Leadership competencies and employee well-being

The effects of classic and digital leadership competencies on employee well-being

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Abstract

Relevance: Due to rapid technological development, organizations continuously face new challenges, which requires a different approach, attitude and skills from leaders and subordinates. Researching the effects of digital development is a relatively new field, therefore consequences associated with digitalization in the workplace-related health have not been thoroughly explored so far.
Purpose: This study investigates how management skills affect psychological well-being. We hypothesized that having good digital leadership skills positively influences well-being.
Methods: We conducted an anonymous, online survey using validated scales (ClassicFuehr, DigiFuehr 2.0, JAWS). The questionnaire was created in Google Forms, and results were analysed using Microsoft Excel and R software. (Claassen et al., 2021, 2023 and Van Katwyk, P.T., Fox, S., Spector, P.E., & Kelloway, E.K., 2000)
Results: The findings confirm that both leadership competencies (ClassicFuehr and DigiFuehr 2.0) are positively related to employee well-being, but classic leadership competencies show stronger predictive relevance for employees' emotional experiences at work (JAWS).
Conclusion: Our research confirms that both classic and digital leadership competencies are positively related to each other and employee well-being, with classic leadership competencies showing stronger predictive power. Education and position had greater influence on perceptions of leadership and well-being than gender or generational affiliation.
Keywords: digital transformation, leadership competencies, psychological well-being, employee well-being, challenges of the digital age

JEL codes: M12, I31, O33

1. Introduction

The acceleration of digital transformation significantly reshaped organizational operations, placing increasing demands on both leaders and employees. While technological advance was once a competitive advantage, they are now essential for basic operation. As a result, leadership competencies have expanded, and a new form of leadership, the digital leadership has emerged. However, technology alone does not ensure successful transformation. A key challenge lies in shaping organizational culture and mindset to adapt effectively. Leaders play a critical role in this since a leader can steer the corporate culture in the right direction and convey the company's vision (**Türk, 2023**). The core problem addressed is the mismatch between the pace of technological change and organizational adaptability. Leaders face external resistance from teams and internal doubts due to the complexity of digital processes. In parallel, employees are burdened by automation, workforce reduction, and the need to acquire new digital skills—often feels like learning a second profession **(Kőműves et al., 2024, Kőműves et al., 2022)**. This issue is relevant as employees often face the pressure of multitasking, constant connectivity, and rapidly evolving digital tools. These changes may affect the well-being of employees, making it important to examine how management can support staff during digital transformation. Therefore, this paper explores the relationship between leadership competencies and employee well-being in the context of rapid digitalization.

1.1. Research Aim

The main objective of this study is to examine the relationship between leadership competencies – both classic and digital – and employee well-being. Specifically, it aims to investigate how leadership styles influence the emotional and psychological experiences of employees in digitally transforming organizations. The research is guided by the following questions:

- Is there a significant relationship between classic and digital leadership competencies?
- How do classic leadership competencies influence employees' job-related well-being?
- How do digital leadership competencies influence employees' job-related well-being?

2. Literature Review

Due to the digital transformation of recent decades workplaces have been rehaped, demanding new competencies from both employees and leaders. As digital tools become basic to operation, leadership styles changed too, giving rise to digital leadership. However, adopting technology alone does not guarantee success. Instead, organizational culture and leadership adaptability are crucial. This paper explores the relationship between digital leadership competencies and psychological well-being in the workplace. Addressing this topic is essential, as technological demands increasingly affect mental health and employee satisfaction. The study analyzes how leadership competencies impact well-being in the fast-changing digital environment.

Well-being refers to more than the absence of stress—it includes areas such as a sense of control, personal potential development, striving for meaningful goals, and the presence of positive human relationships. **(Huppert, 2009)** The World Health Organization (WHO) defines it as "a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity". **(Grad, 2002)** Later, this was refined to include recognizing one's abilities, managing normal stress, and contributing to the community. **(WHO, 2001)** Psychological well-being also includes elements such as

interest, commitment and trust as well. **Fredrickson & Joiner (2000)** stated that positive feelings lead to positive behavior and growing cognitive abilities, while positive behavior and perception support positive emotions. With constant digital demands, leaders must navigate not just technical implementation but its impact on employees' well-being since this affects digital transformation itself, as job expectations, if they are not aligned with appropriate skills, may lead to fatigue and burnout among employees. In contrast, adequate resources contribute to reaching a motivated state, which also determines the level of workplace engagement. **(Larjovuori et al., 2016)**

According to German researchers **(Claassen et al., 2021, 2023)**, the literature does not contain an accepted definition for term "digital leader," but they emphasize Chaiyaset Promsri's comprehensive work **(Promsri, 2019)**, whose research collected 64 characteristics of the digital leader and then narrowed these down to six equally important elements. The elements can be seen in Figure 1:

