DIGITAL LEADERSHIP: THE 21ST CENTURY LEADERSHIP STYLE

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ABSTRACT

As a process of digital transformation, the previous, classic leadership competencies were supplemented with new ones, and a new leadership style, the digital leadership emerged. What was considered an advantage a few years ago is now a basic requirement. Technology can no longer be seen as just a tool. A digital leader must ensure that technology is a central element of the strategy. This paper examines this area from the perspective of leadership competencies and emerging challenges. Objectives of this study were to analyse digital leadership as a leadership style, and to investigate the connection between classical and digital leadership skills. At the same time the main challenges - employees and leaders face - have been also examined. Results: In this research it was determined that digital leadership exists beside the classic and modern leadership styles and it complements them. Strong relation has been found between classical and digital leadership skills. It was observed that employees in leadership roles tend to view their own superiors more favourably than employees without subordinates. Finally, the main challenges that employees and leaders face in the workplace due to digital transformation were summarised. Conclusion: The acceleration of technological development and the rise of digitization have brought humanity into a constantly changing world, posing unprecedented challenges for all of us. For managers, this may require new skills, or a different application of traditional leadership competencies, which now carry a different weight in the digital age.

Keywords: challenges of digital age, digital leadership, digital transformation, leadership competencies

INTRODUCTION

As a result of digital transformation, revolutionary changes have occurred in the global economy, significantly impacting the human dimension, including the roles and operations of management and leadership.

In the second half of the 20th century, the emergence of semiconductors, computers, and the internet (Industry 3.0) sparked a wave of innovation that, when combined with the breakthroughs of the Fourth Industrial Revolution - such as intelligent technologies and artificial intelligence - has profoundly transformed the economy and every aspect of human life.

As SAP highlights in its newsletter (*SAP Insights,* 2022), while the first four industrial revolutions were driven by the discovery of new technologies, the

developing Fifth Industrial Revolution (Industry 5.0) focuses more on the evolution of existing technologies (primarily those of Industry 4.0) and emphasizes the synergy between technology and the human element. It represents the enhanced collaboration between humans and robots, prioritizing a human-focused, sustainable, and resilient industrial environment.

Although there is frequent discourse suggesting that the digital age is leading to the mechanization of life and the domination of technology over humans, the reality is that people remain one of the central pillars of current developments, especially in Industry 5.0. From a business perspective, this involves attracting, developing, and retaining talent, as well as fostering a progressive work environment and processes that drive employee efficiency and commitment. Leaders continue to play a cardinal role in this transformation. Through digital transformation, traditional management competencies have been expanded, giving rise to a new management style: to the digital leadership.

By searching for the term 'digital leadership' in the 'Web of Science' database and filtering it to the European articles from the last ten years, it has been found that 82.95% of publications were written between 2021 and 2025, which fact itself supports the timeliness of the topic.

This study aims to examine the existing literature on digital leadership with the objective of determining whether it represents a distinct leadership style or functions as a complementary dimension alongside classical and modern model, emerging as a response to digital transformation. Since there is no universally accepted definition, the research seeks to synthesize the various approaches that have appeared in the topic. An additional goal is to add to the academic discourse by bringing the various researches on digital leadership skills into a unified conceptual framework. By synthesizing the different studies, the research intends to provide a more structured picture of what digital leadership competence actually means. This holistic approach can serve as a starting point for future empirical research and the further development of measurement tools in this area. Understanding and developing these competencies are essential not only for organisation success and sustainable performance, but also for maintaining the mental health of leaders. The primary research focuses on evaluating employees' perceptions of their leaders' classical and digital leadership competencies with the aim of identifying potential correlations between the two and assessing the strength of these relationships. This approach allows for either the reinforcement or re-evaluation of the conclusions of existing studies in the topic. Furthermore, the study aims to identify the primary challenge employees face in the workplace as a result of digital transformation.

