

REVIEW PAPER

Digital Leadership for Transformation of the Leadership: The Aspects of Developing and Least Developed Countries

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ABSTRACT

Digital transformation (DT) is a global priority. Current Digital Leadership frameworks are predominantly based in Western developed economies, where infrastructure is strong and regulatory systems are well established. This study tries to bridge the theoretical gap by exploring the distinct leadership challenges encountered in Developing and Least Developed Nations (DLDNs). Based on a qualitative integration of Industry 4.0 and institutional theory, this study tries to Contextualised Digital Leadership Framework (CDLF). This paper provides the fundamental concept of Digital Leadership and highlight the Digital Leadership in Developing and Least Developed Nations. The paper tries to explore the technological concerns, institutional utilization of technology, skill development of the stakeholders and socio-economic challenges. The framework highlights some essential dimensions of Digital Leadership, like- Digital Competencies, Contextual Intelligence, Strategic Alignment and Sustainable Impact. Its impact helps leaders to navigate inclusive and sustainable digital transformation effectively.

HIGHLIGHTS

- ① Digital Leadership is the technological utilization to achieve organizational goal.
- ① Emerging Technological are playing a vital role to growth of the organizations
- ① Contextualised Digital Leadership Framework (CDLF) is based on four pillars, like- Digital Competencies, Contextual Intelligence, Strategic Alignment and Sustainable Impact.
- ① Digital Leadership has many benefits and challenges to implement in organizational scenario.

Keywords: Digital Leadership, Emerging Economies, DLDN, Industry 4.0, Contextualised Digital Leadership Framework (CDLF), Digital Transformation

The use of digital technology plays a role of a catalyst for the transfer of development goals to development. By applying various types of advanced emerging technologies, a technology-based e-governance system brings all organizations into the digital era. The use of this digital technology increases the production of any sector and increases its economic growth. This digital transformation promotes inclusiveness and ensures the growth of the organization. The application of digital technology ensures the economic development of the

organization. As a result of digital transformation in various sectors, the growth of the organization increases, such as boosting the GDP of the country. It introduces digital economics which increases global economic participation. Digital transformation promotes the

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creation of new entrepreneurs. Also, through smart eco-system, customer requirement analysis is done, advance supply chain is stabilized and fast customer requirement is completed. It creates a digital marketplace through technology where all types of operations are performed digitally. Digital transformation promotes automation and helps to fulfill the objective of Industry 4.0 by increasing organizational efficiency. Digital transformation promotes Foreign Direct Investment (FDI) and initiates global economic trade. The use of technology has led to the emergence of economic groups by reducing operational costs and increasing productivity. Financial Incubation has increased the scope of the digital economy many times over. The functioning of various banking sectors and non-banking financial institutions (NBFCs) has become dependent on digital technology. Mobile-based electronic best (e-) services have been able to reach a large number of people very easily as a result of digital transformation. Digital transformation encourages digital payment systems. As a result, cash dependence has been reduced to a large extent. It has also been possible to increase the transparency of the system by reducing human error. It is possible to track fraud by identifying various types of financial fraud very easily. It is also possible to provide a lot of cyber security through the use of block chain technology and artificial intelligence. It is possible to automatically block any fraud before it occurs by pattern recognition through artificial intelligence.

Digital transformation promotes e-governance system. As a result, public service delivery has improved a lot. Digital services are reaching a large number of citizens very easily. Due to increased transparency in the system, the amount of corruption has decreased. Also, with the implementation of the online given system, it has become possible to easily complain about any service and get its remedy. With the use of digital technology, it is possible to reduce carbon footprint generation and start a digital economy and ensure sustainable development. By improving different sectors together, developing countries are moving towards becoming developed countries by increasing the country's GDP.

LITERATURE REVIEW

To get the fundamental concept of Digital Leadership and its role in transforming Developing and Least Developed Countries into develop countries, it is necessary to study some previous work in this context. The previous works are helping to understand the present scenario of Digital Leadership and its different impacts. Some of the previous works are discussed below.

Abbu *et al.* (2022) conducted a theoretical study on the importance of trust in successful Digital Leadership. It discussed the role of trust in digital transformation. It emphasized the role of trust in empowering and responding with speed, creating a growth mindset, managing ethical issues arising from new technologies, managing digital trends, and building a resilient culture. It analysed the requirement of digital learning skills in organisations.

Adie *et al.* (2022) performed a literature review-based study on digital leaders and Digital Leadership. It categorically reviewed different previous studies and stated the 6Ps framework for studying leadership. It analysed the definition of Digital Leadership from different aspects. It proposed a Digital Leadership conceptual model and explored various critical success factors of Digital Leadership.

