Conceptualization and Development of Digital Leadership to Drive Corporate Digital Transformation for Sustainable Success

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Abstract: *The digital age, marked by persistent demands for transformation, compels today's workplaces to evolve into modern organizations powered by advanced digital technologies and innovation. This constant evolution exposes leaders to unique challenges birthed by escalating digitization. Consequently, Digital Leadership—defined by practical problem-solving skills—has become a prominent topic regarding the essential competencies managers must develop in this era. Digital Leadership is the discipline of steering an organization towards digital transformation to maintain competitiveness and agility in a swiftly changing landscape dominated by big data and social media. This discipline extends beyond managing businesses in the era of artificial intelligence or digital disruption; it also entails acquiring and applying appropriate digital skills to cultivate technological changes and innovation in diverse circumstances. This article explores the significance and benefits of proficient digital leadership in accomplishing business goals, delves into digital leadership's concept, characteristics, and skills, and provides a comprehensive roadmap for developing digital leadership, fostering progressive digital leaders, and driving corporate digital transformation for sustained success. It demonstrates that comprehending and appropriately applying digital transformation is crucial for corporate leaders. The article also posits that digital leadership depends on specific factors such as organizational agility, engagement of skilled staff, leadership skill development, support from technology partners, investment, cultural adaptation, and the alignment of new digital technologies with existing ICT System. Lastly, the paper contends that building digital leadership skills necessitates comprehensive change management and strategic selection of digital talents or experts to propel the organization towards enduring success.*

1. Introduction

Leadership can impact individual and team‑related process factors in virtual work settings. These factors serve as intermediaries in the relationship between the inputs, outputs, and outcomes of an organization in the era of the digital economy (Liao, 2017). The landscape of business processes and manufacturing methods has been significantly disrupted, necessitating the swift adoption of digital applications and various stages of digital transformation. In response to these changes, companies have prioritized reaping the benefits of digitalization to stay competitive and resilient. Our focus is predominantly on the affective and behavioral process factors, as service employees exposed to the Covid‑19 pandemic are likely to experience emotional impacts in their work and living conditions. This includes feelings of perceived insecurity or tension, which could, in turn, lead to behavioral alterations in their individual performance or team dynamics (Bartsch et al., 2021). In the 2020‑2022 period, the Covid‑19 pandemic has, besides the health concerns, caused an unprecedented social and economic crisis that has particularly hit service industries hard. The pandemic has drastically expedited the need to adapt and confront the challenges organizations encounter universally. Furthermore, the pandemic has triggered a swift surge in digital innovation and fostered the necessity for

cross-functional teams. These teams amalgamate technology and innovation experts with business analysts to work collectively and promptly, thereby developing new digital platforms, applications, and solutions (Aissaoui, 2022).

The Covid-19 era has pressed businesses into adopting remote working, distance learning, and online training, elevating the demand for leaders with substantial influence in the digital domain. Throughout this pandemic, organizations have shown a preference for leaders who define clear roles and objectives, embrace shared leadership, maintain open communication with employees, prioritize the emotional well-being of their staff, safeguard the financial health of the company, and foster organizational resilience (Kashive et al., 2022).

Over the past four decades, organizations have harnessed the power of modularity in software, decision-making, processes, and policy/business rules to foster agility, enabling them to adapt to fluctuating market conditions. Today's customers seek value creation at every point of interaction with an organization, which often influences their decisions regarding product or service purchases. As a result, organizations must incorporate modularity at the service encounter level, ensuring the capacity to adapt swiftly to evolving customer demands and expectations (Vial, 2019). In essence, organizations must develop the capability to construct "service-level" agility, which enhances customer value creation through advanced digitization.

Before delving into digital leadership or transformation, defining our understanding of "digital" is vital. Often, we perceive "digital" as social media, websites, applications, digital publications, and marketing. This perspective is hardly surprising given that these platforms and tools are key mediums through which we engage with audiences and funders, showcasing our identities as artists, innovators, organizations, and leaders (Ziadlou, 2021).

An alternative perspective views "digital" as an innovative and avant-garde force capable of potentially transforming the nature of our art and its distribution methods. Consequently, it is no surprise that cultural leaders are captivated by the prospects these cutting-edge technologies offer to redefine art and heritage experiences (Erhan et al., 2022).

Technological innovations such as Virtual Reality (VR), Augmented Reality (AR), Extended Reality (XR), and Mixed Reality (MR) collectively constitute a powerful and versatile toolset for creative exploration.

"Digital" refers to these elements but is not limited to them. A narrow focus on platforms or innovation alone could potentially restrict the growth of our organizations, limit our audience reach, and stifle our creative practice (Inegbedion, 2021; Phakamach et al., 2022).

The new digital reality, eloquently described by Schiuma, Schettini, Santarsiero, & Carlucci (2022), this shift is often compared to the industrial revolution because of its substantial impact on people's preferences and methods for communication, media consumption, learning, banking, shopping, and lifestyle management. It is a profound transformation that permeates virtually every facet of our daily existence.

Ruel, Rowlands, & Njoku (2020) outline several compelling reasons companies necessitate this emergent form of digital leadership. There are at least six significant factors:

1) Pressure to Innovate: With rapid technological advancements, business models, and products, every organization must stay ahead of the curve and constantly innovate (Khalili, 2017).

