DECODING THE DIGITAL LEADERSHIP PERSONA: KEY COMPETENCES IN TODAY'S DISRUPTIVE WORLD

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Abstract. In the past decade, technology has enabled digitalization to become a global phenomenon that reshaped how organizations build their competitive advantage and how leaders empower their people to face the disruptive changes generated by digital transformation. Navigating novel challenges in a digital world calls the leaders to augment their skillset and develop new competencies to better guide people through uncertainty and a high speed of change. In the quest to identify the key competencies of digital leaders, the present paper employed a qualitative research method based on building a statistical bibliography map out of 109 publications. The research results emphasize four essential competencies a digital leader should cultivate to drive innovation, provide purpose, and bring clarity: digital literacy and knowledge, a strong set of power skills, transformative vision, and being an agent for change.

Keywords: digital leadership, digital leader, digital transformation, technology

Introduction

Today's reality cannot be imagined without the disruptive change technology brought to life in the past century, irreversibly shaping humankind (Wolff, 2021; Millar et al., 2018; De Cremer & Kasparov, 2022). The emergence of cutting-edge digital technologies stimulates organizations to challenge the status quo and embrace digital transformation to secure their competitive advantages (Păduraru et al., 2016; Vătămănescu et al., 2016, 2017, 2020). Not only the business needs to change under the power of digitalization, but also the leaders should acquire new knowledge, transform themselves and develop new competencies to be able to promote innovation and drive change under the umbrella of Industry 4.0 (Hapenciuc et al., 2015; Oberer & Erkollar, 2018). Digital Leadership (DL) comes as a natural step in the development journey of traditional leadership, defining itself as the meeting point of conventional leadership practices and novel competencies (Kane et al., 2019; Gray, 2018). The organization should prepare the digital leaders to bravely face uncertainty and new challenges, inspire transformative vision, and adapt quickly, provided that in a world marked by technology, fast-changing trends, and devices, how you lead people will make a significant difference (Stratone & Vătămănescu, 2019; Stratone et al., 2022; Vătămănescu et al., 2022a). Being able to master knowledge dynamics and employing non-linear thinking become essential for digital leaders to keep up with the intrinsic dynamism of digital transformation (Bratianu, 2019; Bratianu & Vasilache, 2009).

The main purpose of the present paper is to analyze the fundamental characteristics of a digital leader starting from the cornerstone of traditional leadership and propose a

framework of the key concepts a digital leader should possess to lead people through digital transformation. Hence, the following research question arises:

RQ1: What are the key four competencies of a digital leader?

The paper employs a qualitative research approach to comprehensively answer the above-mentioned research question. Using the VOS Viewer, a specialized tool to examine high numbers of research papers, all available keywords correlated to digital leadership were analyzed to create a bibliometric map (van Eck & Waltman, 2017). The paper's originality may be understood by integrating traditional leadership characteristics with the novel competencies a digital leader should develop, covering a wide range of business challenges on both operational and strategic levels.

The present paper is organized as follows: after the introduction, a theoretical analysis will be developed, whose main target is to underline the literature review with regard to the main concepts, focusing on Digital Leadership, its main characteristics, and DL in correlation with traditional leadership. Once this section is finalized, the research continues by presenting the methodology and data sources in more detail. This part is followed by emphasizing the results. Lastly, the paper focuses on the reached conclusions, including the research limitations and other directions that can be considered for further developments.

Literature review

Digital Leadership

The exponential expansion of digital transformation in the global business environment set the foundation not only for creating new strategies and processes, but also for developing leaders who can inspire, guide, and empower others to navigate through the challenges generated by digital disruption (Stratone et al., 2022; Vătămănescu et al., 2018, 2022a,b). Klus and Müller, 2021 found a series of specific challenges that digital leaders are bound to face in today's world, including information overload transmitted on multiple digital communication channels, high speed of change, shifting to a digital mindset, implementing new digital solutions, and remote leading (Klus & Müller, 2021). Fearing the lack of human interaction and face-to-face communication being replaced by virtual encounters was identified as a challenge in the digital world of leadership by Jakubik and Berazhny (2017), who found that in order for digital leaders to manage the challenges associated with digitalization and technology evolution, they should have social intelligence and empathy, an open mindset with high creativity skills, being able to empower others and collaborate, have critical thinking and delegate power (Jakubik & Berazhny, 2017).

