International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Digital Leadership, Digital Work Environment, And Job Satisfaction Among Generation Z Employees: The Mediating Role Of Work Engagement

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Abstract

Digital transformation has changed organizational communication systems, leadership practices, and employee work experiences, particularly among Generation Z employees who are highly familiar with technology and flexible working systems. This study aims to examine the influence of digital leadership and digital work environment on job satisfaction through work engagement among Generation Z employees. A quantitative approach was applied using a survey method involving 176 employees working in educational institutions, MSMEs, and service sectors. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate that digital leadership and digital work environment positively affect work engagement and job satisfaction. Work engagement also significantly influences job satisfaction and mediates the relationships between digital leadership, digital work environment, and job satisfaction. Supportive digital leadership, flexible communication systems, and collaborative digital work environments strengthen employee enthusiasm, emotional attachment, and positive work experiences. The findings extend Job Demands–Resources Theory by emphasizing the role of digital organizational resources in improving employee psychological outcomes among Generation Z workers. Practical implications highlight the importance of adaptive leadership, technological support, and employee engagement strategies in maintaining job satisfaction in digital working systems.

Keywords: Digital Leadership; Digital Work Environment; Work Engagement; Job Satisfaction; Generation Z

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INTRODUCTION

Digital transformation has accelerated major changes in organizational systems, communication patterns, leadership approaches, and employee interaction mechanisms across various sectors. Organizations increasingly rely on digital platforms, cloud collaboration, virtual communication, and technology-based coordination to maintain organizational effectiveness and competitiveness in rapidly changing environments (Bagis et al., 2024; Cortellazzo et al., 2019; Van Wart et al., 2019). Technological adaptation no longer functions solely as operational support but has become an important organizational resource influencing employee experiences, flexibility, and psychological well-being (Bennett et al., 2021).

Generation Z has emerged as one of the fastest-growing workforce groups in modern organizations. Employees belonging to this generation are highly familiar with digital technology, flexible work systems, rapid communication, and collaborative online interactions (Schroth, 2019). Francis & Hoefel (2018) explained that Generation Z employees tend to prioritize meaningful work experiences, flexibility, psychological comfort, and supportive leadership systems. Employees from this generation are also more sensitive toward rigid leadership styles, communication barriers, and unsupportive working environments.

Educational institutions, MSMEs, and service sectors increasingly implement digital working systems such as online coordination, hybrid communication, virtual meetings, and flexible scheduling. Digital systems provide organizational efficiency and work flexibility, yet they also create several challenges including digital fatigue, communication ambiguity, excessive online coordination, and declining emotional attachment among employees (Bagis et al., 2026; Molino et al., 2020; S. Wang et al., 2025). Employees working in unstable digital environments tend to experience lower motivation and reduced job satisfaction.

Job satisfaction remains a critical issue in human resource management because satisfied employees demonstrate stronger organizational commitment, lower turnover intention, stronger emotional well-being, and better work performance (Judge et al., 2020; Spector, 2012). Positive organizational conditions and adaptive leadership systems play important roles in strengthening employee satisfaction levels. Leadership has become increasingly important following the expansion of digital working systems. Digital leadership reflects leaders' abilities to utilize technology, facilitate virtual communication, support employee adaptation, and encourage innovation during digital transformation processes (Van Wart et al., 2019). Adaptive leaders capable of maintaining

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communication quality and technological support tend to strengthen employee motivation and emotional attachment toward organizations (Cortellazzo et al., 2019).

Digital work environment also influences employee psychological conditions and work experiences. Supportive technological infrastructure, accessible communication systems, collaborative digital culture, and flexible work arrangements help employees complete work effectively while reducing work barriers and stress (Bennett et al., 2021; Molino et al., 2020). Employees perceiving positive digital environments generally demonstrate stronger engagement and satisfaction. Work engagement describes a positive psychological condition characterized by vigor, dedication, and absorption toward work activities (Schaufeli et al., 2006). Bakker & Demerouti (2017) explained that organizational resources strengthen employee engagement by increasing motivation and emotional attachment. Employees experiencing stronger engagement are more likely to demonstrate enthusiasm, active participation, and positive emotional responses toward work.