2) Competition: In the era of the digital economy, competitors—both major and minor—are merely a click away. Companies compete in a global market, making catching up with early pioneers are challenging once a newcomer successfully disrupts an industry.

3) Decentralization: Value creation is progressively decentralized, thanks to high-performance digital tools. Customers are gaining the ability to execute processes, further decentralizing power independently.

4) Knowledge Revolution: The volume of data available to companies is burgeoning exponentially, offering a competitive edge to those who can successfully harness it. Concurrently, digital marketplaces and platforms enhance transparency, provide more choices, and deliver superior customer experiences, setting new competitive standards.

5) Smart Communication and Meeting: The swift shift to remote work necessitates organizations to facilitate efficient communication channels between teams scattered across various geographic locations and time zones. Establishing such smart communication pathways promotes agility in executing all activities.

6) Evolving Workforce: In a market where, digital skills are highly sought after, job seekers hold sway. Therefore, attracting and retaining talented employees has become a top priority for companies.

7) Limitless response to demand: consumers have more knowledge or channels to explore, and this causes the behavior of consumers to have the following characteristics: (1) Communicate all the time; (2) Must be proactive; (3) Must be socialized; (4) Adaptability; (5) Innovative; (6) Competitive; (7) Prefer famous brands; and (8) Likes to be necessary, or special (Robertson et al., 2022).

2. Digital Leadership Concept

GDS Group (2020) characterizes digital leadership as empowering others to take charge and fostering self-organized teams capable of optimizing daily operations. Leadership in this context transcends the traditional hierarchical structure, necessitating active participation, involvement, and contribution from all organization members.

Digital leadership involves strategically deploying a company's digital resources to realize its business objectives. This responsibility can be undertaken at an organizational and individual level. When examined individually, those entrusted with managing digital resources are frequently seen leading such initiatives.

An adept digital leader is cognizant of the organization's business objectives and understands how their role contributes to achieving these goals. On a broader organizational scale, a digital leader can be represented by a company that has proficiently leveraged its digital resources to secure and sustain a competitive advantage. Such leaders continuously investigate how technology can be employed to make their businesses more responsive to customer needs and fluctuating business demands (Liao, 2017).

Weber, Krehl, Buettgen, & Schweikert (2019) characterize a digital leader as an individual who generates innovative ideas within a digital context and motivates their team in this environment. Such a leader excels at establishing enduring communication with their employees in a digital milieu, along with the capability to devise effective digital strategies. Phakamach et al. (2021) assert that an accomplished digital leader appreciates the significance of inbound data and the accompanying business processes that facilitate its use. They assign considerable importance to their communication skills, creative thinking, and open-minded approach towards exploring how emergent technologies and digital information can benefit business projects. Consequently, they define "Digital Leadership" as strategically guiding the successful digital transformation of an enterprise and its business ecosystem.

Uhl-Bien & Arena (2018) argues that gaining a firm grasp on the role of a digital leader is crucial for truly understanding the essence of digital transformation. At its core, this transformation implies adopting and implementing new, rapidly advancing, and constantly changing digital technology to tackle various challenges. However, why does digital leadership hold such a pivotal position? Primarily, effective digital leadership fosters an organizational workflow and business procedures that allow for the rapid introduction of new technologies, products, and services while concurrently ensuring the smooth operation of existing legacy applications and Information and Communication Technology (ICT) functions. Nevertheless, what are the specific advantages of this kind of digital leadership? (Wang & Cardon, 2019; Ziadlou, 2021).

1) It builds a digital climate and culture: different departments within a business will require different digital tools to improve their work and develop a higher-performance work process. Digital climate and culture can always create valuable innovations. An effective digital leader facilitates this within the organization by equipping the team with the appropriate tools. For instance, companies can leverage Google Drive to generate and access particular documents that encompass specific information. Every modification is instantaneously recorded, enabling individuals to track who has added, deleted, or altered data in real time. Moreover, this platform facilitates real-time collaboration and document sharing for remote employees (Beynon et al., 2021).

2) Enhances employee productivity and competence: The tools furnished to an organization are primarily intended to boost productivity levels. However, without motivating digital leadership, employees might face challenges in effectively implementing these tools and fully exploiting their potential. Digital leadership ensures that the workforce is equipped to utilize these tools immediately, fostering competencies and skills development.

3) Bolster's customer satisfaction through effective leadership: A satisfied customer has little reason to switch to a competitor. Conversely, a dissatisfied customer can find multiple grounds to defect and might eventually become loyal to a competitor's products or services. Digital leadership can be instrumental in augmenting and introducing elements of convenience, speed, and customer support, enhancing customer satisfaction with the product or service.

Digital leadership can significantly contribute to revenue growth through various means. These include: (1) Improving customer retention: By effectively serving customers with digital tools, their satisfaction levels are enhanced, increasing loyalty and (2) Expanding customer base: Using digital tools can help cater to a larger number of customers at a reduced operational cost.

4) Revenue Growth and Expenditure Reduction: The equation is straightforward; servicing a larger customer base in a shorter timeframe is an efficient strategy for enhancing revenue within the business.

5) Development of growth patterns: digital leaders often seek ways to operate for organizations to create distinctive and modern identities. Organizations can sustainably exist and thrive in typical environments and transformative change.