LITERATURE REVIEW

Digital Transformation

The acceleration of technological development and the rise of digitalization have brought a constantly changing world to humanity, which presents all of us with unprecedented challenges. Both as professionals and as individuals, we need a kind of lifelong learning, as well as a high degree of flexibility and adaptability (*Kőmüves*

et al., 2022). Not only we have to adapt ourselves to the digital transformation, but we also have to deal properly with the fact that it does not work in the same way in all areas and not for everyone. As individuals, many characteristics can influence our ability to adapt to digital transformation, such as generational differences or general awareness. In the same way, there are large differences in the corporate sector as well. Technology, IT and communication companies are obviously key players in the digital transformation process, while e.g. the construction industry is slower to catch up with other players in the economy in terms of digital development. (*Zulu et al.,* 2023).

The presence of technology alone does not guarantee that companies will achieve their goals during digital transformation processes. The biggest challenge is not the introduction and application of technology, but the general attitude and perspective of companies, as well as corporate culture and other characteristics of the organisations that enable the successful participation in digital transformation processes. That is why it is important to highlight the role of the digital leader, who steers the corporate culture in the right direction and conveys the company's vision (*Türk,* 2023).

However, as a leader, new skills may be needed, or the existing, so-called classic leadership skills can bring success to the digital leader with a different weight. However, for a deeper understanding of the topic, it is necessary to examine and define the concept of digital management itself at first.

Concept of Digital Leadership

Owing to the digitization, companies have set many new goals, such as error-free manufacturing capabilities. When digitization left the production structures and became a structure characteristic of the entire company, this process necessarily results the development of digital management. (*Oktaysoy et al.,* 2022).

According to German researchers (*Claassen et al.,* 2021, 2023), the literature does not uniformly define what digital leadership is. The related definitions are not consistent, and shifts in emphasis can also be observed in this subject. However, they emphasize the comprehensive work of *Chaiyaset Promsri* (2019), whose research collected 64 characteristics of the digital leader from the named sources, and then narrowed all these characteristics down to six equally emphasized main elements.

The first characteristic is digital knowledge: knowledge of the changes caused by digitization and the possibilities inherent in it. The next characteristic is the vision, which means clear objectives related to digital transformation processes. The third characteristic is customer focus: taking into account the needs of our partners regarding digital processes. Next is agility, which is the ability to move skilfully in the digital space and adapt to rapidly changing processes. This is followed by risk taking. Promsri approaches this characteristic by saying that the digital leader must be able to create a kind of experimental atmosphere in the digital age. In addition, leaders need to develop a culture of constructive criticism, because this can ensure that we test what we are capable of and participate in the processes with an innovative approach. The last characteristic is the strengthening of cooperation and teamwork between colleagues.

Claassen and his research collaborators - also using the work of Promsri - applied and validated a seven-item measurement tool (DigiFuehr) suitable for analysing digital leadership competencies, involving 546 municipal employees in their research, who use virtual workstations. The results of this were compared to the results of a previously created scale for measuring a classical leadership style (ClassicFuehr), also consisting of seven elements (*Claassen et al.,* 2021, 2023).

They were able to demonstrate a moderate correlation between the two scales, from which they came to the conclusion that a new type of – digital – managerial competence will be necessary for the 2020s.

A study from 2019 states (*Dimitriadi,* 2019) that digital leadership is not necessarily different from leadership in terms of managing different interactions and promoting innovation. At the same time, for leaders, the term "digital" should draw attention to the fact that the digital leader must understand the possibilities of the relationship between human and non-human participants in the problem-solving process.

A Greek study (*Antonopoulou et al.,* 2021) examined the relationship between the digital leadership style, that exists in parallel with modern leadership styles among managers working in Greek higher education. In their own model, they described that a strategic leader with business and digital knowledge is considered a digital leader. It was shown that the transformational leadership style has a significant positive effect on digital leadership among the transformational and transactional leadership styles. Also, the more effective a leader is, and the stronger the satisfaction with him/her, the more effective his/her digital leadership practice is.