Antonopoulou *et al.* (2020) made a behavioural data analysis to find different types of leadership and the role of Digital Leadership in higher education. The study was conducted at the University of Patras in Greece. It highlighted different types of leadership and some leadership outcomes. It illustrated the collected data, such as leadership types, demographic-based leadership types, and so on. It tried to find correlation outcomes between leadership outcomes and leadership styles, as well as outcome leadership according to leadership style using simple linear regression. It also attempted to identify the association of Digital Leadership with different leadership types. It described various required digital skills, including leadership-oriented digital skills, mobile application usage across demographic groups, and the distribution of digital skills based on demographic characteristics and leadership styles.

de Araujo *et al.* (2021) made a theoretical study on identifying different applications of Digital Leadership in business organisations. It descriptively stated the role of Digital Leadership in different organisations. It tried to make a comparison between traditional leadership and Digital Leadership. It discussed strategies for digital business, transformation, and leadership. It highlighted some case studies from both success and failure viewpoints.

Gierlich-Joas *et al.* (2020) tried to define the Digital Leadership concept from different aspects. It diagrammatically showed the technology push-pull model of Digital Leadership innovations. It explored the theoretical concepts of leadership and transparency. It stated the impact of transparency on leadership. It categorized inverse transparency using a control theory framework and discussed potentialities and challenges. It tried to highlight some future research agendas in detail.

OBJECTIVES

The role of technology has a great impact on Digital Leadership. Digital Leadership not only responsible for the organization but also it is equally important for the development of the countries. The objectives of the study are: —

- ❖ to know about the fundamental concept of Digital Leadership
- ❖ to discuss about the Contextualised Digital Leadership Framework (CDLF)
- ❖ to explore the benefits and the challenges of Digital Leadership

RESEARCH METHODOLOGY

The work entitled 'Digital Leadership for Transformation of the leadership: The Aspects of Developing and Least Developed Countries' is a theoretical paper. Different secondary sources are studied to complete the study. It is an interdisciplinary field of study. Different fields are studied to complete the study. Some fields contributing in Contextualising Digital Leadership are- Information and Communication Technology (ICT), Management

and Business Studies, Sociology, Economics, Psychology, Education and Learning Sciences, Data Science and Analytics, Ethics and Philosophy, Political Science and Public Administration, Environmental Studies, Cultural Studies, Communication Studies, Innovation and Entrepreneurship, Cybersecurity Studies, Systems Engineering and so on.

RESEARCH QUESTIONS

To study the Contextualising Digital Leadership it is necessary to frame the Research Questions. The Research Questions are designed to study are —

- ❖ **RQ1:** What are the fundamental concepts of Digital Leadership and what are the essential pillars of the Contextualised Digital Leadership Framework (CDLF)?
- ❖ **RQ2:** What are the benefits and challenges of Digital Leadership in any organisational and its impact on societal contexts?

RESULTS

Digital Leadership: Fundamentals

Digital Leadership is the implementation of digital technologies in any organisation to transfer the traditional organisational policy into a digital-based system to achieve organisational goals. Various digital tools and technologies are used in combination with traditional leadership skills (Antonopoulou *et al.* 2021). It is the strategic use of technologies to enhance the desired outcome of the organisation. A digital leader can be any organisation, institution, or any person who leads among their peers. So, Digital Leadership is the leadership skill that provides guidance with the use of digital technology, delivers strategic outcomes, and ensures the growth of the organisation. Digital Leadership promotes digital awareness to utilise different emerging Information and Communication Technologies such as artificial intelligence, machine learning, cloud computing, Big Data analytics, data mining, blockchain technology, IoT devices, and many others in organisational use. It provides data-driven decision-making. Data-driven decision-making is

very important for making effective decisions based on strategic results. It also ensures digital ethics in the institution and improves the digital policy of the organisation.

Digital Leadership tries to make a bridge between societal, business, economic, strategic, operational policies, consumer requirements, and so on. It offers strong digital integration in all aspects of the organisation. With the integration of generative AI and agentic AI, it opens a new window to meet customer needs. Fast and on-time internet-based services provide more satisfaction to consumers. It has the ability to provide advanced analysis of the market and helps to make the right decisions in advance. It helps to transform all processes of the organisation digitally and uses different digital tools for real-time financial and operational cost management (Bandyopadhyay, 2024). A Digital Leadership plan is very helpful for organisational growth. It is also helpful in reducing the operational cost of the organisation. It is very helpful in maintaining environmental sustainability. It tries to reduce the use of paper and ensures environmental protection. Digital Leadership promotes green governance with a stable ecological balance and ensures sustainable development (Peng, 2022).