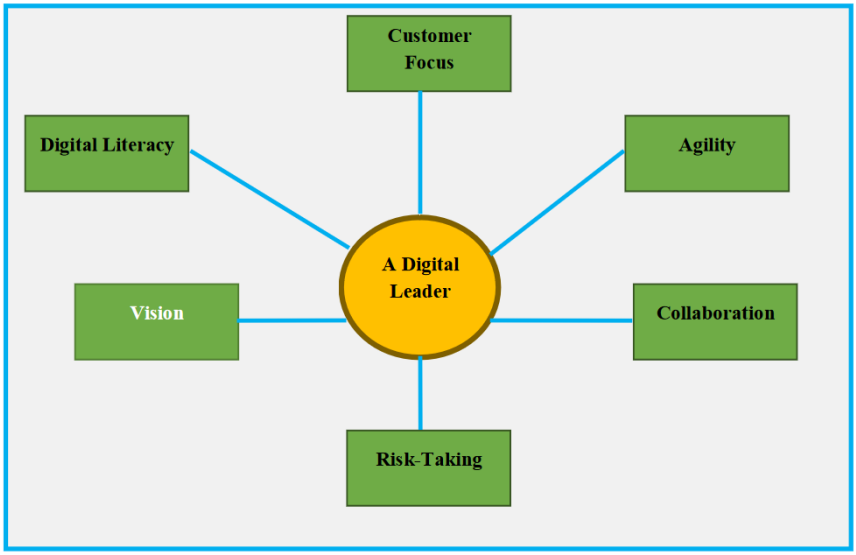

Fig. 1. 6 characteristics of a digital leader that ensure the success of digital transformation
Source: https://gphjournal.org/index.php/bm/article/view/249/113
Download Time: 3/12/2024

Dimitriadi (2019) states that term "digital" should draw leaders' attention to the need to understand the relationship between human and non-human participants in the problem-solving process and the opportunities it may present.

The importance of the connection between workplace-related well-being and digital leadership is reflected int increasing intensity of research on this topic. A British-German showed a link between digital leadership competencies and the psychological well-being of leaders, with those possessing lower digital skills more likely to experience lower well-being. This suggests that digital transformation increases stress for leaders, and the lack of necessary digital skills negatively impacts their personal well-being, highlighting the importance of integrating digital competency development into managerial training. **(Zeike et al., 2019)** Another literature **(Larjovuori et al., 2016)** not only examined the psychological well-being of leaders but also the well-being of subordinates in relation to digital transformation. They emphasized that employee well-being directly impacts the success of digital transformation. If job expectations are not aligned with the appropriate digital skills, this may result in increased workload, time pressure, loss of concentration, and weakened sense of control, which can

ultimately lead to fatigue and burnout. On the other hand, when employees are supported with adequate resources and digital competencies, it leads to higher motivation and stronger workplace engagement. They argue that strategic leadership and the so-called "servant" leadership style are crucial for the success of digital transformation. **Greenleaf (1977)** defined this as a leadership style that takes into account and cares about the well-being of employees. Later research has proven that this leadership style contributes to employee engagement **(de Sousa & van Dierendonck, 2017)** and that employees working under such leadership are less likely experiencing burnout due to perceived fairness and involvement. **(Hakanen & van Dierendonck, 2011)** A recent study emphasized the significant personal, societal, and economic costs of neglecting employees' mental health and psychological well-being. Figure 2 shows the rapid increase in psychological and psychiatric conditions as a basis for disability pensions in Australia. **(Johnson et al., 2020)**

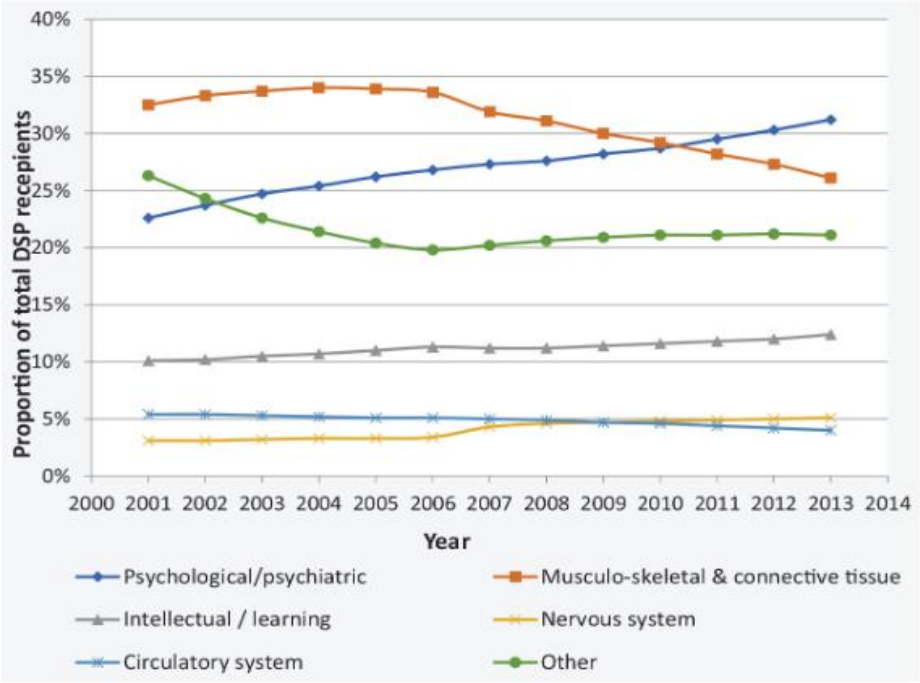

Fig. 2. Changes in the health grounds for eligibility for disability pension
Source: https://journals.sagepub.com/doi/full/10.1177/0312896220922292
Download Time: 10/12/2024