In connection with the discussion of the digital leader, the concept of digital maturity should also be mentioned. This is the company's willingness to change and its ability to apply new, innovative technologies in line with trends (*Eremina et al.,* 2019). A research involving 1,821 Croatian small and medium-sized enterprises (*Kokot et al.,* 2023) concluded that while digital management is characteristic of 92% of the companies, digital maturity presents to a much more modest extent. 16% of digital leaders are sceptical about digital processes and their importance. 22% of leaders try to adapt their leadership style to digital processes, 39% of them work well in the digital environment, and only 16% of digital leaders can really achieve outstanding results by exploiting the opportunities of digital transformation.

According to our approach, digital leadership is a leadership style that was developed as a result of the digital transformation, and which represented a competitive advantage in the early days of the digital age, but for now it has become a basic condition for successful leadership. As a management style, it appears parallel to classical and modern styles in managerial work and characteristics and also complements them. And it requires new skills and competencies, as well as a strategic approach, from the digital leader.

Following the conceptual examination of digital leadership it is appropriate to examine the specific skill and competencies associated with the term.

Digital Leadership Skills

While there have been many studies on leadership skills, there is little research on the skills of digital leaders. Has the skillset that companies expect from the managers

changed? What are the skills that have increased in value and received more emphasis from the point of view of the management process as a result of the digital transformation?

One of the basic skills that characterizes a digital leader is digital awareness (digital literacy). In practice, this means that a digital leader is able to make decision about which technology should be used in a given situation, based on the needs and the digital practices already in use. (*Newland & Handley,* 2016)

A recent research (*Philip et al.,* 2023), with the involvement of senior managers, aimed to identify the most important management skills in the age of digital transformation. The experts collected 39 skills and agreed that the most important ones for the successful management of digital transformation are: foresight, agility, data analysis ability, data-driven decision-making, strategic thinking and change tolerance. They pointed out that all these skills are important to a different level in different industries and cultures. Digital thinking is a critical skill in a technology company, while it plays a lesser role in medicine, and behavioural skills are more prominent in the consulting industry than in other fields. Philip and his colleagues set an important goal with their research, however, it involved only eighteen participants and introduced a rather opaque system for defining the skills expected of digital leaders.

So far, there have been few publications not only on digital leadership skills, but also on digital leadership competencies. There is also a lack of a scale that can be used to measure digital leadership competencies, which prevents the understanding of these characteristics, as well as their underlying mechanisms and consequences. The existing tools are at an initial stage, waiting for further development and validation. In addition, it can be assumed that a leader can effectively deal with the challenges of digital transformation in three ways: by means of "digital interactions", "digital openness" and "digital example setting" (*op´ t Roodt et al.,* 2024).

Competence can be interpreted as the interaction of skills, knowledge and attitudes (*Baartman & De Bruijn,* 2011).

Based on the above three studies, *Table 1* presents the competencies of digital managers.

Table 1: Digital Management Competencies

SKILL	KNOWLEDGE	ATTITUDE
Foresight	Digital literacy	Digital interaction
Agility		Digital openness
Data analysis		Digital setting as example
Data-driven decision making		
Strategic thinking		
Change tolerance		

This list is complemented by the statement of *Tagscherer and Carbon* (2024) that in addition to business strategic leadership, people leadership should not be ignored. According to them 'On the one hand, a strategic decision-making process neglecting

customer or market needs or lacking a comprehensive business understanding could steer companies in the wrong direction. On the other hand, missing out on the people's perspective and neglecting the importance of change management harms employee motivation and, thus, companies' performance within digital servitization'.

The importance of people leadership is supported by a Dutch study (*Henderikx & Stoffers,* 2023**)**, which examined the leadership behaviour of middle managers related to digital transformation. According to the respondents' ratings, the most important skills were integrity, trust, and empowering people. They found that soft skills that facilitate people-oriented interactions (e.g. empathy, clear communication, adaptability, flexibility, etc.) are key to managing change, driving innovation, and successfully leading digital initiatives.