The Contextualised Digital Leadership Framework (CDLF)

Digital Leadership is a broader concept than only technology utilisation in organisations. Digital Leadership is the framework that is used to frame the strategic planning of the organisation. It is the inclusion of technology to operate the whole system efficiently and generate a sustainable output. It is the process of identifying gaps inside the organisation and making a bridge between technology, institution, society, economic, and sustainable practices. It helps in policy framing of the institution. The e-governance system and green governance system provide digital benefits to the customers. It is used to strengthen the institutional framework. It is the establishment of digital infrastructure in different sectors and different organisations. The digital leader must focus on the inclusion of all and maintain sustainable digital growth

(Petry, 2018). It encourages boosting international collaboration and provides global exposure to the organisation. It has a great role in digital policy framing in the organisation. The digital policy should consider each individual and the priorities of the consumers. A contextualised Digital Leadership framework can have four interrelated pillars like –

Digital Competency

Digital competency in Digital Leadership is one of the important pillars (Sheninger, 2014). Digital competency has a great role in implementing Digital Leadership in different organisations (Akhmad, 2025). It is the integration of technical, strategic, ethical, and socio-economic aspects. It is necessary to implement digital transformation efficiently in various organizations. It is necessary to implement the technological infrastructure in developing and least developed nations (Merlano, 2024). It ensures technical awareness among all stakeholders and promotes data-driven growth by maintaining sustainable development.

It offers a strategic planning for the organisation and helps to create a systematic roadmap for organisational growth. It tries to boost digital awareness among the employees of the organisation and encourages them to utilise digital technology for different types of purposes (Turyadi, 2023). It creates awareness about artificial intelligence, cloud computing, big data analytics, and other emerging information and communication technologies (Paul, 2023). It also promotes the use of those technologies to serve organisational goals. It is necessary to adopt digital proficiency to use different types of software and digital tools. It encourages gaining basic knowledge about the fundamentals of programming and the software development life cycle.

It should have knowledge about data infrastructure such as database management systems, data pipelining, data processing, data analysis, and so on. It promotes awareness about cybersecurity, threat identification, risk management, and so on. One of the main purposes of digital competency is to help in making advanced data-driven decisions. It is necessary to have a clear idea about descriptive analysis and predictive analysis. Big data analytics is an important part of data

competency. Different systems deal with different types of heterogeneous data, so to manage different types of data, it is necessary to incorporate big data analytics for advanced data analysis. Data governance is an important part of data competency (Ongena, 2024).

Digital competency always encourages continuous innovative research and development. Virtual communication and technology-based communication are important aspects of digital competency. Social media also has a significant role in digital competency. Organisations continuously promote training for their employees and upgrade their skills. Organisations also support change management, which creates new leaders who can lead the organisation from a new perspective. It should have a proper plan for knowledge management. It should include an interdisciplinary approach, knowledge sharing, cultural sharing, trust building, industrial collaboration, startup encouragement, cross-functional teamwork, and more.

One of the important aspects is a customer-centric approach. The first priority is customer requirements and customer satisfaction. Digital systems should analyse customer behaviour and expectations. The digital platform should have an attractive and user-friendly interface. The system should be able to collect customer feedback and analyse it properly. It is also necessary to create a digital mindset for all. Institutions should encourage building a digital culture. They should arrange continuous digital-based learning systems. They should provide different technological skill development courses, soft skill development courses, and knowledge upgradation through online and certification courses in different modes of education (Zhong, (2017). Organisations should organise different types of events such as conferences, seminars, workshops, and so on. Institutions should allocate mentors for learning and skill development programmes. Mentors should have strong skill sets and high emotional intelligence. They should have proper decision-making capacity along with strong analytical ability. With the proper implementation of digital governance, digital competency plays a vital role in Digital Leadership.

Contextual Intelligence

Contextual intelligence is one of the basic requirements of Digital Leadership. A leader must be aware of different contexts in managing any institution. It is necessary to know about the socio-economic conditions of the stakeholders. It can be considered as understanding technological adaptation among different levels of people. The basic requirement is to build a stable conceptual foundation. It tries to integrate knowledge, experience, and awareness. It promotes dynamic leadership rather than a static one.