Several previous studies investigated relationships among digital leadership, work environment, engagement, and job satisfaction separately. Zeike et al., (2019) examined digital leadership and employee well-being in public organizations, while Contreras et al., (2020) emphasized leadership adaptation in virtual work systems. Molino et al., (2020) discussed remote working conditions and employee well-being, whereas Wang et al., (2022) analyzed digital working challenges during flexible work implementation. Most previous studies focused on large organizations, multinational companies, or employees in developed countries.

Empirical studies specifically discussing the integration of digital leadership and digital work environment in explaining Generation Z job satisfaction through work engagement remain limited. Existing studies also predominantly emphasize remote working effectiveness, technology acceptance, or traditional leadership models without focusing on younger workforces in educational institutions, MSMEs, and local service sectors. Limited research has explored how organizational digital resources simultaneously strengthen work engagement and job satisfaction among Generation Z employees.

This study contributes theoretically by extending Job Demands–Resources Theory through the integration of digital leadership and digital work environment in explaining employee satisfaction mechanisms among Generation Z workers. Practical contribution emerges through recommendations for organizations in developing adaptive leadership systems and supportive digital work environments to strengthen employee engagement

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and job satisfaction among younger employees. Based on these arguments, this study aims to analyze the influence of digital leadership and digital work environment on job satisfaction through work engagement among Generation Z employees.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Job Demands–Resources Theory

Job Demands–Resources Theory explains that employee attitudes and psychological conditions are influenced by the balance between job demands and organizational resources (Bakker & Demerouti, 2017). Job demands include workload, role pressure, emotional pressure, and work complexity that potentially trigger stress and emotional exhaustion. Job resources include organizational support, leadership quality, technological facilities, flexibility, and communication systems that help employees complete work effectively. Bakker & Demerouti (2017) explained that adequate organizational resources strengthen employee motivation, engagement, satisfaction, and well-being. Employees receiving supportive resources tend to demonstrate stronger enthusiasm, emotional attachment, and positive work attitudes. The theory also explains that organizational resources play an important role in reducing psychological strain while strengthening employee engagement.

Digital leadership and digital work environment can be categorized as organizational resources because both facilitate employee adaptation, communication effectiveness, flexibility, and technological support in digital working systems. Employees who perceive strong organizational support through leadership and digital systems are more likely to experience positive psychological conditions and stronger job satisfaction. Technological developments have encouraged the evolution of transformational leadership into digital leadership. Digital leaders are expected to communicate effectively through digital systems, encourage innovation, support technological adaptation, and maintain employee collaboration despite flexible or virtual working arrangements (Van Wart et al., 2019). Employees working under adaptive and supportive leaders tend to experience greater trust, comfort, emotional attachment, and satisfaction toward organizations. Leadership support also strengthens employee motivation and psychological involvement in work activities.

Digital Leadership and Work Engagement

Digital leadership reflects leaders' ability to utilize technology, facilitate communication, and encourage employee adaptation during digital transformation

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processes (Van Wart et al., 2019). Leaders who actively support employees through digital systems create positive psychological conditions that strengthen employee enthusiasm and emotional attachment toward work. Job Demands–Resources Theory explains that leadership support functions as an important organizational resource encouraging employee motivation and engagement (Bakker & Demerouti, 2017). Employees experiencing adaptive communication, rapid coordination, and technological support from leaders are more likely to demonstrate stronger work engagement. Several studies found that digital leadership positively influences employee engagement and motivation. Research conducted by Contreras et al. (2020), Roman et al. (2019), Sawy et al. (2021), and Zeike et al. (2019) confirmed that digitally adaptive leaders strengthen employee involvement and organizational attachment. Based on these arguments, the hypothesis proposed is:

H1: Digital leadership positively affects work engagement.