A practical framework for digital leadership competencies was established by the Norwegian-Danish Müller and co-authors (*Müller et al.,* 2024). They argue that the necessary leadership competencies depend on the goals of the digital transformation (e.g. flexible or stable operation, internal or external orientation). Based on this, four archetypal leadership competency portfolios were identified (*Figure 1.*). The authors therefore state that digital transformation is not a uniform phenomenon, but a diverse process that requires different leadership competencies, depending on the organisational situation, goals and technological challenges. The competency portfolio framework helps companies identify gaps between the leadership skills needed for digital transformation and the skills they already have. It can be used to plan leadership development or selection, make digital strategies, and identify leadership profiles that best match the organisation's digital maturity. It also supports the ongoing rethinking of leadership competencies across different phases and challenges of digital transformation.

Figure 1: Digital Transformation Leadership: Archetypical Competency Portfolios

Source: *Müller et al.*, 2024, p. 3

Having examined and attempted to synthesize the competencies of digital leadership, the focus now shifts to the challenges faced in digital management.

Challenges of Digital Management

While recent literature increasingly addresses the topic of digital leadership, relatively little research has been found concerning the leadership challenges of digital transformation and the potential solutions or responses to these challenges.

One of the difficulties faced by a digital leader during digital transformation is the fact that the process of digital transformation is much less recognizable than economic processes. It takes unpredictable turns, when platforms, digital processes and devices supplant each other even from one month to the next, and modern solutions become obsolete in a short time. *Kőműves et al.* (2024) stated that automation may lead to an even greater burden on employees and on leaders as well. There is a demand for continual headcount decrease, but savings achievable through more efficient processes are often overestimated.

It is equally challenging that during the digital transformation, the participants in the process must acquire a kind of digital knowledge. However, for many of them, all of this is like learning a new profession in addition to the existing one.

It can be admitted that it may be less challenging for an IT or a telecommunications specialist to keep up with digital transformation processes than for a doctor or an artist. As a result of the above, the digital leader can easily encounter external (coming from his/her team), but also internal (personal) resistance at the same time. Organizational culture, work and group processes do not necessarily follow flexibly the events of digital transformation. The digital leader has to make efforts to increase his/her team's adaptability and openness towards digital transformation processes.

Examining the relationship between digital leadership and psychological well-being in an British-German research (*Zeike et al.,* 2019), the results of previous publications were summarized and it was formulated that it is very important for a digital leader to make his/her digital competencies strengthened to successfully cope with the challenges of digital transformation. Otherwise, challenges increased by the digital transformation negatively affect their personal well-being and increase the chance of burnout. In their own research, *Zeike et al.* involved 368 managers and they were able to demonstrate that there is a relationship between digital leadership competencies and the psychological well-being of top-level managers. People with lower digital leadership competencies are more likely to have lower levels of psychological well-being.

All this suggests that the digital transformation itself exposes managers to increased stress, and the successful management of digital transformation processes requires the existence of new types of digital skills. If the manager does not have this, it is expected to have a negative impact on her personal and psychological well-being. Thus, the development of digital competences cannot be left out of the management development process.

The following four recent studies conducted in different countries and focusing on the subject examine the consequences of digital transformation from different approaches. However, they all highlight that technological innovations alone are not enough for successful digital operations. These researches all point out that adapting to the digital environment primarily poses human and organizational challenges, not technical ones: the biggest tasks are leadership attitude, the development of employee skills, strengthening team cohesion, and adapting to new forms of work.

The aim of the Latvian-Lithuanian-German research (*Toleikienė et al.,* 2024) was to identify the key challenges of e-leadership (digital leadership) in municipalities in the post-pandemic period. According to the focus group studies, there are differences in remote work practices across countries, but several common challenges can also be observed. According to their findings, striking the right balance in communication, supporting employees, strengthening team spirit, and establishing fair practices regarding remote work are of particular importance.

The Swedish study (*Vallo & Byströmm,* 2021) also highlights that the development of digital workplaces presents not only technological but also social and leadership-related challenges. It emphasizes two key areas: the need for everyday learning practice to acquire new skills, and the necessity of adapting leadership approaches to the digital environment. The COVID-19 pandemic has made these issues even more relevant, as digital work has, in many cases, become a permanent practice. The study points out that the digital workplace is not just a technological change, but also a profound organizational and human transformation.