It focuses on technology-based decision-making that combines human intelligence with digital knowledge. One of the important aspects of intelligence is that it considers cultural awareness. Local culture, local traditions, local language, cultural diversity, and many other aspects should be considered. It is necessary to have proper institutional awareness regarding ICT and other digital tools. It encourages continuous learning and ongoing skill upgradation. Organisational awareness is another important aspect of contextual intelligence. It is necessary to have proper knowledge about various digital initiatives, organisational goals and ethical policies of the organization. Environmental awareness is also important for the understanding of technological progress. Environmental awareness generates a significant impact on societal behaviour (Benitez, 2022). It helps to frame policies that include different aspects (Zupancic, 2018).

Strategic Alignment

Strategic alignment in Digital Leadership is one of the important perspectives. It refers to the idea that technological integration should consider the overall vision, mission, long-term strategies, organisational goals, and more. Digital technology must focus on the organisation's vision. Digital leaders should consider the long-term objectives of the organisation at the time of integrating any technology (Quaquebeke and Gerpott, 2023). New digital technologies should synchronise with the digital business goals of the organisation (Mihardjo, 2019).

Top-level management should actively support the integration of new technology. It optimises resource utilisation and helps in the effective allocation of different resources such as financial, technological, and human resources. To implement it in different organisations, it creates user-friendly digital platforms. It should have an advanced analytics-based decision-making system. It helps in operations between different teams, departments, organisations, and even across different sectors (Ushaka Adie, 2024). It tries to build a bridge between digital innovation and organisational goals. The success of an organisation mainly depends on strategic alignment in Digital Leadership.

Sustainable Impact

Digital Leadership has a significant sustainable impact (Senadjki, 2024). It refers to the sustainable outcomes of Digital Leadership. It tries to make a balance between technology, society, finance, and the environment (Hoque *et al.* 2025). While achieving organisational goals, it also considers environmental aspects. It aims to integrate sustainability into digital strategy-making. It is the responsible use of technology with the promotion of inclusive goals of the organisation. The main objective is to maintain stable growth while ensuring sustainable development (Munsamy *et al.* 2023). It focuses on the long-term value creation of the organisation.

It tries to support e-governance and green governance for citizens. It promotes green and clean technologies. It aims to combine innovation, technology, environment, and sustainability (Morgan and Papadonikolaki, 2021). It follows an interdisciplinary approach and seeks to achieve the United Nations Sustainable Development Goals. It focuses on maintaining environmental, social, and economic sustainability (Nengwani, 2025). Digital Leadership helps in taking various digital initiatives to achieve sustainable goals (Zupanzic *et al.* 2016). It is based on long-term planning and also promotes transparency and accountability within the organisation.

It focuses on achieving goals through strategic thinking, digital literacy, skill development, environmental awareness, data analysis, an innovative mindset, risk management, policy-making, advanced decision-

making, cultural collaboration, and sustainable development (Tulungen *et al.* 2022). Organisations should take different initiatives to promote sustainability. They should create a complete technology-based digital system and reduce the use of paper by transforming processes into digital systems (Mwita and Joanthan, 2019).

It also promotes blended learning systems and includes sustainability as a topic in the curriculum. By adopting different types of green technologies, it promotes remote learning. It tries to implement circular economy practices within the organisation and uses advanced data analytics for sustainability tracking. It is necessary to adopt digital inclusion policies to achieve sustainable development goals. Continuous monitoring of the entire process is also essential. By implementing different policies, it is possible to build a bridge between society, the economy, and the environment. A proper strategy can help create effective digital leaders who can guide organisations while maintaining sustainable development. Fig. 1 shows The Contextualised Digital Leadership Framework (CDLF).

Case Study

Digital Leadership has a significant impact on transforming a developing country into a developed one. The utilisation of different emerging technologies in organisations affects various sectors (Tigre, 2025). By efficiently operating processes using technology, organisations can perform their activities more effectively. Digital Leadership ensures the economic development of different sectors (Eberl and Drews, 2021). It encourages the growth of entrepreneurs and motivates them to build digital platforms. Various e-commerce platforms promote digital growth.

It also includes digital financial systems and encourages the use of online payment systems, especially the UPI system. Startups are trying to develop online-based digital ecosystems. The contribution of ICT in different sectors helps in the growth of the GDP of a country. Digital Leadership opens the door to globalisation. With the help of technology, different services can be provided efficiently.