Nicolás-Agustín, Jiménez-Jiménez, & Maeso-Fernandez (2022) cite the notable individuals at Dot Everyone, an organization devoted to fostering digital literacy among leaders. They propose that "being a leader in the digital age implies comprehending technology as much as one understands finances, human resources, or the law." Leaders with this digital understanding can make confident, informed, and impactful decisions for their organizations and users.

Leadership skills development is an ongoing process. We can all augment our digital literacy by staying current with digital trends and tools and honing skills that amplify our leadership potential. This does not necessarily entail everyone becoming technologists or coders in the digital realm. Instead, what is vital is a substantial digital acumen to identify gaps in our skills and determine potential collaborators to ensure the success of our projects and organizations.

Moreover, proficient digital leadership is crucial for steering our organizations towards adapting to the Internet era by constructing new capabilities, structures, and working methodologies (Ngayo Fotso, 2021).

So, where does one begin? A curiosity about our users and audiences and a willingness to learn how we can adapt to serve them better hold immense potential for cultural organizations. Cultural organizations nationwide are investigating the application of agile methodologies and design thinking to their organizational and program development, guided by the needs of their users. Comprehending the demands of our users and how our initiatives can satisfy these requirements can render our work more attractive, relevant, accessible, and cost-efficient. By drawing insights from data about our users and their needs, we can usher in a transformation in cultural leadership and organizations, enabling them to thrive in the Internet era. This also helps us to break away from the restrictive thinking of digital as only about platforms or innovation (Machado et al., 2021).

Jakubik (2021) has noted that most conventional organizations grapple with defining the term "digital" and this ambiguity also extends to the concept of digital leadership. We often encounter difficulties when we delve into seeking definitions due to the plethora of fragmented interpretations.

Here are a few potential meanings:

1) Leadership that effectively utilizes digital tools and technologies;
2) Leadership centered around guiding digital natives;
3) Leadership active during digital transformation;
4) Leadership engaged with incorporating digital sales channels within traditional businesses;
5) Leadership addressing big data and the digitization of information.
6) Leadership related to human resource management in the digital era.
7) Leadership involved in innovation for humanity.

The complication arises because, within each of the contexts above, the interpretation of leadership itself could vary, necessitating different tools. For example, we could envisage digital leaders holding distinct roles in the first scenario, which could also be applicable in the fourth scenario. The second point resonates strongly with the leadership seen in start-ups, with abundant literature trying to distil the successful traits of unicorn leaders. The third point is arguably the most intriguing, as it encapsulates the genuine needs of most companies. Lastly, points 6 and 7 are intricately linked to human behavior and needs.

Denning (2021) and Caredda (2021) portray digital leadership as a trending concept in recent managerial literature and discussions, bearing similarities to the concept of transformation. The debate oscillates between two extremes: one group endeavours to wholly redefine the concept of leadership in the context of the digital sphere, while the other downplays its impact, demoting it to merely a new technological factor that does not fundamentally modify the principles of conventional leadership models.

Hizir (2022) advises that amid digital transformation, every organization needs to adapt quickly to all dimensions of its strategy to be aware of the current and future trends in its development. Leaders inevitably play an important role in leading the organization to its goals amidst fierce competition to gain an edge and maintain its longest-lasting existence.

Moreover, a digital leader will: 1) Employ data-driven analysis instead of relying on subjective interpretations; 2) Establish a concrete vision as opposed to merely setting aspirations; 3) Formulate strategies centered around customers or citizens rather than constructing inside-out plans; 4) Define unified action plans instead of disjointed performance programmes; 5) Prioritize achieving outcomes over simply producing outputs.

Above all, a digital leader understands that digital transformation revolves less around the technology itself and more around strategy, structure, culture, capabilities, and customer or citizen understanding (Leavy, 2020). New technologies and digital capabilities offer leaders unprecedented access to data, facilitate swift testing, and allow system interrogation like never before. However, technology is a means to an end, not the end itself. A common mistake leaders make is to equate the introduction of new technology and digital capabilities, such as websites, social media, and online activities, with fulfilling the demands of digital leadership. The digital leader need not understand the intricacies of how the technology functions; rather, they should focus on learning how to leverage it to gain a competitive edge (Carvalho et al., 2022).

Digital leaders can utilize a variety of digital tools and content in order to achieve the objectives of their organization. Therefore, it can be concluded that digital leaders are proactive in exploring how ICT can help their organizations be more responsive to customer needs, deliver better products and services (or deliver differently) and adapt to rapidly changing environments (Adam & Dzang Alhassan, 2021; Beynon et al., 2021; Maji & Laha, 2022). In essence, digital leadership entails strategically using a company's digital resources to assert influence and drive the achievement of business objectives.

3. Digital Leadership Characteristics and Skills

There must be an understanding of what digital leadership means and what it means to be a digital leader. This topic discusses the attributes and skills of effective digital leadership for executives, showing the elements and indicators needed to apply them to develop skills in the next phase.

Caredda (2021) identifies four distinct characteristics and three behaviours that define agile leaders, as depicted in Figure 1. The four characteristics are:

1) Humility: These leaders are receptive to feedback and know that others may possess greater knowledge.

2) Adaptability: They accept the inevitability of change and perceive altering their views based on new information as a strength rather than a weakness.