Digital leadership is a novel type of leadership naturally developed in the context of exponential technology advancement and the context designed by Industry 4.0, which requires a new way of building leaders to successfully face new challenges and innovations. The concept may be an interconnection between transformation leadership (Bratianu & Anagnoste, 2011) and digital technology (De Waal, van Outvorst, & Ravesteyn, 2016). Another research places the digital leader at the confluence point between digital competence and digital culture, allowing them to look at the challenges as opportunities in the context of constant change driven by technology evolution

(Mihardjo et al., 2019). Also, digital leaders are boundary spanners, meaning they not only possess a high level of technical knowledge and expertise but also show great business literacy. They make sure that the synergies implied by digital transformation and Industry 4.0 are communicated through boundary-crossing networking and are well-understood throughout the organization (Gudergan et al., 2021; Vătămănescu et al., 2017, 2020, 2022b).

Numerous authors from the literature have been interested in studying the digital leadership framework for the past two years, ironing out various competencies and skills a leader should possess in the digital age. Oberer and Erkollar. 2018 found that digital leadership is cross-hierarchical and fast, with a strong focus on innovation and creating a team-oriented and cooperative context (Oberer & Erkollar, 2018). Studying the digital leader role in architectural practice and design, Zupanzic, Achten, and Herneoja, 2016 consider integrative knowledge and digital domains should be part of the leadership skillset in today's world (Zupanzic, Verbeke, Achten, & Herneoja, 2016). Moreover, the more digital literacy and competencies a leader possesses, the higher their psychological well-being is (Zeike et al., 2019). Establishing a conceptual connection with the values of the leader and the attributes of a person's social status, Karpova and Gurenko, 2021 stated that a digital leader is characterized by resourcefulness, a high degree of consciousness while choosing an independent path, having strong values of love, family, and health. This highlights the importance of correlating spiritual knowledge with emotional and rational knowledge.

Embracing digital transformation implies switching from industrial management to knowledge management, hence digital leaders need to learn how to employ a non-linear way of thinking in order to be able to convey the organization's vision and generate innovation. Digital leadership is an essential integrator of individual intelligence and organizational values, having the power to positively influence people to organically adopt new ways of working to sustain digitalization. In today's world, it is not sufficient for a leader to use only rational knowledge in the decision-making process but integrate spiritual and emotional knowledge to cover specific technological and generational challenges (Bratianu et al., 2021; Pînzaru et al., 2016).

Digitalization should not be perceived only through the lenses of a traditional process which can be planned, implemented, and monitored, a perspective characterized by linear thinking - digitalization should be recognized as a mindset that correlates new technologies, agility, and knowledge to navigate ambiguity and uncertainty, turning challenges into opportunities. (Nepomuceno Carvalho, 2020). Moreover, if we are to look at digital leadership through the lenses of VUCA (volatility, uncertainty, complexity, and ambiguity), an important component of Agile, which plays a significant role in digital transformation and digital economy, the leader should demonstrate the ability to master an integrated approach of different leadership styles to ensure a holistic fashion when facing a challenging environment: agile leadership, translating into the capacity to think outside the box and have a solution-oriented approach in challenging environments), participative leadership (involving all the people they are working with to take part in the decision making and facilitating the process), network leadership (which goes hand in hand with participative leadership and implies connecting the right people to the right resources), open leadership (being able to provide honest and clear feedback and act as a objective facilitator in discussions to ensure that everyone is openly share their opinions), and trust-based leadership (being able to build trust-based

relations with the employees and act as a true supporter in their work). Nevertheless, it is essential for a digital leader to not only adapt the traditional approaches to the new context of digital transformation, but also find the right balance of integrating agile business methods (Petry, 2018).