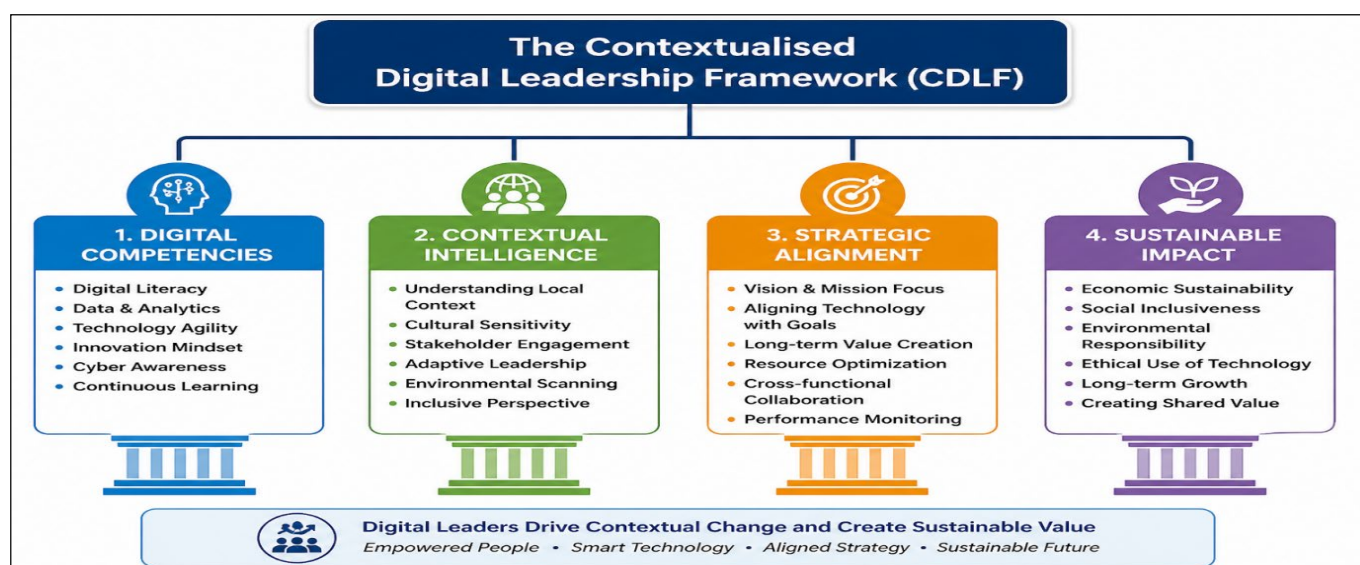


Fig. 1: The Contextualised Digital Leadership Framework (CDLF)

Infrastructure is one of the basic requirements for Digital Leadership. It is necessary to establish stable digital infrastructure and reduce the digital divide. Table 1 shows the number of telecommunication users in India based on Subscriber Base (in million). Fig. 2 illustrates the graphical representation of number of telecommunication users in India based on Subscriber Base (in million).

Table 1: Number of telecommunication users in India based on Subscriber Base (in million)

	QE Dec 2024	QE Dec 2025
Wireline	39.27	47.37
Wireless	1150.66	1258.8

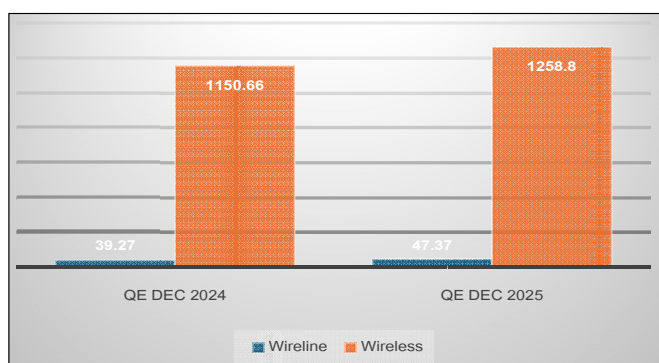


Fig. 2: Number of telecommunication users in India based on Subscriber Base (in million)

The results show that there is a significant increase in the number of telecommunication users, which implies that digital services are growing rapidly. Different Indian digital services are also available in other countries. Table 2 shows the category wise telecommunication users in India based on Subscriber Base (in million) and figure 3 shows the category wise telecommunication users in India based on Subscriber Base (in million). The diagram illustrates the increase of technological utilization to reduce Digital Divide (Paul *et al.* 2024).