The nature of an employee's job, where they spend one-third of their day, significantly impacts their physical and emotional health, and this has changed due to recent technological advancements. Johnsson and colleagues categorized the impacts of digital transformation into two areas: changes in how work is done through automation and advanced technology, and the flexibility in where and when work takes place due to technological advances. (see Figure 3)

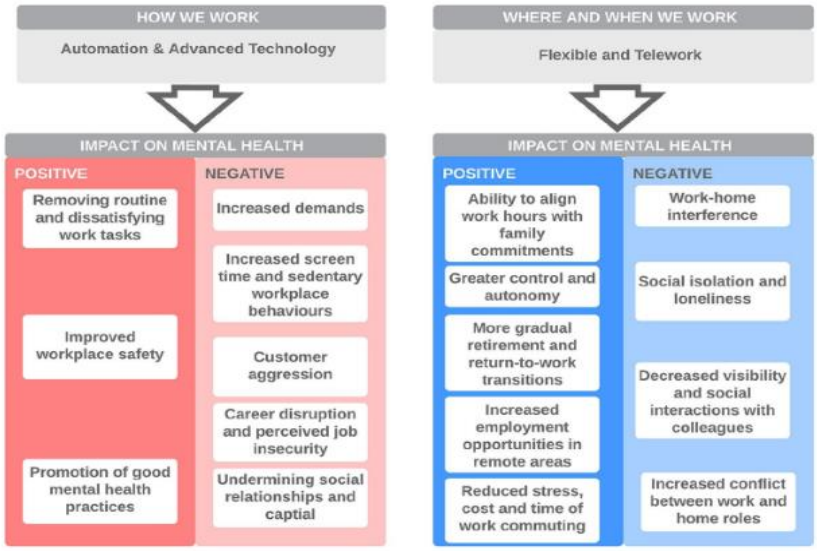

Fig. 3. The impact of technological change on mental health and well-being in the workplace
Source: https://journals.sagepub.com/doi/full/10.1177/0312896220922292
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This summary can serve as a starting point for organizations to review their current practices for preventing or reducing the negative impacts of technology, as they play a central role in fostering and maintaining psychological well-being.

2.1. Epitome and Hypotheses

2.1.1. Epitome

Our research aims to understand the relationship between leadership competencies and employees' job-related well-being in contemporary organizations. Regarding management capabilities, the concept of "leadership" was differentiated along two dimensions: "classic" leadership competencies that shape the traditional framework and foundational principles of management, and "digital" competencies, emerging in response to digital transformation, which became essential in the 21st century. Previous studies in organizational psychology and leadership theory suggest that both influence employee experiences and outcomes. We developed our hypotheses to assess the relationship between classic and digital leadership competencies, and whether either dimension contributes positively to job-related well-being.

2.1.2. Hypotheses

Based on preliminary literature review and empirical findings in leadership concepts and organizational psychology, we formulated the following three hypotheses:

H1: There is a significant relationship between classic and digital leadership competencies.

H2: Classic leadership competencies positively affect employees' job-related well-being.

H3: Digital leadership competencies positively affect employees' job-related well-being.

Each hypothesis aligns with emerging leadership theories and responds to real-world organizational challenges, such as employees' emotional health and leaders' effect on it.

Table 1 summarises the evolution of our hypotheses.

Table 1: *Development of hypotheses*

No.	Relevance	Purpose	Problem	Literature review	Hypotheses (briefing)
H1	Aligning different forms of leadership, Digital leadership rises in the 21st century	Understand synergy and alignment regarding different sets of leadership competencies	The need of new leadership competencies due to digital transformation	- Claassen et al. (2021, 2023), - Promsri (2019) - Zeike et al. (2019)	There is a relationship between classic and digital leadership competencies
H2	Emotional health focus at workplaces, which affects employee experiences and outcomes	Test the impact of classic leadership competencies on employees' job-related well-being	Employees' experiences regarding their leaders affect their emotional health	- Claassen et al. (2021, 2023), - Larjovuori et al. (2016)	Classic leadership competencies positively affect employees' job-related well-being
H3	Rise of digital leadership in the 21st century, Emotional health focus at workplaces	Test the impact of digital leadership competencies on employees' job-related well-being	Employees' experiences regarding their leaders affect their emotional health	- Claassen et al. (2021, 2023), - Promsri (2019) - Larjovuori et al. (2016) - Zeike et al. (2019)	Digital leadership competencies positively affect employees' job-related well-being

3. Methodology

This research was conducted using a cross-sectional, anonymous, web-based, quantitative survey available in both English and Hungarian. The questionnaire was distributed to active employees based in Hungary, each having a designated line manager at their workplace. Statistical analyses were performed using non-parametric tests appropriate for ordinal data.