3) Visionary: Despite short-term uncertainties, they maintain a clear sense of long-term direction.

4) Engagement: These leaders are eager to listen, interact, provide feedback, and communicate with internal and external stakeholders. A strong curiosity about emerging trends complements their engagement.

The three pivotal behaviors include: (1) Hyperawareness: This behavior involves consistently monitoring internal and external environments for opportunities and threats, typically referred to as SWOT analysis. (2) Informed Decision-Making: Leaders leverage data and informatics to make evidence-based decisions. (3) Swift Execution: These leaders can act rapidly, often favoring speed over perfection.
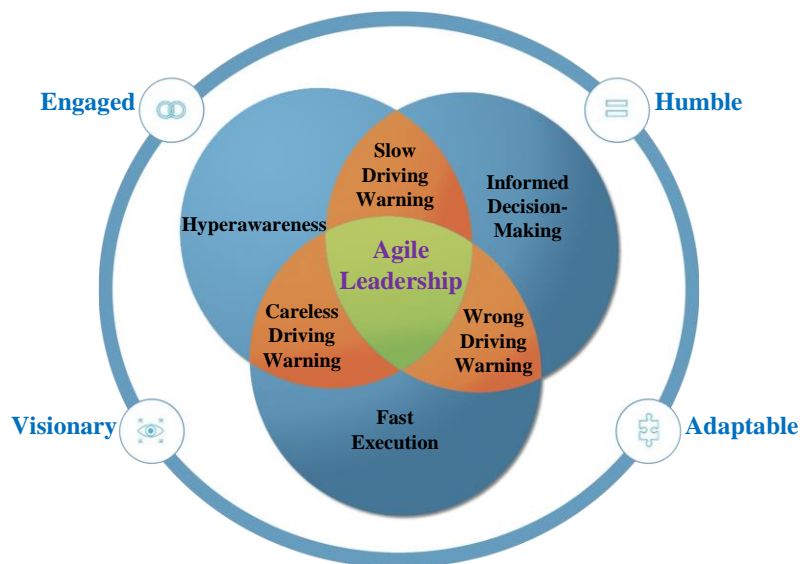

Figure 1. Agile leadership framework (Phakamach et al., 2021; Schiuma et al., 2022)

In today's world, digital leadership is an apparent balancing act requiring unique skills to drive success for that leader, the organization and the overall workforce. Caredda reported that 42% of major companies now believe that it is increasingly important to develop leaders and that success in this digital age heavily depends on it. What skills, then, are essential for digital leaders? As demonstrated in Figure 2, we have identified some of the critical competencies of digital leadership in the digital era (Phakamach et al., 2021). These are:

1) Communication/Collaboration: The digital realm allows us to maintain round-the-clock team connectivity. Through the effective use of technology, digital leaders can establish a vital communication network that permeates all levels of the organization. To accomplish this, digital leaders need to devise a well-thought-out strategy and clearly understand their target audience.

Example: Virtual meetings serve as an ideal instance. Given that managers often grapple with packed schedules and may be out of town, virtual meetings allow them to participate in company meetings remotely. Consequently, they remain updated about the latest developments and can relay information virtually.

2) Vision and Focus: with a solid and clear vision, it is easier to get the workforce onboard, and arguably it is the trait that makes digital leaders stand out from the rest.

3) Digital Literacy: Research conducted by the Harvard Business Review, involving 1,000 CEOs, revealed that 90% of them believe their businesses are undergoing disruption or reinvention due to digital business models. However, when questioned about their preparedness, 70% admitted lacking the requisite skills, leadership abilities, or operational

structures to adapt effectively. A prevalent issue plaguing industries is that the older generation, often called 'digital immigrants', must acquaint themselves with new technologies. It is incumbent upon digital leaders to master these technologies and tools and ensure their entire workforce is also on board.

4) Strategic Thinking/Planning: The most effective digital leaders possess a well-defined outlook for the future and formulate strategies that cultivate a digital culture within their organizations, thus preparing it to embrace changes. For this transformation to occur, it is imperative to have a cohesive strategy delineating the digital agenda.

5) Technology and Innovation: In the ever-evolving digital landscape of our era, leadership must remain open to exploring and adopting new technologies, demonstrating flexibility and adaptability in cultivating a digitally competent workforce. Digital leaders must possess a sound understanding of the technologies the organization is set to utilize to monitor their initiatives' results. Technological initiatives can also amplify how companies meet customer needs. In the digital sphere, business models ought to be flexible, ready to assimilate emerging technologies, and digital leaders play a pivotal role in facilitating this transformation. Though this process often involves taking calculated risks, while embracing new systems ahead of other businesses can seem risky due to a lack of prior evidence or success stories, the potential benefits could be substantial. This brings us to our next point—the importance of critical thinking and risk-taking (Maji & Laha, 2022).

6) Think Critically and Risk-Taking: Organizations often tread cautiously when prioritizing speed and innovation over tried and tested technologies. However, risk-taking is an integral aspect of digital leadership. As Mark Zuckerberg, the CEO of Facebook, emphasized, The biggest risk is not taking any risk. In a world that's changing quickly, not taking risks is the only strategy guaranteed to fail.