Table 2: Category wise telecommunication users in India based on Subscriber Base (in million)

	QE Dec 2024	QE Dec 2025
Rural	527.2	534.69
Urban	662.72	666.11

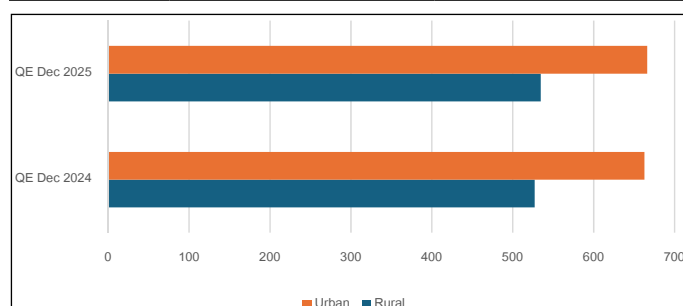


Fig. 3: Category wise telecommunication users in India based on Subscriber Base (in million)

With the help of e-governance, citizens can access more facilities easily. It brings transparency to the system and improves accessibility. Table 3 shows some e-governance applications available in different countries. Both developing and developed countries are implementing various e-governance applications for citizens. Different types of services are provided by utilising these e-governance platforms.

Table 3: Some e-governance applications available in different countries

Sl. No.	Country	E-Governance Application
1	India	Digital India / e-Governance Portal
2	Estonia	e-Estonia
3	United Kingdom	GOV.UK
4	United States	USA.gov
5	Singapore	SingPass
6	South Korea	Government24
7	Australia	myGov
8	Canada	Canada.ca
9	United Arab Emirates	UAE Government Portal
10	Germany	Bund.de

In the education sector, e-learning applications are used for knowledge development (Ratajczak, 2022). E-learning platforms are easy to use and can be accessed anytime and from anywhere, often at low or no cost. Some e-learning portals are – SWAYAM, NPTEL, e-PG Pathshala, DIKSHA, Unacademy and many more. Different EdTech companies also contribute to the promotion of Digital Leadership (Chatterjee et al., 2023). To maintain ecological sustainability, various organisations are offering IoT-based systems.

Finding and Discussion

Digital Leadership is a powerful modern concept (Kiyak and Bozkurt, 2020). It is not only the use of technology, but also a human and strategic approach to utilize the technology to enhance human performance, creativity and achieve organizational goals (Türk, 2023). It empowers employees to use digital tools to serve different task successfully. It helps to expand the scope of work and encourages continuous innovation. Different

Digital platforms facilitate to maintain communication within teams that is helpful for increases trust and mutual respect among peers. In a rapidly changing digital world, this leadership helps teams be flexible and make quick decisions according to the situation. Successful Digital Leadership is not just about the use of technology professionally, but also considering human needs and tries to makes data-driven decisions. Digital Leadership is a wonderful combination of technology and human skills that shape a better future (Narbona, 2016).

Digital Leadership refers to the strategic use and application of AI and technology to boost productivity, increase productivity, and drive business growth (Malik, 2024). Business digitization is a very ideal plan for any organization today. This is because the current world has completely transformed into a digital world. The first step to digitizing a business is to understand the principles of applying Digital Leadership in business, which is also essential for effective digital transformation leadership (Ordu and Nayır, 2021). The purpose of Digital Leadership is to systematically build an organization, help it adapt to a digital culture, and change its characteristics to make the business digital and global. These principles are also consistent with digital transformation for those leaders who have to lead teams strategically in the digital era.

One of the most important characteristics of digitalization is agility. It is very important for leaders to adapt to the pace of change that is taking place in the digital world. Since the nature of every event happening in the digital world tends to change very quickly, leaders with strong Digital Leadership skills can analyze competitors and implement different strategies for success (Claassen et al., 2021). Organizations that collaborate flawlessly demonstrate effective digital marketing leadership and show how adaptability is a driving force for success in digital businesses (de Araujo, 2021). Insight as a leadership quality is essential to being a good leader. In the digital age, having insight, solving complex problems and understanding the digital world are very important in leadership (Eryeşil, 2021 and Hensellek, 2020).

Hiring a leader with deep knowledge of the digital world and industry experience in business development helps organizations implement social media marketing strategies, brand marketing strategies, and brand management plans. Influence means changing people's perspectives towards their own or the company's perspective. By understanding the qualities and characteristics that the company lacks, digital leaders help fill that gap by influencing the digital market on behalf of the organization. Influence means changing the current shape of the company from the customer's perspective. The ability to influence people's opinions is an essential quality for any organization.

Originality is more important than any other aspect of a company's brand. A digital leader must have the courage to follow their passion and take responsibility for the company on their shoulders. Being original means being talented, and being talented means mastering every aspect of a company and finding a way to solve any problem. Leadership qualities are also necessary to gain the trust of not only employees but also customers.