Another Swedish paper (*Babapour et al.,* 2022) argues that the new forms of work offer both opportunities and challenges for employees, managers and organisations. One of the biggest challenges of remote work is the lack of social aspects of work, so the offices of the future are expected to be more about building relationships, collaboration and strengthening a shared culture. Employees and managers will need to learn new skills for hybrid working, while organisations will need to consider social and environmental sustainability and redesign physical and digital workplaces.

The main goal of the Turkish study (*Kübra et al.*, 2023) is to reveal the foresight of managers in the Turkish white goods industry regarding the advantages and challenges of Industry 4.0 (I40) and compare them with the literature. They discovered that 28 studies focused directly on I40's advantages and challenges. They listed the advantages and challenges provided in these 28 studies, which list shows that the most frequently recurring I40 challenges are employee qualification (13%), technical challenges (12%), strategy/competition (10%), cyber security (10%) and financial challenges (9%). These five categories constitute more than half of all challenges mentioned by the literature.

Following a comprehensive review of the relevant literature, the subsequent section presents the research conducted in the current study.

MATERIALS AND METHODS

A mixed-method, anonymous online survey was conducted to collect both qualitative and quantitative data. The primary research reached a total of 141 employed individuals, who have direct superiors at their workplaces. The questionnaire was made available in both English and Hungarian to ensure accessibility. To assess leadership competencies, the validated ClassicFuehr scale with 7 questions and the validated DigiFuehr 2.0 scale with 9 questions (*Claassen et al.,* 2021, 2023) were employed. To evaluate the challenges of digital transformation, open-ended questions were included, that allowed for free-text responses. Google Forms application was used to distribute the questionnaire, and the results were analysed using Microsoft Excel and R software.

Demographic background of study population

A total of 141 individuals completed the questionnaire, of which 39 were male (27.66%) and 102 were female (72.34%) (*Table 2*).

Table 2: Respondents' gender

Gender	Number of respondents	Distribution of respondents
Man	39	27.66%
Woman	102	72.34%
Total	**141**	**100.00%**

Nearly half of the respondents, 70 individuals (49.65%), fell within the 40–49 age group, while close to one-third, 45 individuals (31.91%), were in the 30–39 age group (*Table 3*).

Table 3: Respondents' age

Age (years)	Number of respondents	Distribution of respondents
20–29	7	4.96%
30–39	45	31.91%
40–49	70	49.65%
50–59	17	12.06%
60–65	2	1.42%
Total	**141**	**100.00%**

Among the participants, 93.62% (132 individuals) live and work in Hungary, while additional 7 individuals are based in other countries in Europe, 1 in Asia, and 1 in Australia.

Approximately one-quarter of the respondents, 34 individuals (24.11%), have completed secondary education without a higher education degree, while more than two-thirds, a total of 97 individuals (68.79%), hold a college or university degree (*Figure 2*).

Figure 2: Respondents' education
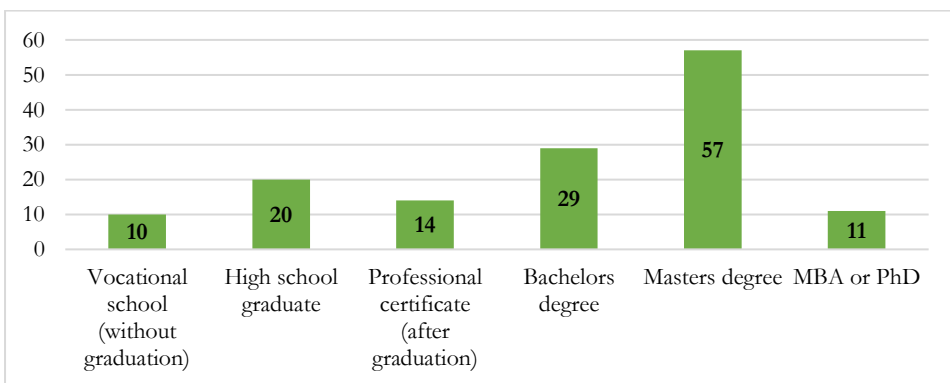
Limitations and potential biases

Although the study provides relevant insights into how employees perceive classical and digital leadership competencies, some methodological limitations must be acknowledged.