3.1. Study design

The target population included active employees living and working in Hungary, each of whom reported having a designated line manager at their workplace. No specific sector or job role was required for participation.

The survey contains four main sections: (1) demographic background, (2) the ClassicFuehr scale measuring traditional leadership competencies, (3) the DigiFuehr 2.0 scale assessing digital leadership competencies, and (4) the Job-Related Affective Well-Being Scale (JAWS). All of the three constructs were measured using Likert-type scales.

The survey was created and distributed via Google Forms tool. Participants were recruited through online platforms and professional networks, using convenience sampling. Participation was voluntary and anonymous.

A total of 296 responses were collected. Out of these, 283 participants met the inclusion criteria.

3.2. Materials

Primary data was collected through an online questionnaire targeting active employees with direct line managers in Hungary. Respondents answered demographic questions and three validated scales:

- ClassicFuehr (Claassen et al., 2021): 7 items measuring classic leadership competencies.

- DigiFuehr 2.0 (Claassen et al., 2023): 9 items measuring digital leadership competencies.

- Job-Related Affective Well-Being Scale (JAWS) (Van Katwyk et al., 2000): 20 items assessing work-related employee well-being states.

3.2.1. Description

After responding to demographic questions, participants filled out the 3 different validated scales. The first construct, ClassicFuehr (Claassen et al., 2021), included 7 questions regarding the classic leadership competencies of respondents' superiors. The second construct, DigiFuehr 2.0 (Claassen et al., 2023), contained 9 questions evaluating the digital leadership competencies of line managers. This scale is an extended version of the original, shorter form of the DigiFuehr scale (Claassen et al., 2021). The third instrument used in this research was the Job-Related Affective Well-Being Scale (JAWS) (Van Katwyk et al., 2000), which included 20 statements regarding the respondents' job-related well-being. Final submission of the questionnaire was only possible after answering all questions. Therefore, we excluded the possibility of missing data.

ClassicFuehr and DigiFuehr 2.0 scales use 4-point Likert scales, while the JAWS scale uses a 5-point Likert scale.

3.2.2. Preparation

The survey was distributed electronically, over a five-month period, between August 2024 and January 2025. No formal sampling framework was applied beyond the inclusion criteria: active employment and presence of a dedicated line manager. Participation in the research as a respondent was voluntary and anonymous. Out of 296 respondents, 283 were Hungary-based active employees.

As participants had to answer every question to submit, and the final sample included fully completed surveys only, no data cleaning regarding missing values was necessary.

This study used a cross-sectional, correlational design to examine associations between leadership competencies and job-related well-being. Given the ordinal nature of the data and the non-probability sampling, non-parametric statistical methods were prioritized to ensure appropriate inference.

The survey was created using Google Forms, and the data were analysed using Microsoft Excel and R software.

3.2.3. Demographic background of study population

A total of 296 individuals completed the questionnaire, of which 283 stated that they live and work in Hungary (n=283). Out of them 92 were male (32.51%) and 191 were female (67.49%). Respondents were born between 1957 and 2005. Almost one-third of them belonged to Generation X (born between 1965-1980), and nearly two-thirds to Millennials (born between 1981-1996). Only one percent of the participants belonged to the Boomer Generation (born between 1946-1964) and less than ten percent to Generation Z, the youngest generation with workers already active (born between 1997-2012). See Table 2.

Table 2: *Gender and generations of respondents*

Gender & Generations (born between)	Boomer Generation (1946-1964)	Generation X (1965-1980)	Millennials (Generation Y) (1981-1996)	Generation Z (1997-2012)	**Grand Total**
Man	2 (0.71%)	23 (8.13%)	59 (20.85%)	8 (2.83%)	**92 (32.51%)**
Woman	1 (0.35%)	68 (24.03%)	102 (36.04%)	20 (7.07%)	**191 (67.49%)**
Grand Total	**3 (1.06%)**	**91 (32.16%)**	**161 (56.89%)**	**28 (9.89%)**	**283 (100.00%)**

Two-thirds of respondents work as team members in their current position, without ownership or leadership roles. Nearly two-thirds hold higher education degrees, at least at Bachelor's level. Further details of participants' educational qualifications and work positions are presented in Table 3.

Table 3: *Participants' level of education and current position at work*

Education & Position	Owner	Senior manager / Director	Junior manager / Team leader	Team member / Employee	Other	**Grand Total**
Vocational school	-	-	1	12	2	**15 (5.30%)**
High school graduate	1	2	3	34	6	**46 (16.25%)**
Professional certificate	-	3	4	29	-	**36 (12.72%)**
Bachelors degree	2	12	13	51	1	**79 (27.92%)**
Masters degree	6	11	15	59	2	**93 (32.86%)**
MBA or PhD	2	3	5	3	1	**14 (4.95%)**
Grand Total	**11 (3.89%)**	**31 (10.95%)**	**41 (14.49%)**	**188 (66.43%)**	**12 (4.24%)**	**283 (100.00%)**

3.3. Methods and analyses

Leadership competency and employee well-being scores were treated as ordinal variables. Since the nature of our data was ordinal and not considered continuous, we did not test for normality or use parametric testing. To examine associations between classic leadership competencies, digital leadership competencies, and job-related affective well-being, Spearman's rho correlations and Kendall's tau-b rank-order correlations were calculated.