Benefits of Digital Leadership

People in a team can work together, but without proper guidance, they can never work on the same idea. A leader must simplify things and clarify the purpose behind it. This helps the team to set a common goal and work towards that goal. When considering the progress of an organization, it is very important to collect revenue and strategically market the company's branding (Gierlich-Joas, 2020). Having a digital leader helps the organization increase revenue by reaching more people. In the process of digitizing a business, digital transformation leadership plays a more important role than any other role in the organization. By acting as a bridge between employees and company management, leaders can create and adapt the company's responsibilities and characteristics to meet the needs of a completely digital environment.

By creating an intermediary source for employees and company management groups, we can create and change the company's responsibilities and characteristics to meet the needs of digitization. Organizations that want to make this cultural change must prioritize customer

engagement and providing high-quality service. This is one of the characteristics of effective leadership in the digital age, where businesses can digitize every part of their workplace and focus on implementing and improving service quality. It shows that organizations are trying to adopt the digitization and invest in infrastructure creation. It helps to create a better work environment and helps to serve better services to the customer with a better service quality.

Leaders who master digital marketing leadership can leverage these tools to increase brand awareness and reach. As the world has become more digital, it is more important than ever to transform an organization. Now, doing business in the cloud not only provides added security for business data, but also helps keep it up-to-date in real-time and allows for the storage and use of vast amounts of user data for business benefit. Digitizing a business doesn't just mean digitizing documents, but also takes responsibility for digitizing business operations. To ensure a quality experience for customers, a digital leader thoroughly studies and understands the company and helps create an environment that encourages employees to excel. Based on the finding it shows, Digital Leadership is a valuable asset for any organization. It is the ability to adapt quick changes in the digital age. It is one of the basic characteristics of good leader. It promotes a continuous research and development. It promotes to integrate modern technologies for the better services. With the integration of modern technologies it ensures a digital transformation inside the organization and tries to maintain a consistent growth in a dynamic environment (Hossain, 2025).

Digital Leadership has a great impact in the digital world. Digital marketing leaders play an active role on their professional platforms. It has a great role by promoting leadership skills and social media interactions to connect with industry professionals and to make a good relation with the target customers. By focusing on these areas, the professionals can acquire the skills needed to lead in the digital world. It will help to grow the organizations as well as the individuals progress. Leadership in the digital age requires mastering both verbal and written communication skills to effectively

serve their profession. The use of digital collaboration tools like Slack, Microsoft Teams, Zoom and others cloud based platforms are encourages teamwork and increases productivity. It is also crucial for digital marketing leadership.

The digital world is changing rapidly. A skilled professional tries to adopt digital transformation quickly and tries to implement the emerging technologies for different purposes. It uses the technologies to predict the market changes and try to predict customer behavior. It is necessary to regularly reading industry reports and follow other leading thinkers, and attending digital transformation courses for leaders can help. It is necessary to acquire the necessary skills requires for the Industry 4.0. The knowledge about the emerging technologies used in Industry 4.0 is very helpful for the futuristic vision of the organization.

In the digital age, data is a key driver for the strategic decisions (Yücebalkan *et al.* 2018). A strong digital leader understands different aspect of the operation of the organization. It tries to analytics, interprets key performance indicators and uses the various tools to gain knowledge about different perspective. The knowledge are helpful to make any informed decisions that are required in business goals. It is an essential aspect of digital transformation for leaders. In addition to using analytics tools, many organizations use EOS software to bring leadership teams together. It helps in tracking performance metrics. Implementing a structured execution system like EOS helps digital leaders to get strategic goals into measurable results and tries to maintain the operational transparency.

Challenges of Digital Leadership

Digital Leadership in the digital age is the demand of the present time. It has several significant disadvantages and challenges. Although Digital Leadership is a fast growing concept. It creates major challenges such as loss of human connection, security risks and pressure to learn new technologies. The human touch of direct or face-to-face communication is not present in digital media. The absent of face to face mode physical interaction in virtual meetings can create loneliness and social isolation among employees. Body language

or tone of voice cannot be understood when speaking digitally through email or message. As a result, it creates misunderstandings within the team because of verbal and written communication gap.

Many team members may not interested to adopt new digital technologies or working with digital tools. Resistance to such changes is a major challenge to digital transformation. The risk of data theft or cyberattacks is higher in online work. Digital leaders often face concerns about information security and privacy. New digital tools or software are often complex, requiring special training for employees. Additionally, the initial cost (CAPEX) of purchasing advanced technology and hardware can be prohibitive for many businesses, especially small businesses. Social media, email, or other notifications can be distracting when working on digital devices. Not all employees or customers may have the same level of technical knowledge or internet connectivity. This can leave some people on the team or in the community disconnected from the mainstream of work.