The sample size (N=141) limits the generalizability of the findings. While the demographic diversity of the sample in terms of age, gender, and educational background enhances representativeness, it is still relatively small compared to the broader working population, and does not allow for more nuanced subgroup analyses.

The sampling method relied on anonymous online distribution, which can introduce self-selection bias. Participants with a higher interest in the topic of leadership or those affected by digital transformation may have been more likely to respond, potentially skewing the results toward more engaged or reflective individuals.

The self-reported nature of the data introduces some common limitations, such as social desirability bias and subjectivity. Respondents may have rated their leaders either more favourably or critically based on personal feelings or recent experiences rather than an objective assessment of competencies. Moreover, leaders evaluating their own superiors might unconsciously project their own leadership views, experiences, or expectations onto them.

Additionally, while the ClassicFuehr and DigiFuehr 2.0 scales are validated tools, their translation and cultural adaptation – despite the process of involving professional linguists and back-translation – could result in interpretational variance across respondents.

Finally, while the mixed-method approach (quantitative scales + open-ended responses) adds depth, the qualitative part was not analyzed through a formal coding process (e.g., thematic analysis), which limits the analytical rigor of those responses.

Future studies could consider employing larger, randomized samples, gathering data from multiple sources (e.g., 360° feedback, peer assessments), and applying standardized qualitative methodologies to address these limitations and deepen the understanding of digital leadership in practice.

RESULTS AND DISCUSSION

Both the ClassicFuehr scale (which measures classic leadership competencies with its seven questions), and the DigiFuehr 2.0 scale (which measures digital leadership competencies with nine questions), were evaluated by respondents using a four-point Likert scale. A score of 1 indicated that the particular skill was not characteristic of the respondent's superior, while a score of 4 indicated that it was completely characteristic. A score of 2 meant "rather not characteristic," and a score of 3 indicated "rather characteristic."

Respondents assigned an average of 2.83 points out of a maximum of 4 to the ClassicFuehr questionnaire, while the DigiFuehr 2.0 questionnaire received an average score of 2.74 points. This does not indicate a significant difference between the two scales (0.09 points) (*Table 4*).

Table 4: Statistical evaluation of ClassicFuehr and DigiFuehr 2.0 leadership skills scales

Leadership skills scales	ClassicFuehr	DigiFuehr 2.0
Count	N=141	N=141
Range	R=3.00	R=3.00
Median	Me=2.86	Me=2.78
Mean	$\bar{X}$=2.83	$\bar{X}$=2.74
Standard Deviation	σ=0.78	σ=0.81

There is no major difference between men's and women's answers, although women assess their superior's digital leadership competencies somewhat more positively (*Table 5*).

Table 5: Statistical calculation of the Mean, by genders.

Gender	Mean (ClassicFuehr)	Mean (DigiFuehr 2.0)	Count
Man	2.80	2.65	39
Woman	2.84	2.78	102
Total	**2.83**	**2.74**	**141**

It was examined, how the two scales correlate with each other. The Pearson correlation coefficient is between +0.7 and +1 (r=0.7329), indicating a strong relationship between the scales with unidirectional movement. A respondent who assesses their superior as possessing classic leadership competencies is likely to hold a similar view regarding their superior's digital leadership competencies. Conversely, a respondent who does not consider their superior to be a good leader based on classic leadership competencies is likely to have the same opinion regarding their superior's digital leadership competencies.

No significant difference can be detected in the opinions of respondents based on their age; however, recent graduates and individuals nearing retirement somewhat negatively assess the classic and digital leadership skills of their superiors (*Figure 3*).