Traditional Leadership as an Inherent Part of Digital Leadership

We live in an era where leadership is no longer hierarchical; people need to feel listened to, involved, and included in the decision-making process. Turbulent and challenging times have always required strong, well-equipped leaders to lead people through uncertainty and change (Vătămănescu et al., 2015). With digitalization and technology generating disruptive changes, leaders must build a set of new skills on their traditional foundation to better manage the specific contemporary challenges. Kane, Philips, Copulsky, and Andrus (2019) found out that many of the core leadership skills remain as a healthy foundation (communicating the value which will be driven by the change, owning the transformation, and equipping employees to succeed) while new skills should be developed to enhance the digital leadership practice: transformative vision and forward-looking perspective, digital literacy and adaptability (Kane et al., 2019).

There is a high number of knowledge-intensive companies (KIBS) that entered the market in fast-growing industries such as software development, artificial intelligence, machine learning, etc., organizations that are paying a lot more attention to knowledge management strategies to ensure competitive advantage and generate innovation through intangible resources and intellectual capital (Alexandru et al., 2020). Adopting dynamic, non-linear, and probabilistic thinking becomes quintessential when it comes to switching from traditional leadership to the one which is modeled by digitalization because the decision-making process is more complex, obtaining a strategic competitive advantage is harder as it necessities more innovation, and dealing with uncertainty and its risks becomes a norm (Bratianu & Lefter, 2011).

Digital leaders confront a much more intense business pace, where creativity, life-long learning, and risk-taking play an important role in digital transformation and new technology challenges. Therefore, it's essential for today's leaders to have a high degree of digital literacy and knowledge, master interpersonal skills (power skills), such as adaptability, empathy, creativity, and courage, and convey a transformative vision as change agents (Kane et al., 2019). That impacts on the organizational intellectual capital (Bratianu, 2007).

Methodology

When it comes to qualitative research, it is important to notice the rising interest generated around bibliometric research in the past years, which came to a conclusion as novel communication technologies that allow huge amounts of data to be analyzed and visualized in the shape of bibliometric maps (Maniu et al., 2021). The present paper employs this type of bibliometric research, known in the literature as statistical bibliography. The aim is to have access to and analyze enough research from the literature to allow us to answer the formulated research question: What are the main key competencies of a Digital Leader?

Data were retrieved on Monday, August 31st, 2022, from the Web of Science (WoS) Core Collection, which is considered the most valuable option for gathering research data thanks to the variety of publication types, the quality, and a very good filtering system in place which gives the user the permission to select various bibliographic parameters (Goksu, 2021). When it comes to the chosen time period of the research, all publications were selected from 1975 to 2022. All documentation types were considered: Articles, Proceedings Papers, Review Articles, Book Chapters, Editorial Materials, and Early Access.

The term "Digital Leadership" was the search keyword, from 1975 to 2022, and 109 results were obtained. It can be noticed that the first publication to mention digital leadership reached the research world in 2004, while over 50% of the publications available were published between 2020-2022, indicating an exponential rise in the interest in digital leadership amplified also by the COVID-19 pandemic. Over 57% of the total publications 109 were in Business, Management, and Educational Research, while most of the publication types were articles: 74 out of 109. The below table presents the types of publications, including their share in the total number.

Table 1. Main concepts frequencies distribution and Share in Total on WoS

Documentation Type	Frequency	Share in total (%)
Articles	74	67,89%
Proceedings Papers	29	26,6%
Book Chapters	6	5,5%
Total	109	100%

Source: Authors' own research

Once the results were narrowed down, the next step was to export all the available information. Therefore, data were exported in "Plain Text Format", .txt format, in one batch of 109 records. Considering that the Record Content filter was set at All information, the export included complex information, from the title, authors, and abstract to publication year and subject. This allows us to use the records in the VOS Viewer application to visually create the bibliometric map.

It is essential to name the steps followed to create the bibliometric map: first, we chose the option to create a map based on bibliographic data. The next one was to select the option to read the data from the bibliographic database files, which allowed us to upload the .txt export we retrieved from WoS. Then, when we reached the "type of analysis" section, we chose Co-Occurrence, as a Unit of Analysis, we selected All keywords and Counting Method was set at All Counting. Lastly, the minimum number of occurrences of a keyword was set at 3, which concluded in 37 keywords that met the threshold out of 557.