Group-level differences by demographic variables were tested using the Mann-Whitney U test (Wilcoxon rank-sum test) and the Kruskal-Wallis test. For significant Kruskal-Wallis test results, Dunn's post-hoc procedure with Bonferroni correction was applied to identify specific group contrasts.

All instruments used in the questionnaire were previously validated by fellow researchers. Therefore, conducting a factor analysis to assess the internal structure of the scales was unnecessary. Cluster analysis was not included either, as the study did not aim to identify respondent typologies or latent subgroups based on leadership or well-being constructs. Neither time-series nor spatial analyses were applicable, since the data were cross-sectional, and geographical information was recorded only to verify that respondents were active employees in Hungary.

Multivariate analysis of variance (MANOVA) was not applied in this study, as the assumption of multivariate normality was not met, based on the distributional characteristics of the data. Non-parametric tests such as Kruskal-Wallis and Wilcoxon rank sum tests were used for group comparisons, as these provided a more robust analytical strategy in the context of violated normality. As per the nature of the data and the research objectives, non-parametric methods provided a more appropriate analytical approach than MANOVA.

4. Results

To evaluate the general tendencies of respondents' perceptions regarding their supervisors' competencies and their own job-related well-being, we first examine the descriptive statistics for each of the three key scales used in this study: ClassicFuehr, DigiFuehr 2.0, and Job-Related Affective Well-Being Scale (JAWS).

4.1. Descriptive Statistics

ClassicFuehr (classic leadership competencies of respondents' superiors) scale's minimum value is 1.00, the maximum value is 4.00. The mean is 2.87, and the median is 2.86, which means that the majority of responses fall within the upper middle range. The standard deviation is 0.76, indicating a moderate degree of variation in the values. It means that while lot of respondents share similar views, notable differences still exist in how leadership was perceived across the sample.

Similarly, DigiFuehr 2.0 (digital leadership competencies of respondents' superiors) scale has a minimum value of 1.00 and a maximum value of 4.00. The mean is 2.75, and the median is 2.89, suggesting that respondents generally chose values in the upper middle range. The standard deviation is 0.82, indicating a slightly wider spread of responses. It shows more diversity in responses, which may reflect the novelty of the concept, as digital leadership practices across different organizations are quite new compared to classic leadership routines.

JAWS (workplace well-being of respondents) scale shows a minimum value of 1.55 and a maximum value of 5.00. The mean is 3.31, and the median is 3.30, which suggests that workplace well-being was generally rated in the moderate average range. The standard deviation is 0.68, showing a moderate spread in the responses.

The above descriptive results suggest that while respondents generally rated both classic and digital leadership competencies positively, classic leadership competencies were slightly more favorably assessed. Overall, workplace well-being was perceived moderately well across the sample, with less extreme evaluations.

Table 4: *Descriptive statistics*

Descriptive Statistics	ClassicFuehr scale	DigiFuehr 2.0 scale	JAWS scale
Sample size (n=)	283	283	283
Min	1	1	1.55
Max	4	4	5
Mean	2.8688	2.7534	3.3117
Standard Deviation (σ)	0.7564	0.8175	0.6806
Median	2.8571	2.8889	3.3000
Mode	4	4	3

4.2. Bivariate Analyses

4.2.1. Correlation Analyses

Spearman's rank-order correlation was used first to assess the relationships between the two leadership competencies scales and the job-related affective well-being scale. Results showed a strong positive correlation between ClassicFuehr and DigiFuehr 2.0 scales (ρ=0.71, p<0.001), indicating a strong association between the two leadership constructs, but demonstrating an interconnection rather than redundancy. ClassicFuehr was also moderately correlated with JAWS (ρ=0.55, p<0.001), while DigiFuehr 2.0 showed a weaker but still statistically significant association with JAWS (ρ=0.41, p<0.001).

Kendall's tau-b rank correlation was also applied to assess the strength of associations between the two leadership competencies constructs and employee well-being. The analysis revealed a strong positive correlation between ClassicFuehr and DigiFuehr 2.0 (τ=0.55, p<0.001), indicating a consistent relationship between the two leadership competencies scales. ClassicFuehr also showed a moderate positive association with JAWS (τ=0.40, p<0.001), while DigiFuehr 2.0 demonstrated a weaker but still statistically significant relationship with JAWS (τ=0.30, p<0.001).