Figure 3: Evaluation of classical and digital leadership skills by age of respondents
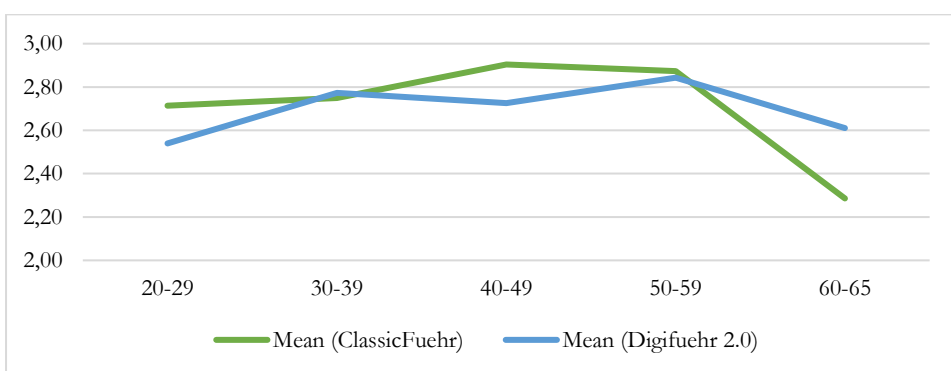
No significant difference can be identified based on the educational level of the respondents; however, it can be observed that those without a secondary education or higher tend to evaluate the classic and digital leadership skills of their superiors less positively (*Figure 4*).

**Figure 4: Evaluation of classical and digital leadership skills by education of respondents**
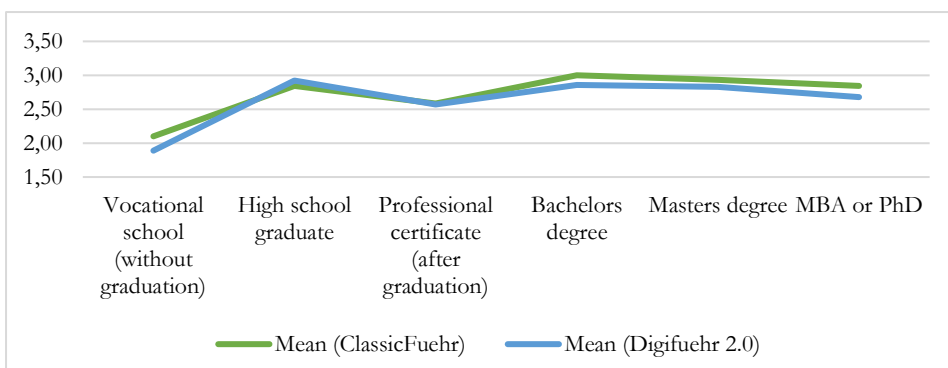
However, a difference can be observed between the responses of leaders and those of employees in subordinate roles. Leaders clearly evaluate their own superiors more positively, while employees without subordinates tend to do so more negatively (*Table 6* and *Figure 2*).

Table 6: Statistical calculation of the Mean, by leaders and subordinates.

Working as a leader	Mean (ClassicFuehr)	Mean (DigiFuehr 2.0)	Count
NO	2.78	2.67	99
YES	2.95	2.93	42
Total	**2.83**	**2.74**	**141**

Figure 5: Evaluation of classical and digital leadership skills by roles of respondents
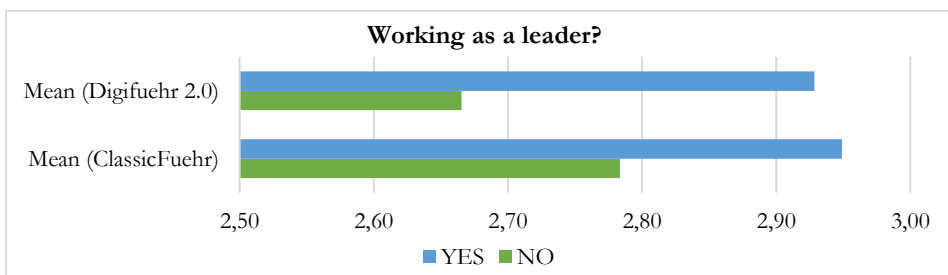
Future researches could aim to investigate whether leaders rate their superiors more favourably because they themselves experience the challenges associated with leadership and digital transformation, or there are other reasons behind the above results.

In the current questionnaire, respondents had the opportunity to write a detailed explanation regarding their challenges at work as leaders or subordinates, due to digital transformation. The most frequently mentioned points of feedbacks are summarized in *Table 7*.