Results and discussion

Using the Co-Occurrence option, the keywords were grouped in visual clusters to create the bibliometric map. The keyword co-occurrence network of Digital Leadership (see

below map: figure 1) was designed, processed, and built using the VOS Viewer software application.

An aspect worth mentioning is that the size of the words and the corresponding nodes highlights their weights, while the distance between two notes outlines the strength of the connection or relation between them. These observations allow us to identify how the concepts are related and connected, because the longer the distance, the weaker the relation, and vice-versa. Also, a line between two words simply referred to as a connection, indicates that the words appear together in a publication. If we want to understand how often they appear together, we may look at the line thickness: the ticker the line between the two words, the more appearances they have together. Looking at the digital leadership map, it can be observed that the strongest relation and appearance is represented by leadership and digital transformation, showcasing the inherent part of both concepts in what digital leadership implies. Technology, innovation, and digital strategy also play an important role.

The clusters are words grouped around a common concept. From a visual point of view, they are marked with different colors. The red cluster (Figure 1, cluster 1, top left, 12 items) is built around "leadership", which indicates the traditional link between leadership practices and digital leadership. "Education", "knowledge", and "capability" can be noticed due to their co-occurrence and direct links between them, indicating the importance of digital literacy and knowledge. Also, "communication" also stands out as a direct link to digital leadership, indicating its immanent value to digital leaders.

The green cluster (Figure 1, cluster 2, top right, 11 items) gravitates around the essence of digital leadership: "technology" and "digital transformation". Their essential impact on digital leadership can be observed through their co-occurrence strength. The link with "business" indicates that digital leaders are now growing and developing in the business sector first, keeping in mind that private enterprises are the ones facing the digital disruptive changes first. "Transformational leadership" also appears here, indicating the importance of interpersonal skills for digital leaders and the connection with traditional leadership practices.

The blue cluster (Figure 1, cluster 3, center bottom, 6 items) is the one containing "Digital Leadership", having a strong link with trust, impact, and behavior, an aspect which suggests the behavioral component of digital leadership, including the importance of building trust among the people that are led. Generating innovation and impact is part of a digital leader's day-to-day activity, and its appearance confirms this aspect.

The yellow cluster (Figure 1, cluster 4, bottom right, 5 items) reveals a strong connection between "digital strategy" and digital leadership, which implies the ability to communicate a clear vision while having a forward-thinking. "Implementation" suggests that digital leaders not only formulate the strategy but are also responsible for leading people to implement it and help them adapt. Lastly, "care" comes to close the circle of interpersonal skills, showcasing the importance of human components.

The purple cluster (Figure 1, cluster 5, center up, 3 items) reiterates different word forms for digitalization and digital strategy, namely "digitalization" and "strategy", reconfirming the direct link between digital leadership and these concepts.

The light blue cluster (Figure one, cluster 6, centered, 9 items) includes words such as "emotion", "employees", "and consequences", indicating the outcomes that PS might have on employees in terms of expressing and managing emotions in the climate that it presents.

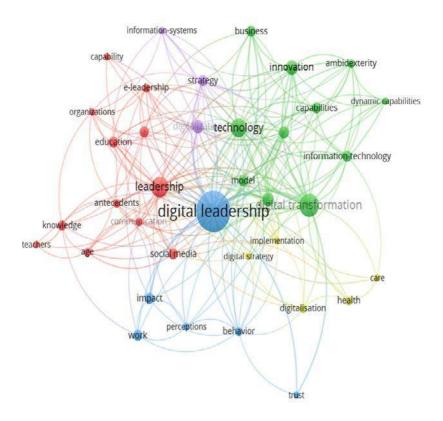


Figure 1. Keywords' co-occurrence network of WoS CQ-related publications - by VOSviewer

Source: Authors' own research

To narrow down the competencies of a digital leader from the bibliometric map, per the literature review, we propose using the method of regrouped concepts. This brings more clarity and focuses in determining the impact and influence of specific keywords on preselected constructs related to digital leadership, which were analyzed in the literature review.