7) Adaptability and Responsibility: When industry or business shifts occur, the digital leader can be adaptable and ready to make decisions that will have minimal impact on the business. A leader unwilling to change or be proactive will condemn the business. Furthermore, Forbes believes that adaptability and responsibility are the primary skills of a digital leader.

8) Talent Identification: Effective digital leaders can identify areas within their business that require enhancement and where talent might be underrepresented. They understand that people are as indispensable as technology.
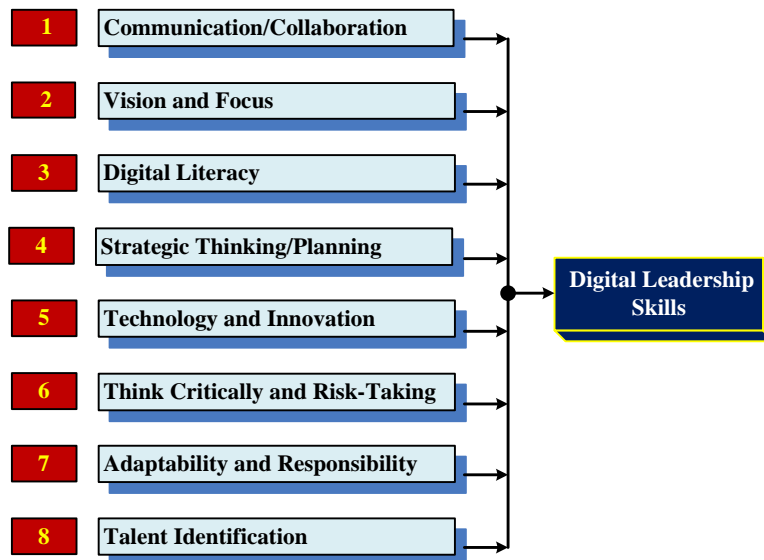

Figure 2. Digital leadership skills (Phakamach et al., 2021)

According to assessments, digital leaders possess a unique combination of digital acumen, experience, and the foresight necessary to steer businesses towards their digital objectives.

They also can adapt their ideologies and strategies to fluctuating circumstances (Phakamach et al., 2021). The discussion underlines that leadership is a crucial component of any management system, instrumental in optimizing efficiency to accomplish business objectives. Effective leadership can inspire and propel the workforce towards achieving set goals.

Roux (2020) contends that digital skills encompass knowledge, the comprehension of information requirements from digital technology sources, and the ability to adeptly utilize digital tools and resources for data input, organization, and

the integration of digital assets. Numerous studies have examined a range of digital skills, yet three consistently stand out as essential for digital leaders to either possess or integrate into their strategic approach. These encompass:

1) Programming: This skill is not limited to developers. A basic understanding of programming is a key skill for digital leaders, as it can aid in underpinning their projects.

2) Project Management: The capability to efficiently coordinate people, budgets, and resources is one of the most sought-after technical skills. A proficient project manager can deliver projects effectively and allocate the right personnel for specific tasks. The importance of this skill lies in the potential of a well-assembled team to address any issues that may arise during the project.

3) Big Data & Business Intelligence Analysis: This provides crucial information that businesses can use to sustain their market share and define their competitive edge. Big data analysis plays a vital role in business processes. Scrutinizing large datasets is critical for identifying correlations, highlighting valuable customers, and evaluating market trends. Accurate analysis of this data leads to more efficient sales strategies and creates opportunities for increased revenue.

4) Information Security: Security is a prominent concern for all businesses. Data breaches can have dire consequences, ranging from the loss of customers to damage to the brand's reputation. Consequently, having technical security specialists onboard is essential—a factor that every digital leader must consider critical.

Weber, Krehl, Buettgen, & Schweikert (2019) describes six characteristics of digital Leadership:

1) Acknowledging that digital transformation is not solely about the magnitude of visually impressive projects but rather about revolutionizing people's approaches and workflows;

2) Cultivating digital competencies across the organization instead of confining them to a separate department;

3) Prioritizing the integration of digital processes and technologies to inform and shape business and artistic strategies rather than having an isolated digital strategy;

4) Empowering leaders with a mandate and a budget to experiment with digital technology and embrace agile work methodologies;

5) Initiating all programs and projects with user research and an understanding of user needs, refining what to do and how to do it based on feedback received; and

6) Energizing and inspiring teams and boards about the benefits of digital transformation, providing tangible proof of concept, even if successful experiments initially appear small in scale.

Moreover, Ranjith Kumar, Ganesh, & Rajendran. (2022) stated that an effective digital leader is someone who: leads, inspires, educates, enables, empowers, fosters partnerships, and is accountable.