The main challenges of Digital Leadership are adapting to rapidly changing technologies, managing cybersecurity risks, and addressing employee digital skills gaps. In addition, integrating new technologies with legacy systems, changing organizational culture, and effectively managing remote workers are also major challenges. Lack of qualified manpower required to use modern digital tools. Achieving the ability to make the right decisions from large amounts of data. Effectively managing and motivating virtual or remote teams. Integrating new digital tools with legacy systems. Increased risk of data theft and hacking. Reluctance or fear of employees to adopt new technologies.

Technology is changing at an incredible pace. Quickly adapting to new technologies like artificial intelligence (AI), the Internet of Things (IoT), and cloud computing is a major challenge for leaders (Tarsuslu *et al.* 2025). Employees in organizations are often afraid or reluctant to abandon old ways of working and use new digital tools (Temelkova, 2020). Overcoming this internal resistance or fear of change is a major challenge for leaders. While technology exists, many organizations lack the skilled

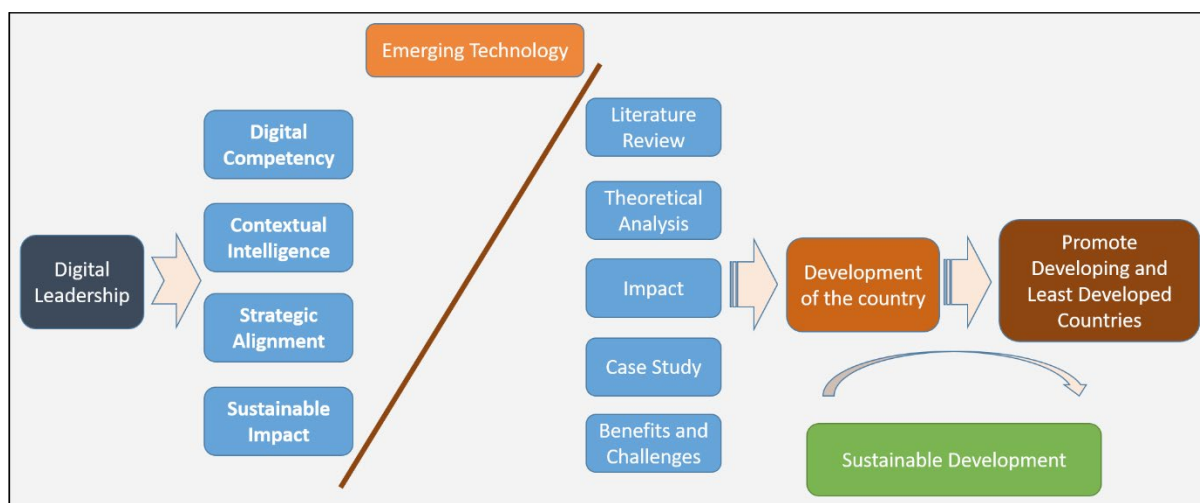


Fig. 4: Conceptual diagram of Transformation of Digital Leadership

workforce or talent to use it effectively. Lack of proper training slows down digital transformation. The risk of data theft or cyberattacks increases when working on digital platforms. Ensuring the security of customer data and managing cyber risk are key responsibilities of digital leaders. Remote or hybrid work cultures have become popular in the post-COVID era. Maintaining team morale, maintaining communication, and ensuring work productivity in a virtual environment is challenging. Fig. 4 shows the conceptual diagram of Transformation of Digital Leadership.

Concluding Remarks

Digital Leadership is a significant step for the development of any country. Following the Digital Leadership strategy is a very important step to ensure the growth of various sectors. The application of Digital Leadership framework can be seen in various sectors such as education sector, healthcare sector business and corporate sector government sector banking and financial sector manufacturing and industrial sector agricultural sector media and communication sector and in many other sectors. As a result of the application of Digital Leadership in various sectors, the technological advancement of all those sectors is improving the working efficiency which is ensuring their organizational growth. Digital transformation is helping in making the right decision due to the use of advanced technology which

is helping the organization to take the right decision. Constant Innovation - Research and Development is required to meet the outcomes of various organizations according to customer requirements. By implementing Digital Leadership, organizations are gaining more digital competence, and through contextual intelligence, they are ensuring digital growth by completing various strategic elements. According to the correct concept of this digital growth gate, organizational products are being improved, which is helping them to reduce their operation costs and meet the correct customer requirements. By ensuring the growth of all sectors together, this is helping developing nations to change into developed nations. The use of various types of smart technologies is reducing the impact on the environment and establishing green governance, which is ensuring sustainable development while maintaining a sustainable economy.

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