Table 5: *Spearman rank-order and Kendall's Tau-b rank correlation results*

Pair	Spearman Correlation (ρ)	p-value (Spearman)	Kendall Tau-b (τ)	p-value (Kendall)
ClassicFuehr & DigiFuehr 2.0	0.7079	< 2.2e-16	0.5547	< 2.2e-16
ClassicFuehr & JAWS	0.5538	< 2.2e-16	0.4045	< 2.2e-16
DigiFuehr 2.0 & JAWS	0.4142	3.677e-13	0.2984	3.889e-13

These findings confirm that both leadership competencies constructs (ClassicFuehr and DigiFuehr 2.0) are positively related to employee well-being, with classic leadership competencies having the stronger predictive relevance on JAWS.

4.2.2. Non-Parametric Group Comparison

To investigate whether the three constructs (ClassicFuehr, DigiFuehr 2.0 and JAWS) differ across different demographic groups, we applied non-parametric methods suitable for ordinal or non-normally distributed data. *Wilcoxon rank sum test* (also known as the Mann-Whitney U test) was used for binary comparisons (e.g., gender), and Kruskal-Wallis rank sum test group comparisons involving more than two levels (e.g., generation, education, position).

Table 6: *Demographic groups of respondents*

Gender	Generation	Education	Position
Man (1)	Boomer Generation (1)	Vocational school (1)	Owner (1)
Woman (2)	Generation X (2)	High school graduate (2)	Senior manager (2)
	Millennials (Generation Y) (3)	Professional certificate (3)	Manager, team leader (3)
	Generation Z (4)	Bachelors degree (4)	Team member (4)
		Masters degree (5)	Other (5)
		MBA or PhD (6)	

To explore potential gender-related differences across the variables, we run the Wilcoxon Rank Sum test, as it is appropriate for binary comparisons (male and female) related to ordinal data derived from Likert-type scales and does not assume normal distribution. Results show no statistically significant differences between male and female respondents and any of the three constructs of this study. Findings related to ClassicFuehr scale (W=9107.5, p=0.618), DigiFuehr 2.0 scale (W=9371.5, p=0.364), and JAWS scale (W=9640, p=0.186) indicate gender neutrality within the constructs analysed.

Table 7: ***Wilcoxon Rank Sum test results***

Construct	**Grouping Variable**	Test Statistic (W)	p-value	Significant?
ClassicFuehr	Gender	9107.5	0.6180	No
DigiFuehr 2.0	Gender	9371.5	0.3637	No
JAWS	Gender	9640	0.1855	No

The Kruskal-Wallis test revealed no significant differences in any of the constructs based on “gender”, while “generation” had a significant effect on DigiFuehr 2.0 scores, but not on ClassicFuehr or JAWS. “Education” and “position” were significantly associated with both ClassicFuehr and DigiFuehr 2.0 scores (ClassicFuehr: $\chi^2_{(5)}$=14.44, p=0.013; $\chi^2_{(4)}$=15.43, p=0.0039; DigiFuehr: $\chi^2_{(5)}$=16.43, p=0.0057; $\chi^2_{(4)}$=25.57, p<0.001), suggesting that these demographic variables influence leadership perceptions. Regarding JAWS scale, only “position” showed a significant effect ($\chi^2_{(4)}$=12.27, p=0.015).

Table 8: *Kruskal-Wallis Rank Sum test results*

Construct	**Grouping Variable**	χ^2	df	p-value	Significant? (p<0.05)
ClassicFuehr	Gender	0.25	1	0.617	No
	Generation	7.33	3	0.062	No
	Education	14.44	5	0.013	✓ Yes
	Position	15.43	4	0.0039	✓ Yes
DigiFuehr	Gender	0.83	1	0.363	No
	Generation	8.54	3	0.036	✓ Yes
	Education	16.43	5	0.0057	✓ Yes
	Position	25.57	4	<0.001	✓ Yes
JAWS	Gender	1.75	1	0.185	No
	Generation	4.94	3	0.176	No
	Education	4.30	5	0.507	No
	Position	12.27	4	0.015	✓ Yes

The results of the Wilcoxon rank sum tests showed no significant differences between male and female respondents across the three constructs of this study: ClassicFuehr, DigiFuehr 2.0 and JAWS (all $p>0.18$). These findings were confirmed by the Kruskal-Wallis test as well. Kruskal-Wallis test suggests a potential generational shift in perceptions of digital leadership. More robust differences are visible on education and organizational position: both variables significantly influenced scores on ClassicFuehr and DigiFuehr 2.0, and position was also associated with JAWS. These results indicate that the perception of leadership capabilities and work-related well-being are more meaningfully characterized by experiential factors – such as educational background or hierarchical status – than by demographic characteristics like gender or generation.

4.2.3. Post-hoc Testing

To further investigate the differences identified by the Kruskal–Wallis test regarding participants' evaluations of their supervisors' leadership capabilities, Dunn's post hoc tests with Bonferroni adjustment were performed. These analyses confirm that respondents' educational background and organizational position are associated with differences in how they rated leadership competencies on both classic and digital leadership dimensions (P.adj<0.05).