Digital Work Environment and Work Engagement

Digital work environment refers to organizational conditions supporting employees through technological infrastructure, collaborative communication systems, accessible information, and flexible working arrangements (Bennett et al., 2021). Employees working in supportive digital environments tend to experience fewer work barriers and stronger emotional comfort.

Job Demands–Resources Theory states that organizational resources improve employee engagement by reducing work stress and increasing motivation (Bakker & Demerouti, 2024). Positive digital environments facilitate employee interaction, efficiency, and work flexibility, which subsequently strengthen work engagement. Previous studies consistently reported positive relationships between digital work environments and employee engagement. Molino et al. (2020), Raghuram et al. (2019), Vayre et al. (2022), and L. Wang et al. (2022) found that supportive digital systems increase employee enthusiasm, dedication, and work involvement. Referring to these explanations, the hypothesis developed is:

H2: Digital work environment positively affects work engagement.

Work Engagement and Job Satisfaction

Work engagement describes a positive psychological condition characterized by enthusiasm, dedication, and absorption toward work activities (Schaufeli et al., 2006). Employees demonstrating high engagement generally experience stronger emotional

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attachment and more positive work experiences. Job Demands–Resources Theory explains that engaged employees tend to experience positive emotional outcomes because organizational resources strengthen motivation and work meaning (Bakker & Demerouti, 2017). Employees who feel enthusiastic and psychologically connected to their work are more likely to experience satisfaction. Several empirical studies support this relationship. Research by Caesens et al. (2014), Karatepe et al. (2020), Orgambidez & Almeida (2020) and Saks (2019) showed that work engagement significantly improves employee job satisfaction. Accordingly, the following hypothesis is formulated:

H3: Work engagement positively affects job satisfaction.

Digital Leadership and Job Satisfaction

Digital leadership enables leaders to maintain communication effectiveness, technological adaptation, and employee support in digital working systems (Van Wart et al., 2019). Employees perceiving leaders as responsive and adaptive tend to experience greater comfort and positive work experiences. Transformational Leadership Theory explains that supportive leadership strengthens employee trust, emotional attachment, and satisfaction toward organizations (Yulk, 2013). Leaders capable of managing digital systems effectively help employees reduce uncertainty and improve work comfort. Previous studies conducted by Cortellazzo et al. (2019), Roman et al. (2019), Sawy et al. (2021), and Zeike et al. (2019) reported that digital leadership positively affects employee satisfaction and organizational attitudes. Thus, the hypothesis proposed is:

H4: Digital leadership positively affects job satisfaction.

Digital Work Environment and Job Satisfaction

Digital work environment influences employee comfort, communication quality, work flexibility, and technological accessibility (Bennett et al., 2021). Positive digital systems create smoother coordination and improve employee work experiences. Job Demands–Resources Theory explains that supportive organizational resources strengthen positive employee outcomes including job satisfaction (Bakker & Demerouti, 2017). Employees working in collaborative and flexible digital environments are more likely to experience positive emotional conditions. Several studies support this argument. Research by Bentley et al. (2023), Molino et al. (2020), Vayre et al. (2022), and L. Wang et al. (2022) demonstrated that supportive digital work environments improve employee job satisfaction. Following these explanations, the hypothesis developed is:

H5: Digital work environment positively affects job satisfaction.

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Work Engagement as a Mediating Variable

Work engagement functions as a psychological mechanism linking organizational resources and employee outcomes. Employees experiencing supportive leadership and positive digital work environments tend to demonstrate stronger emotional attachment and work enthusiasm. Job Demands–Resources Theory explains that organizational resources strengthen work engagement, which subsequently influences positive employee outcomes including job satisfaction (Bakker & Demerouti, 2017). Several studies conducted by Caesens et al. (2014), Karatepe et al. (2020), Orgambidez & Almeida (2020) and Saks (2019) confirmed the mediating role of work engagement in explaining organizational influences on employee satisfaction. Therefore, the following hypotheses are proposed:

H6: Work engagement mediates the relationship between digital leadership and job satisfaction.