4. Planning Digital Roadmap in Digital Leadership

In the digital era, leaders can surface from any organizational tier. Key traits of a digital leader include agility, engagement, trust, networking, and openness. Digital leadership employs four pivotal platforms to enable business transformations: (1) An innovation platform that stimulates teams to unearth value-creating ideas via digital transformations; (2) An agile system and business platform structured to devise and deliver ICT applications swiftly; (3) A platform that fosters proactive work ethos and efficient communication; and (4) A learning platform that encourages reflective discourse and builds the organization's capacity. In addition, an adoption platform is dedicated to determining the appropriate timing and methods for implementing digital transformations. All digital leaders are tasked with developing a digital roadmap. This fundamental document delineates business objectives and pinpoints the digital initiatives that will aid in achieving these goals. Essentially, it acts as a blueprint for actions that align with the digital strategy (Hearsum, 2015; Liu et al., 2018; Busse & Weidner, 2020). This roadmap comprises both short-term and long-term targets and clearly assigns responsibilities to key stakeholders. Furthermore, it provides explicit, concise guidance concerning the initiatives that the business should prioritize. This strategic roadmap should then be shared widely across the organization. However, how does one go about creating such a digital roadmap? (Aboobaker & KA, 2021). As depicted in Figure 3, here are several helpful steps:

1) Define the digital strategy and goal: Begin by establishing a clear vision of the potential benefits of the digital strategy. These benefits may include amplifying the brand, augmenting sales revenue, or enriching customer experiences. Utilize these objectives as a foundation to outline your digital strategy. Establishing clear digital goals and strategies will act as the primary drivers, making the transition to digital leadership meaningful and operationally viable.

2) Establish a timeline: Your digital roadmap should delineate when you anticipate certain aspects of the project, as well as the completion of the overall project.

As you formulate your strategies, set a realistic timeframe for achieving your goals. Consequently, a clearly defined timeline will enable those transitioning to digital leadership to effectively review and evaluate the strategies and activities implemented within a specific period.

3) Identify and engage stakeholders: For the roadmap to success, it is necessary to ascertain who is accountable for which tasks, who is involved in the process, what the current operational status is, whether future preparations to achieve the goal within the designated timeframe are feasible, and how to maintain alignment with the roadmap. Digital leaders must ensure that stakeholders are involved and fully engaged with the proposed strategy.

4) Establish Key Performance Indicators (KPIs): KPIs are crucial for evaluating and measuring the strategy's success and identifying lagging elements needing adjustment or evolution.

However, developing digital leadership is essential for building a new generation of corporate leaders. Nowadays, it is found that this is a true of business organizations at all levels. Public and private sectors, especially education sector, require different leadership development styles. It will depend on the organization's structure, culture, vision, and mission as to what their identity is. Therefore, learning about the role of digital leaders is critical for sustainable growth.
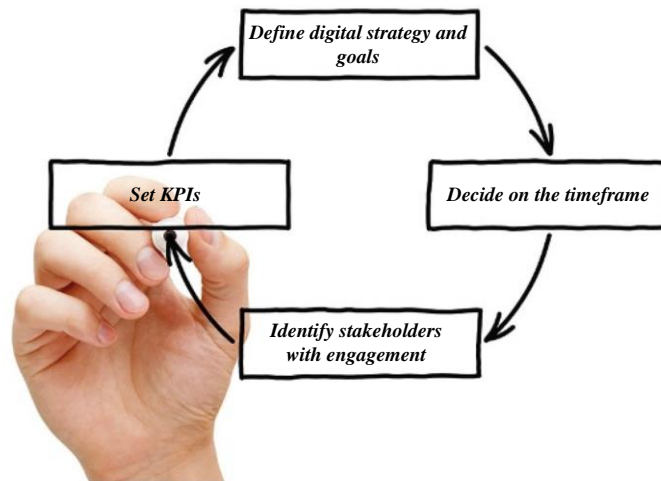

Figure 3. Digital roadmap (Busse & Weidner, 2020)

5. Progressive Digital Leadership

Digital leaders should be fully immersed in the realm of technology. This requires staying abreast of the latest innovations and transformations in the digital business landscape. These leaders should utilize digital tools comprehensively in their personal and professional lives while investing in continuous digital education for themselves and their team members. Digital technologies such as big data and analytics, cloud computing, the Internet of Things (IoT), artificial intelligence (AI), e-commerce, online and social media marketing, and smart mobile technologies are of particular relevance. Becoming proficient in these areas is imperative for digital leaders (Leavy, 2020).

Henry (2019) posits that forward-thinking digital leaders look beyond their organizations to develop a more credible perspective. They see potential challenges as opportunities for growth. Nevertheless, above all, they must prioritize the well-being of their workforce and customers. Progressive leaders typically possess certain qualities, including:

1) Leading by example: By exemplifying excellent leadership, they establish the standards for the leadership expected in their business. This approach fosters a culture where others are motivated to emulate these practices.

2) Articulating their vision: What is their envisaged future for the organization? They cannot expect their workforce to follow a path they do not comprehend or believe in. Sharing the vision is crucial because it ensures everyone is aligned and working toward the same objectives.

3) Creating their value: value creation is essential for managing a digital enterprise because the value is a measure of efficiency growth, and success in developing the organization towards sustainable goals.

4) Celebrating Success: Acknowledging achievements expresses appreciation for those who accomplished them. Individuals are motivated by their achievements. Acknowledging these triumphs reinforces the desired behaviors, promoting their repetition across the organization.

The digital tools and solutions that enhance processes, productivity, efficiency, and competitiveness are at the core of any digital transformation. Nonetheless, constructing an appropriate technology stack necessitates thoroughly examining all operations to comprehend precisely which solutions should be deployed, where, and in what priority sequence. Comprehending how, when, and where technology can augment productivity or refine internal processes is a pivotal skill in digital leadership (Kashive et al., 2022). Leaders and executives should be aware and focus on various issues in adapting to accommodate the business disruption, including:

1) Focusing on digital strategy and strategy over technology;

2) Having an organizational culture and atmosphere that supports digital initiatives;

3) Organizations must have faith in the digital agility of their leaders;

4) Digital strategies and strategies can drive digital development;

5) The effectiveness of a digital transformation strategy depends on the core organizational scope and objectives;

6) Digitally thriving organizations will build skills to understand strategy and tactics;

7) Employees want to work with digital leaders; and

8) Risk tolerance has become a cultural norm.