Specifically, respondents with lower levels of education, such as vocational school certificates, tended to rate their supervisors lower on leadership competencies compared to those who hold a master's degree (Education-ClassicFuehr: P.adj=0.0127, Education-DigiFuehr 2.0: P.adj=0.0057).

In terms of organizational hierarchy, respondents in owner positions rated leadership competencies more favorably than team members with no managerial responsibilities (Position-ClassicFuehr: P.adj=0.0167, Position-DigiFuehr 2.0: P.adj=0.0014).

These findings suggest that employees' educational level and role within the organization may influence their perception of managerial capabilities, possibly due to differences in expectations, detections, or alignment with leadership behaviors.

4.3. Multivariate Analyses

4.3.1. Linear Regression Model

The intercept (constant) is 1.89, suggesting that when both ClassicFuehr and DigiFuehr 2.0 are zero, the expected JAWS score is 1.89 (β_0=1.8920).

ClassicFuehr: The coefficient is 0.43, indicating each one-unit increase in ClassicFuehr is associated with a 0.43-point increase in JAWS score (b_1=0.4326). This effect is statistically significant (p<0.001).

DigiFuehr 2.0: The coefficient is 0.065, suggesting that each unit increase in DigiFuehr 2.0 results in only a 0.065-point increase in JAWS score (b_2=0.0649). This effect is not significant (p=0.29).

Model validity: the R^2 value of the model is 0.29. This means that ClassicFuehr and DigiFuehr 2.0 scales together explain 29% of the variance in JAWS (R^2=0.2919). The overall model is statistically significant, as indicated by the F-statistic (F=57.71, p<2.2e-16).

These findings highlight that the model explains a meaningful proportion of the variance in job-related affective well-being, but this is primarily driven by classic leadership competencies. Digital leadership competencies have little additional explanatory power.

4.3.2. Standardized Regression Coefficients

The *Standardized Regression coefficients* show that ClassicFuehr has a strong effect on JAWS with a value of 0.48 (β_1=0.4808), and DigiFuehr 2.0 has a minimal effect on JAWS with a value of 0.078 (β_2=0.0779).

These results suggest that traditional leadership competencies (ClassicFuehr) are substantially more predictive of affective well-being (JAWS) than digital leadership competencies (DigiFuehr 2.0). While ClassicFuehr demonstrates a moderate to strong standardized effect size, the impact of DigiFuehr 2.0 is negligible, indicating that classic leadership skills may play a more central role in shaping employees' emotional experiences at work.

5. Discussion

The primary objective of this study was to investigate the relationship between leadership competencies – both classic and digital – and employees' job-related affective well-being. The findings offer several important insights into how leadership styles and competencies impact psychological outcomes within modern organizational environments.

5.1. Verification or rebuttal of hypotheses

Based on the results of Spearman's rank order correlation and Kendall's tau-b rank correlation analyses, a statistically significant, strong, positive relationship was confirmed between classic and digital leadership competencies (ClassicFuehr-DigiFuehr 2.0: ρ=0.71, τ_b=0.55, p<0.001), therefore, we accept **H1**.

Both classic and digital leadership competencies had a statistically significant, positive relationship with employee well-being. Classic leadership competencies strongly correlate with job-related affective well-being (ClassicFuehr–JAWS: ρ=0.55, τ_b=0.40, p<0.001), and Digital leadership competencies have a moderate correlation with job-related affective well-being (DigiFuehr–JAWS: ρ=0.41, τ_b=0.30, p<0.001). Based on these results, we accept **H2** and **H3**.

Table 9: *Summary table of verification or rebuttal of hypotheses*

No.	Materials	Methods	Results	Verdict
H1	**H1R1**	Spearman's rank-order correlation and Kendall's tau-b rank correlation	Strong positive relationship confirmed	**Confirmed**
H2	**H2R1**	Spearman's rank-order correlation and Kendall's tau-b rank correlation	Strong positive relationship confirmed	**Confirmed**
H3	**H3R1**	Spearman's rank-order correlation and Kendall's tau-b rank correlation	Moderate positive relationship confirmed	**Confirmed**

5.2. Interpretation of Key Results

The significant positive correlations between both classic and digital leadership competencies and affective well-being suggest that employees perceive leadership quality as a key factor in their emotional experience at work. This aligns with other main leadership theories, such as transformational and servant leadership, which emphasize emotional and relational dimensions of effective people management. Classic competencies showed a slightly stronger relationship in the analyses. This suggests that while digital skills are increasingly important, classic leadership traits – like fairness, flexibility or open communication – still play a vital role to employees' psychological outcomes. At the same time, in the age of digital transformation, managing remote teams, implementing the latest technologies for work and communication, or maintaining cohesion in hybrid or virtual environments, has become essential, and requires a new set of leadership skills. This dual and parallel relevance supports the concept that effective leadership today must include traditional and digital skills to meet employees' needs.

5.3. Theoretical Implications

The study supports an integrated model of leadership effectiveness that involves both digital and classic competencies. This finding adds nuance to leadership theories while suggesting that effective leadership in the 21st century is multidimensional, requiring the integration of technological skills with managerial consistency.