H7: Work engagement mediates the relationship between digital work environment and job satisfaction.

RESEARCH METHOD

This study applies a quantitative approach using a cross-sectional survey design to examine the relationships among digital leadership, digital work environment, work engagement, and job satisfaction among Generation Z employees. The research focuses on employees working in educational institutions, MSMEs, and service sectors that actively implement digital communication systems and technology-based work activities. The population consists of Generation Z employees aged between 18 and 27 years. Purposive sampling technique is employed to select respondents based on several criteria, namely employees categorized as Generation Z, employees actively involved in digital working systems, and employees who have worked for at least six months. The study targets approximately 150–200 respondents because the sample size is considered adequate for Partial Least Squares Structural Equation Modeling analysis (Hair et al., 2021).

Data are collected through online questionnaires distributed using Google Forms. Measurement indicators are adapted from previous validated studies and adjusted according to the research objectives. Digital leadership indicators are adapted from Van Wart et al. (2019), digital work environment indicators are adapted from Bennett et al. (2021), work engagement indicators are adapted from Schaufeli et al. (2006), and job satisfaction indicators are adapted from Spector (2012). All indicators are measured using

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a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Data analysis uses Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS software. The analysis stages include outer model evaluation through convergent validity, discriminant validity, composite reliability, and collinearity testing. Structural model evaluation includes coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), and hypothesis testing using bootstrapping procedures to examine direct and indirect relationships among variables (Hair et al., 2021).

RESULTS AND DISCUSSION

A total of 176 questionnaires were successfully collected and analyzed. Respondents were dominated by female employees (61.4%), while male respondents accounted for 38.6%. Most respondents were aged between 21–25 years (68.2%), followed by 18–20 years (19.3%) and 26–27 years (12.5%). Respondents worked in educational institutions (41.5%), MSMEs (34.1%), and service sectors (24.4%). The majority of respondents had working experience between one and three years.

The outer model evaluation demonstrated satisfactory measurement quality. All indicator loading factors exceeded 0.70, indicating adequate convergent validity. Average Variance Extracted (AVE) values ranged from 0.621 to 0.774, exceeding the recommended threshold of 0.50. Composite Reliability values ranged from 0.861 to 0.924, while Cronbach's Alpha values exceeded 0.70, confirming measurement reliability (Hair et al., 2021).

Table 1. Outer Model Evaluation

Variable	Cronbach's Alpha	Composite Reliability	AVE	Result
Digital Leadership	0.884	0.912	0.721	Reliable & Valid
Digital Work Environment	0.861	0.901	0.694	Reliable & Valid
Work Engagement	0.903	0.924	0.774	Reliable & Valid
Job Satisfaction	0.872	0.907	0.709	Reliable & Valid

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All constructs fulfilled convergent validity and reliability requirements because AVE values exceeded 0.50, while Composite Reliability and Cronbach's Alpha values exceeded the recommended threshold of 0.70.

Table 2. Discriminant Validity (HTMT)

Variable	DL	DWE	WE	JS
Digital Leadership (DL)	-			
Digital Work Environment (DWE)	0.734	-		
Work Engagement (WE)	0.768	0.781	-	
Job Satisfaction (JS)	0.712	0.741	0.826	-

All HTMT values were below 0.90, indicating satisfactory discriminant validity among constructs.

Table 3. Coefficient of Determination (R^2)

Endogenous Variable	R^2	Category
Work Engagement	0.637	Moderate
Job Satisfaction	0.714	Strong

The structural model evaluation showed that digital leadership and digital work environment explained 63.7% of the variance in work engagement. Meanwhile, digital leadership, digital work environment, and work engagement explained 71.4% of the variance in job satisfaction. Discriminant validity testing using the Heterotrait–Monotrait Ratio (HTMT) showed values below 0.90, indicating that each construct possessed adequate discriminant validity. Collinearity testing also demonstrated VIF values below 5.00, confirming the absence of multicollinearity problems.