Indeed, one of the most effective investments a digital leader can make is in a modern, robust enterprise resource planning (ERP) system. Long regarded as the bedrock of strong and sustainable digital transformations, ERP solutions are engineered to provide digital leaders with a comprehensive overview of the entire organization. They consist of a powerful suite of business process management, communication, and collaboration tools that consolidate all aspects of an organization, including product development, planning, human resources, finance, accounting, public relations, sales and marketing, into a single database and user interface. Thus, the ERP system becomes the central hub for planning, controlling, and executing all business processes. It lays a flexible groundwork for digital leaders to incorporate the technologies required to enhance their organization's digital maturity and sophistication (Tulowitzki et al., 2022).

However, digital leaders must select their enterprise tools judiciously. Certain ERP systems are dauntingly extensive and intricate, require several months to implement, and an even longer time to train employees. These factors can challenge ensuring that change processes are streamlined and that the transformation is a lasting success. Finally, Vial (2019) stated 5 traits of a successful digital leader: vision, curiosity, collaboration, experimental, and networking proficiency.

6. Successful Digital Leaders

In today's ever-evolving landscape, emerging technologies such as big data analytics, robotics, artificial intelligence, and machine learning are compelling leaders to steer their organizations through challenging times. The recent pandemic further hastened the speed of technological transformation, presenting organizations with a dramatic paradigm shift. Remote work became the norm, and interfaces with customers, suppliers, and network partners were progressively digitized to maintain communication and deliver ongoing services (Khaw et al., 2022). Digital leaders possess a profound comprehension of business objectives, enabling them to meticulously devise plans that exploit digital resources for a competitive advantage. With the onset of digital transformation prompting companies to embrace novel digital technologies, this brand of leadership ensures optimal utilization of these advancements. Digitally equipped leaders set the groundwork for digital transformation and orchestrate organizations in a manner that capitalizes on disruptions to the fullest. They foster an environment encouraging employees to revolutionize their work methods, overhaul processes, boost profitability, and steer organizations towards remarkable success. This topic presents the issue of qualifications of successful digital leaders. This is to give readers an overview of the potential of digital leaders and their applications for the development of digital leadership for the most effective management of the organization, shown in Figure 4.

1) Shape a strong vision and inspire others: A distinct roadmap with a defined end goal is indispensable in shaping a digital strategy. Digital leaders must have a thorough understanding of their organization, sound technical knowledge and digital literacy.

2) Think beyond industry boundaries: digital leaders don't settle for what's already been done. Identifying gaps in the current workings and using digital technologies to bridge them will make you a pioneer.

3) Always curious about the new: with the new technologies and innovations taking over the world rapidly, digital leaders who are always curious have the edge over others. This will help them predict key trends in the industry and align their organizations to make the most out of them

4) Lead teams that win over adversities through collaborations: digital transformation is a volatile field, and if the organization needs to be successful, everybody on the team needs to adapt to the changing technologies and innovations. Being receptive and building a collaborative culture that will support the team through challenges is crucial for a leader.

5) Reimagine and experiment: these is no easy road to digital transformation; it will take a lot of experimentation and failed attempts; the one way to succeed is to build a team of empowered individuals who aren't afraid to fail.

6) Good risk-taking appetite: digital leaders take calculated risks and weigh the potential benefits when making decisions, sometimes giving them valuable insights that they can use later on.

7) Masters at networking: industry professionals have a host of knowledge to share. Leaders need to make use of their network of connections and help build a strong future together.