The findings support a dual-competency framework that integrates digital fluency with classic leadership behaviors. The strong correlation between classic and digital leadership competencies suggests these are related dimensions. Future leadership theory may benefit from treating digital leadership not as a subcategory, but as a complementary factor requiring separate development and assessment. It is important to mention that leaders may strive in one area while needing development in the other. Therefore, theoretical frameworks need to treat digital leadership as an independent but complementary dimension to traditional models.

5.4. Practical Implications

These findings emphasize the necessity of leadership selection procedures and leadership development programs that balance both factors: classic leadership competencies, such as emotional intelligence, fairness, and clarity, alongside digital skills, like virtual team management, or tech-enabled work procedures and communication. Organizations can design selection and training mechanisms that involve both competency areas, to build resilient work cultures with employee well-being.

6. Limitations and Future Research Directions

Our study has some limitations that must be acknowledged, along with directions for future research.

7.1. Limitations

Cross-Sectional Design: In this study we used a cross-sectional survey methodology, which limits causal inference. While our findings indicate relationships between the different factors, they do not confirm the directionality of influence. There is a possibility that employees with higher well-being are more likely to perceive leadership behavior positively.

Self-Report Bias: All data were collected through self-reported questionnaires, which can introduce biases. Employees may have over- or underestimated their leaders' competencies or their own affective states.

Sample Size and Diversity: While the sample was sufficient for completing the statistical analyses and detecting relationships, it may not fully represent the broader Hungarian workforce or international organizational contexts. The participants came from various sectors and geographic regions within Hungary, which supports a certain level of diversity. However, the use of non-probability sampling limits the external validity of the findings. Furthermore, sectoral or organizational-level factors – such as company size, ownership structure, or industry-specific leadership norms – may have influenced the observed patterns. These factors should be taken into account when interpreting the generalizability of the results beyond the studied sample.

7.2. Future Research Directions

Longitudinal Studies: Future research could employ longitudinal designs to assess how changes in leadership behaviors influence job-related well-being factors over time. This would enable stronger suggestions about causality and dynamic interaction.

Experimental Approaches: Introducing leadership training programs and assessing their impact on employee well-being through experimental design would offer deeper insights into the practical applications of the findings.

Broader Constructs of Well-being: While affective well-being is a key component, future studies could incorporate other well-being dimensions, such as job satisfaction, burnout, or work-life balance. It could provide a broader picture of leadership competencies and their effect on employees.

Cross-Cultural Analysis: Since leadership perceptions and employee experiences can vary widely across cultures, it would be valuable to replicate the study in different national cultures to test the universality of the findings.

7. Conclusion

Overall, the results of our research confirm that both classic and digital leadership competencies are positively related to each other and employee well-being. Furthermore, the predictive strength of classic leadership competencies is greater than the influencing aspects of digital leadership competencies.

Demographic factors such as education and organizational position (rather than gender or generational affiliation) were consistently associated with perceptions of leadership competencies and employee well-being. Our findings also highlight the relevance of traditional leadership capabilities in the digital context.

As organizations become more technologically integrated and geographically extended, the ability of leaders to adapt to these changes may directly influence not only organizational performance but also the mental and emotional health of employees. Therefore, investment in comprehensive leadership development is not only a strategic advantage but a moral factor.

8. Recommendation

Our results emphasize the continued relevance of classic leadership capabilities while also validating the emerging construct of digital leadership in contemporary organizational psychology. Future research should explore longitudinal and cross-cultural dimensions of this relationship and investigate potential mediators such as organizational culture, remote work dynamics, or team cohesion.

From a practical standpoint, organizations should prioritize the development of classic leadership capabilities paralell to digital domains. Tailored leadership development programs should consider employees' educational levels and hierarchical roles to maximize engagement and relevance. Moreover, leadership assessments and succession planning processes should incorporate a balanced evaluation of both classic and digital competencies.

Finally, in the post-pandemic hybrid work era, organizations must not over-index on digital transformation at the expense of human-centered leadership. Ensuring well-being and sustaining performance requires a dual-focus approach where technology augments, rather than replaces, traditional leadership effectiveness. Table 10 is summarizes our conclusions and recommendations:

***Table 10**: Aftermath of the results*

No.	Discussion	Conclusion	Recommendation
H1	Classic and digital leadership competencies show a strong, positive correlation across respondents.	A robust association exists between traditional and digital leadership competencies. Those skills that were important before the digital transformation have been supplemented with new leadership competencies necessary in the digital era.	Leadership training can integrate classic and digital leadership skillsets in parallel.
H2	Classic leadership competencies have a strong positive correlation with job-related affective well-being.	Traditional leadership practices remain essential for employee well-being.	Organizations need to continue to invest in people-centered leadership programs.
H3	Digital leadership competencies moderately correlate with job-related well-being, less strongly than classic leadership competencies.	Digital leadership matters for job-related well-being, but it is not a standalone driver.	Progressing digital competencies should complement, and not replace, classic leadership development.

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