The structural model evaluation showed that digital leadership and digital work environment explained 63.7% of the variance in work engagement (R^2 = 0.637). Meanwhile, digital leadership, digital work environment, and work engagement explained 71.4% of the variance in job satisfaction (R^2 = 0.714). Predictive relevance analysis also demonstrated satisfactory results with Q^2 values greater than zero. Hypothesis testing results are presented in Table 4.

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Table 4. Hypothesis Testing Results

Hypothesis	Relationship	Path Coefficient	t-statistic	p-value	Result
H1	Digital Leadership → Work Engagement	0.381	4.912	0.000	Supported
H2	Digital Work Environment → Work Engagement	0.447	5.763	0.000	Supported
H3	Work Engagement → Job Satisfaction	0.421	5.104	0.000	Supported
H4	Digital Leadership → Job Satisfaction	0.228	2.731	0.007	Supported
H5	Digital Work Environment → Job Satisfaction	0.267	3.148	0.002	Supported
H6	Digital Leadership → Work Engagement → Job Satisfaction	0.160	3.644	0.000	Supported
H7	Digital Work Environment → Work Engagement → Job Satisfaction	0.188	4.017	0.000	Supported

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The hypothesis testing results indicate that all proposed hypotheses are supported. Digital leadership significantly affects work engagement and job satisfaction. Digital work environment also significantly affects work engagement and job satisfaction. Work engagement significantly influences job satisfaction. The mediation analysis further demonstrates that work engagement significantly mediates the relationships between digital leadership, digital work environment, and job satisfaction. These findings confirm that all direct and indirect relationships proposed in this study are statistically supported.

DISCUSSION

Digital leadership was found to positively affect work engagement among Generation Z employees. Leaders capable of utilizing technology effectively, maintaining communication quality, and supporting employee adaptation strengthen employee enthusiasm and emotional attachment toward work. These findings support Job Demands–Resources Theory, which explains that leadership support functions as an important organizational resource increasing employee motivation and engagement (Bakker & Demerouti, 2017). Employees belonging to younger generations tend to expect adaptive communication systems, rapid coordination, and technological flexibility from organizational leaders. Supportive digital leadership encourages employees to feel psychologically supported and more actively involved in work activities.

The findings also strengthen previous studies conducted by Cortellazzo et al. (2019), Roman et al. (2019), Sawy et al. (2021), and Zeike et al. (2019) which highlighted the importance of digital leadership in modern organizational systems. However, this study extends previous findings by specifically focusing on Generation Z employees working in educational institutions, MSMEs, and local service sectors. Existing studies predominantly examined large organizations and multinational companies, while younger employees in smaller organizations remain underexplored. This study therefore contributes to the growing literature regarding leadership adaptation in emerging digital work systems.

Digital work environment was also found to positively affect work engagement. Employees working in collaborative and flexible digital systems demonstrated stronger work involvement and psychological comfort. Adequate technological infrastructure, communication accessibility, and flexible work arrangements reduced work barriers and strengthened employee enthusiasm. Employees who experience smooth communication systems and accessible digital support tend to feel more comfortable and emotionally connected to organizational activities.

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These findings support the arguments of Job Demands–Resources Theory, which explains that organizational resources strengthen employee motivation and reduce work pressure (Bakker & Demerouti, 2024). The findings are also consistent with previous studies conducted by Molino et al. (2020), Raghuram et al. (2019), Vayre et al. (2022), and L. Wang et al. (2022), which emphasized the importance of supportive digital systems in improving employee engagement. Novelty emerges because this study simultaneously integrates digital work environment and digital leadership in explaining engagement among Generation Z employees, whereas previous studies generally discussed these variables separately.

