2019. Exploring Research Methodology. *International Journal Of Research And Review*, 6(3), 48-55.
- Putra, A. R., & Arifin, S. 2021. Supply Chain Management Optimization in the Manufacturing Industry through Digital Transformation: The Role of Big Data, Artificial Intelligence, and the Internet of Things. *Journal of Social Science Studies*, 1(2), 161-166.
- Putra, A. R., D. Darmawan, & S. Arifin. 2022. Employee Experience in the Digital Workplace: A Human Resource Management Perspective, *Studi Ilmu Sosial Indonesia*, 2(2), 361-384.
- Putra, A. R., Darmawan, D., & Arifin, S. 2023. Digital Sharia Finance Products and Service Innovation Under Managerial Governance. *Studi Ilmu Sosial Indonesia*, 3(1), 129-158.
- Radjawane, L. E., & Mardikaningsih, R. 2022. Building Ethical and Fair Technology: Approaches to Responsible Technology Development and Application. *Journal of Social Science Studies*, 2(1), 189-194.
- Ramle, N. L. B., & Mardikaningsih, R. 2022. Inclusivity in Technology-Based Services: Access and Skills Challenges. *Journal of Social Science Studies*, 2(2), 225-230.
- Sinambela, E. A. & D. Darmawan. 2021. Relevance of Email Marketing in the Contemporary Digital Marketing Communication Mix, *Studi Ilmu Sosial Indonesia*, 1(2), 301-324.
- Sinambela, E. A., Darmawan, D., & Halizah, S. N. 2022. Digital Inequality and Unequal Opportunity for Young Entrepreneurs in Online Economies. *Studi Ilmu Sosial Indonesia*, 2(1), 169-190.
- Sinambela, E. A. 2023. Integration of Change Management and Technology Strategy in Digital Transformation. *Journal of Social Science Studies*, 3(1), 375-380.
- Stratton, S. J. 2019. Literature Reviews: Methods And Applications. *Prehospital And Disaster Medicine*, 34(4), 347-349.
- Taneja, K. 2021. Devising Sustainable Growth In The Organisation Through Digital Leadership. *Research Journal Of Humanities And Social Sciences*, 12(3), 179-181.
- Trenerry, B., Chng, S., Wang, Y., Suhaila, Z. S., Lim, S. S., Lu, H. Y., & Oh, P. H. 2021. Preparing Workplaces For Digital Transformation: An Integrative Review And Framework Of Multi-Level Factors. *Frontiers In Psychology*, 12, 620766-620766.