Table 2. Keyword's co-occurrence network of PS-related publications / Direct links to PS - by VOSviewer

Item 1	Item 2		Direct DL link strength (sum)
	Name	Category	
Digital Leadership	 Information Technology, Technology, digitalization (95) Digital transformation (66) Education (18) Knowledge (10) Capability, dynamic capabilities (7) 	Digital Literacy and Knowledge	196
	 Leadership (43) Transformational Leadership (28) E-leadership (14) Communication (14) Behavior (14) Trust (7) Health (8) 	Power Skills (adaptability, communication , empathy, courage, trust)	128
	 Digital Strategy, Strategy (37) Model (21) Management (18) Business (17) 	Transformative Vision	93
	Innovation (27)Performance (32)Impact (11)	Agent for change	70

Source: Authors' own research

With a cumulative direct of 196 with digital leadership, digital literacy, and knowledge stands out as the most important competence for digital leaders to be equipped to face the speed of change of today's business environment and understand the implications of digital transformation. Knowledge brings clarity and allows the digital leader to employ credible resorts to help people navigate digital transformation and its novel concepts and challenges. This result aligns with other research from the literature, which states the importance of digital literacy for digital leaders (Abbu et al., 2022).

The analysis confirms the importance of interpersonal skills, called power skills by Runyon, 2022 in the economy of a digital leader (Runyon, 2022). From the traditional leadership foundation and transformational leadership to a deep focus on the behavioral side of leadership highlighted through trust, empathy, courage, and

communication, the power skills play an essential role in preparing the digital leader to have a people-centric approach in the digital transformation. Moreover, high adaptability is required when dealing with constant change and uncertainty, which is in line with the literature. (Kane et al., 2019; Newman, 2017).

The ability to inspire and communicate a transformative vision is crucial for digital transformation, and our analysis confirms that digital leaders should have the competence to translate the ambiguity of digitalization into a clear vision backed up by a strong strategy and provide direction. Developing strategic thinking rooted in clear purpose is not only an essential competence for a digital leader but for anyone interested in constantly transforming risks into opportunities and impacting the organizational level through innovation.

Lastly, shaping itself as a correlator of the abovementioned competencies, our analysis reveals that a digital leader should be an agent for change to encourage people to embrace the evolution of digital transformation and adopt new processes and technologies. A digital leader should create the context for people to experiment change and build bridges between the fear of trying and the value of adopting new methods and working methods. Being a change agent is the essence of transformational leadership, which is a component of digital leadership (Rosfeldt Lorentzen, 2022).

Conclusions

Digital Leadership has proven to positively influence the success of digital transformation within an organization. (Gudergan et al., 2021). To ensure a smooth process and navigation through all the changes and innovation, an organization must train and grow its leaders to develop new competencies required in the digital environment. They can then work on catalyzing digitalization and leading people to embrace change.

Using VOSviewer to perform the bibliometric analysis, we found that the four key competencies of digital leadership are digital literacy and knowledge, transformative vision, and strong power skills, including adaptability, communication, empathy, and empathy trust, and acting as a change agent. The present paper contributes to the literature by showcasing the areas managers can develop and grow to better respond to digital challenges and make sure they drive innovation to maintain the organization's competitive advantage. Knowing that a digital leader should have the ability to understand the digitalization components, firms can invest in training and workshops to enhance this knowledge and equip leaders better for the future. Also, it is important for organizations to acknowledge the importance of the human side of digital leadership, implying the constant development of interpersonal skills.

Considering the methodology, which was employed to develop the qualitative research, there are limitations that need to be taken into account: the concept of digital leadership is quite novel and the number of publications available cannot allow us to generalize for all business segments and industries when it comes to having the right skillset. Moreover, the language for the research publications searched in WoS was English, implying that there might have been other valuable articles in other languages that were omitted because of the language barrier. Also, the present study covers mostly the private sector. A further direction for research might involve the insights from public

organizations and focusing on a specific industry to understand if the niche components change or not the way the digital leadership framework comes together.

Digital Leaders will continue to be at the helm of digital transformation, being themselves on a transformative journey modeled by constant change and new challenges. Continuing to lead with kindness, providing clarity and direction, showing the capacity to quickly adapt to a new context, and possessing a high level of digital knowledge will make digital leaders build bridges between people and purpose.

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