Table 7: Challenges at work due to digital transformation

As a team member or subordinate	As a leader or superior
Lack of information	Digital implementations without trainings
Lack of digital culture	Lack of interest of team members in learning
Unreliable tools	Increased employee stress level
More complex processes	Improper digital implementations
Less personal connection	Customer dissatisfaction

It is evident that during the digital transformation process, it is crucial to implement the appropriate applications effectively within the workflows, and ensure that employees receive the necessary training to utilize these tools. Furthermore, accepting the altered processes and being open to learning how to use the newly introduced applications is essential, as is embracing the changes in workplace processes brought about by digital transformation.

Implications

Digital transformation – following the technological advancements of the latter half of the 20th century – did not come as a surprise to humanity. However, it has introduced unexpected and unforeseen changes into our lives. People experience these changes both in their personal and professional lives, across nearly every field.

For companies, in the early stages of digital transformation and Industry 4.0 (during the last three decades of the 20th century), digital knowledge and the use of technological tools initially provided only a competitive advantage. Later, it became the key to success, and today, it has become a fundamental prerequisite for operation. This shift has also influenced leadership practices, giving rise to a new leadership style: digital leadership.

Digital leaders first had to acquire new types of skills. As a result of digital transformation, a new economic structure has emerged, requiring leaders to adopt different mind-set, attitude, and methods. This has placed significant pressure on leaders, and research now shows that leaders with higher levels of digital competencies also experience improvements in their personal or psychological well-being.

Digital transformation and digital leadership are relatively new topics in academic works. A significant portion of the research has been conducted in the last 10 years, and particularly in the last 5 years. As a result, there are still only a few studies and validated scales available that address the most common challenges, characteristics, and skills of digital leaders. However, based on existing literature, we can assert that digital leadership is now essential for all economic organizations, and its success, as well as the effective management of digital transformation challenges, requires continuous learning and leadership competence development.

Digital knowledge and the ability to navigate digital processes are expected to have a positive impact on management and employee psychological well-being, and ultimately, on the overall performance of the company.

CONCLUSIONS

This study was set out to examine the existing literature on digital leadership, to assess whether it represents a distinct and independent leadership style, or exists alongside classical and modern leadership styles, as a result of digital transformation. The literature suggests that digital leadership has evolved from being a competitive advantage to becoming a fundamental leadership requirement. It does not replace classical or modern leadership, but rather complements them by integrating new competencies essential for navigating organizations during the digital era.

During the primary research, the objective was to investigate the connection between classical and digital leadership skills and identify the main challenges respondents face during work due to digital transformation.

The empirical findings support a strong correlation between classical and digital leadership competencies. Leaders who are rated highly on traditional leadership skills also tend to score high on digital competencies, suggesting these dimensions are closely intertwined. At the same time, no significant differences were observed based on gender, age, or education. However, individuals in leadership positions evaluated their superiors more favourably, likely due to shared experiences and a deeper understanding of leadership challenges in digital contexts.

Qualitative responses revealed that both employees and leaders face obstacles related to digital transformation. For employees, these include lack of information, weak digital culture, and reduced personal interactions. Leaders, in turn, report insufficient training, low team engagement in digital upskilling, increased stress levels and customer dissatisfaction. These findings highlight the dual challenge of implementing effective digital tools while building a workplace culture open to transformation.

Based on the evolving nature of digital leadership, there are several opportunities for future research:

Longitudinal or experimental studies to explore causality between digital leadership competencies and organizational outcomes, such as employee engagement, retention, and psychological well-being.

Future studies from larger, more diverse populations across industries and countries to enhance generalizability and enable subgroup analyses (e.g., generational or cultural effects).

Applying structured qualitative methods (e.g., thematic analysis) to open-ended responses would result deeper insight into the human aspects of digital leadership transitions.

Testing leadership development programs focused on digital competencies would help to identify effective methods for preparing current and future leaders.

Ultimately, the integration of classical and digital leadership appears to be not only complementary but mutually reinforcing. Ensuring that leaders possess both skill sets – and are supported in developing them – may help in maintaining resilient and adaptive organizations in the digital age.

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