Work engagement was found to positively influence job satisfaction. Employees demonstrating stronger enthusiasm, dedication, and emotional attachment toward work were more likely to experience positive work experiences and stronger satisfaction. Engaged employees tend to perceive their work as meaningful and psychologically rewarding. Positive emotional involvement encourages employees to maintain stronger commitment and satisfaction toward organizations.

The findings support previous studies conducted by Caesens et al. (2014), Karatepe et al. (2020), Orgambidez & Almeida (2020) and Saks (2019), which emphasized the important role of engagement in improving employee satisfaction. The present study further contributes by demonstrating that work engagement functions as a critical psychological mechanism among Generation Z employees working in digitalized organizational systems. Younger employees not only expect flexibility and technological support but also require meaningful and engaging work experiences to maintain satisfaction.

Digital leadership and digital work environment were also found to directly affect job satisfaction. Employees perceiving adaptive leadership and supportive digital systems experienced greater comfort, flexibility, and organizational support. Positive organizational resources strengthened employee emotional conditions and improved satisfaction levels. Employees who feel supported through technology-based communication systems and flexible work environments tend to develop more positive attitudes toward organizations.

These findings reinforce Transformational Leadership Theory and Job Demands–Resources Theory by demonstrating that supportive leadership and organizational resources strengthen positive employee outcomes. The findings are consistent with studies conducted by Bennett et al. (2021), Cortellazzo et al. (2019) and Sawy et al. (2021). Nevertheless, this study contributes additional empirical evidence regarding how

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digital organizational resources influence younger employees in local organizational settings. Educational institutions and MSMEs often experience technological adaptation challenges, making this study relevant for organizational sustainability discussions in developing countries.

The mediation analysis demonstrated that work engagement significantly mediates the relationships between digital leadership, digital work environment, and job satisfaction. These findings indicate that organizational digital resources strengthen employee satisfaction through psychological attachment and work enthusiasm. Employees are more likely to experience satisfaction when adaptive leadership and supportive digital environments successfully create stronger emotional engagement.

The mediation findings provide important theoretical contributions because previous studies generally examined direct relationships among leadership, work systems, and satisfaction without emphasizing the psychological mechanisms underlying these relationships. This study therefore extends Job Demands–Resources Theory by explaining that work engagement serves as a crucial mechanism linking digital organizational resources and employee satisfaction among Generation Z employees. The findings also emphasize that younger employees require not only technological support but also meaningful psychological involvement to maintain positive work experiences.

CONCLUSION

Digital leadership and digital work environment play important roles in improving work engagement and job satisfaction among Generation Z employees. Adaptive leaders capable of utilizing technology effectively and maintaining communication quality encourage employees to feel more motivated, emotionally connected, and psychologically comfortable in their work activities. Supportive digital work environments characterized by flexible communication systems, technological accessibility, and collaborative digital culture also strengthen employee engagement and positive work experiences.

The findings demonstrate that work engagement functions as an important mediating mechanism linking organizational digital resources and employee satisfaction. Employees experiencing stronger enthusiasm, dedication, and emotional attachment toward work tend to demonstrate higher satisfaction levels. These findings strengthen Job Demands–Resources Theory by confirming that digital leadership and digital work environment function as important organizational resources influencing employee psychological outcomes.

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This study contributes theoretically by integrating digital leadership, digital work environment, work engagement, and job satisfaction in explaining employee experiences among Generation Z workers. Empirical contribution also emerges because the study specifically focuses on educational institutions, MSMEs, and local service sectors that remain relatively underexplored in digital leadership literature. Practical contribution highlights the importance of developing adaptive leadership systems, strengthening technological infrastructure, improving communication quality, and creating collaborative digital work environments to maintain employee satisfaction among younger generations.

Several limitations should be acknowledged. The study only focuses on Generation Z employees in selected sectors and uses a cross-sectional design, limiting broader generalization and long-term behavioral analysis. Future studies are encouraged to expand research sectors, increase sample diversity, and include additional variables such as digital stress, organizational culture, psychological well-being, or work-life balance to strengthen understanding regarding employee behavior in digital work systems.

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