Another key aspect of self-development to become an organization's digital leader in the age of transformative digital transformation is the use of executives' digital leadership development model by framing or self-development goals consisting of (1) inspiring, (2) building confidence, (3) relying on good governance, (4) allocating time to access, (5) leading to change, and (6) virtualization, etc. Therefore, the application of all of the aforementioned models and methods in the above material can drive to become a digital leader with high potential for the effective development of an organization and supporting sustainable growth.
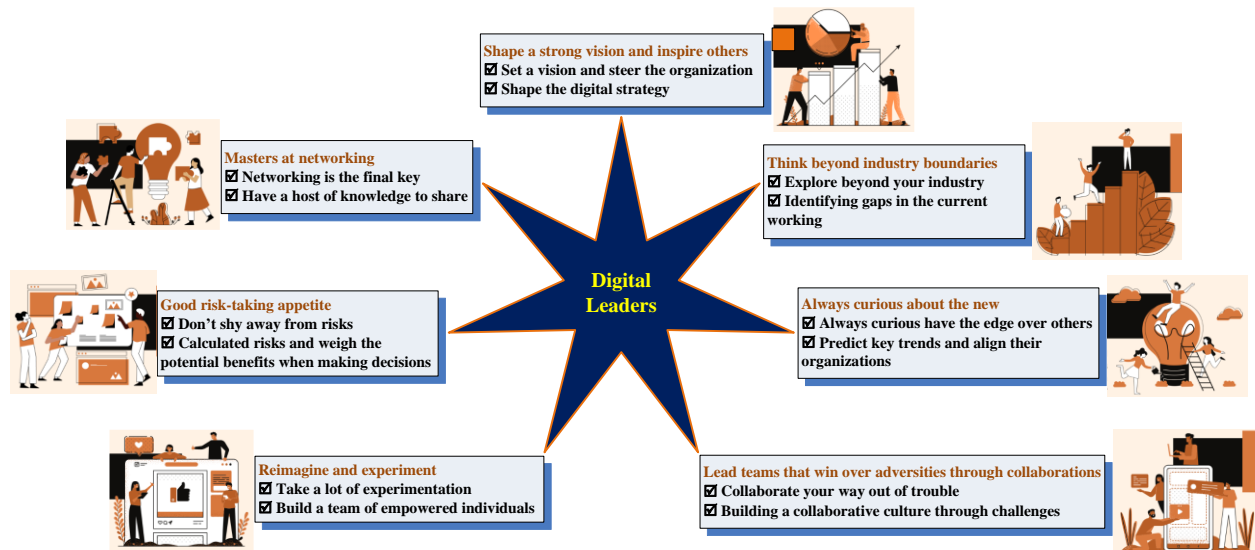

Figure 4. Successful digital leaders (Phakamach et al., 2021)

7. Corporate Digital Transformation for Sustainable Success

Hernandez (2018) imparted her experiences and insights, discussing seven principles for leaders in the sphere of digital transformation and examining how such transformation affects the role of leadership and the overall organization's sustainable success as follows:

1) Value-Driven Leadership: People gravitate towards companies or organizations that exhibit a strong sense of values. However, a leader's values also play a crucial role. To be an individual people wish to follow, you must be familiar with your values, communicate them openly, and remain authentic.

2) Coaching of Humans and Bots: In the digital transformation era, leaders must develop new coaching techniques suitable for an ecosystem composed of both humans and robots. With a workforce of (human and AI) employees, subcontractors, stakeholders, and remote workers, leaders must devise novel ways to connect with everyone. This comprehensive approach can cultivate high-level teamwork.

3) Fostering Innovation: Amidst new teams of people working collaboratively, there might be confusion about the most effective modes of cooperation. To foster innovation, agile methods must be employed, despite differing perceptions of agility. A leader must simplify and clarify task allocation and working mechanisms to guide the team towards a shared objective. Thus, driving innovative organizations can offer a competitive edge, fostering sustainable growth.

4) Awareness of Security and Integrity: As we transition to a more digital world, matters of security and integrity must climb higher on our agenda. Leaders must stay updated on these issues, understanding and assessing the risks while posing the right questions.

5) Harnessing the Power of Diversity and Inclusion: Diversity and inclusion extend beyond mere statistics. To truly benefit from diversity and inclusion as drivers of innovation, leaders must recognize and cultivate every individual's potential, providing them with the tools they need to grow.

6) Learnability and Adaptability: Continuous learning, development, and adaptability are essential for everyone, especially leaders. Rapid learning ability is a key skill for ensuring sustainable success.

7) Sustainability as Humans and Leaders: The concept of work-life balance may be outdated, but we still need to identify strategies catering to work performance and relaxation. Reflect on your relaxation strategies and focus on aspects that bring value to your life. Embodying these principles as a role model for your colleagues and team can be the secret to sustainable digital leadership.

8. Conclusion and Recommendations

Digital leadership, or Leadership 4.0, represents a contemporary management style that instigates and fuels an organization's digital transformation, infusing business processes with agility and flexibility. This article elucidates the advantages of efficacious digital leadership in reaching business objectives. Digital leadership, in a broader sense, refers to the management of businesses in the era of artificial intelligence and involves acquiring essential digital competencies to drive technological change and innovation. The successful execution of digital leadership hinges on a myriad of critical factors such as organizational agility, engaging skilled personnel, supportive technology partners, strategic investment, an adaptable culture, harmonizing new digital technologies with existing ICT infrastructure, and learning from unsuccessful endeavors. The core challenge lies in contextually managing and synchronizing these elements. This leadership style further necessitates vital leadership capabilities to foster internal and external collaborations and co-developing ideas and strategies for digital transformation.

Digital leadership is hallmarked by a well-articulated vision for digital transformation, adeptness in formulating adaptive policies, profound digital acumen and intelligence, the capability to motivate employees, a tolerant approach towards mistakes, and empathic and conciliatory behaviors. This form of leadership aligns with other leadership styles, such as visionary, entrepreneurial, transactional, transformative, and democratic. Therefore, in the context of the evolving concept of digital leadership, this study is expected to significantly contribute to adopting digital leadership practices in the face of digital transformation. By scrutinizing the current leadership practices of managers, the goal is to enhance managerial effectiveness in practice.

Lastly, what credentials are necessary for one to be considered a digital leader? Although we have previously outlined the distinct attributes and essential traits of a digital leader, it is valuable to summarize that leading by example, effectively communicating their vision with the business, and possessing crucial digital leadership skills all play pivotal roles. Furthermore, strong communication abilities and prudent decision-making significantly contribute to the success of a digital leader.

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