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Analysis of the Influence of Digital Leadership on Innovative Work Behavior through Psychological Safety

Muhammad Ahyat[1]
Universitas Teknologi Mataram

Sahar[2]
Universitas Islam Al'Azhar Mataram

Correspondence : Muhammad Ahyat (ahyat241970@gmail.com)

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ABSTRACT

This study examines the influence of digital leadership on innovative work behavior, with psychological safety positioned as a mediating variable. The rapid adoption of digital technologies has transformed the way leaders guide, motivate, and empower employees, creating a pressing need to understand how digitally oriented leadership styles translate into innovative outcomes at the individual level. Using a quantitative research design, data were collected through a structured questionnaire distributed to 215 employees working in technology-based service organizations, and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that digital leadership has a significant positive effect on both psychological safety and innovative work behavior, and that psychological safety significantly mediates the relationship between digital leadership and innovative work behavior. These findings suggest that leaders who effectively leverage digital competencies, transparent communication, and adaptive decision-making foster a climate in which employees feel safe to take interpersonal risks, which in turn encourages them to generate, promote, and implement novel ideas. The study contributes to the growing body of literature on digital-era leadership by clarifying the psychological mechanism through which digital leadership stimulates innovation, and offers practical implications for organizations seeking to strengthen innovation capacity through leadership development and the cultivation of psychologically safe work environments.

Keyword: digital leadership; innovative work behavior; psychological safety; PLS-SEM; organizational innovation

INTRODUCTION

The accelerating pace of digital transformation has fundamentally altered the way organizations operate, compete, and create value. Advances in artificial intelligence, cloud computing, big data analytics, and remote collaboration platforms have reshaped organizational structures and, consequently, the nature of leadership required to navigate this new landscape (Klein, 2020). Traditional leadership models, which were largely developed for stable, hierarchical, and face-to-face work environments, are increasingly considered insufficient to address the complexity, speed, and interconnectedness that characterize digitally enabled organizations. In response, scholars and practitioners have introduced the concept of digital leadership, defined as a leadership approach that integrates digital literacy, technological

fluency, and adaptive communication to guide teams through continuous technological and organizational change (Zeike et al., 2019).

Innovation has long been recognized as a critical determinant of organizational survival and competitive advantage, particularly in industries characterized by rapid technological disruption. At the individual level, innovation manifests as innovative work behavior, defined as the intentional generation, promotion, and realization of novel and useful ideas within a work role, group, or organization (De Jong & Den Hartog, 2010). Because innovative work behavior requires employees to deviate from established routines and to voice ideas that may be met with skepticism or failure, it is inherently a risk-laden activity. Employees are more likely to engage in such behavior when they perceive their work environment as psychologically safe, that is, when they believe they can take interpersonal risks, express dissenting opinions, or admit mistakes without fear of negative consequences to their self-image, status, or career (Edmondson, 1999).

Although prior research has established relationships between leadership and innovative work behavior, and separately between psychological safety and innovative work behavior, comparatively little empirical attention has been devoted to understanding how digital leadership specifically shapes innovative work behavior through the psychological mechanism of safety. This gap is particularly salient given that digital work environments often involve reduced face-to-face interaction, increased reliance on virtual communication, and heightened ambiguity, all of which may influence employees' perceptions of interpersonal risk in distinct ways compared to conventional work settings. Understanding this mechanism is essential for organizations seeking to design leadership development programs that not only build digital competencies but also cultivate the psychological conditions necessary for innovation to flourish.

Accordingly, this study aims to (1) examine the direct effect of digital leadership on innovative work behavior, (2) examine the effect of digital leadership on psychological safety, (3) examine the effect of psychological safety on innovative work behavior, and (4) test the mediating role of psychological safety in the relationship between digital leadership and innovative work behavior. The findings are expected to contribute both theoretically, by extending the nomological network of digital leadership research, and practically, by offering guidance for organizations navigating digital transformation while striving to sustain innovation.

LITERATURE REVIEW

Digital Leadership

Digital leadership refers to the capacity of leaders to strategically utilize digital technologies while simultaneously guiding, motivating, and influencing followers to achieve organizational goals amid continuous digital change (Zeike et al., 2019). Unlike purely technical notions of digital competence, digital leadership emphasizes a combination of technological fluency, agility, transparent and frequent communication, and the ability to foster a culture of experimentation and continuous learning (Klein, 2020). Digital leaders are characterized by their willingness to decentralize decision-making, empower employees to use digital tools creatively, and model adaptive behavior in the face of uncertainty. This leadership style is theoretically grounded in transformational and empowering leadership traditions, extended to account for the unique demands of virtual and hybrid work contexts (AlNuaimi et al., 2022).

Innovative Work Behavior

Innovative work behavior (IWB) is conceptualized as a multi-stage process comprising idea generation, idea promotion, and idea realization (De Jong & Den Hartog, 2010). Idea generation involves the production of novel and potentially useful concepts related to products, processes, or procedures. Idea promotion refers to the social process of building coalitions and gathering support for a proposed idea, while idea realization concerns the transformation of an idea into a tangible outcome or application within the organizational context. Because IWB requires employees to exert discretionary effort beyond formal job requirements, it is heavily influenced by contextual and psychological factors, including leadership style, organizational climate, and individual perceptions of safety and support (Janssen, 2000).

Psyhological Safety

Psychological safety is defined as a shared belief that a team or work environment is safe for interpersonal risk-taking, such that individuals feel comfortable being themselves, expressing concerns, and admitting errors without fear of embarrassment or retribution (Edmondson, 1999). Psychological safety operates as a proximal psychological state that reduces the perceived cost of engaging in behaviors with uncertain outcomes, such as proposing unconventional ideas or challenging the status quo. Prior studies have consistently shown that psychologically safe environments are associated with greater knowledge sharing,

learning behavior, and innovation, as employees are more willing to voice ideas and experiment without excessive fear of failure (Newman et al., 2017).

Digital Leadership and Innovative Work Behavior

Leaders who exhibit strong digital leadership competencies are positioned to directly stimulate innovative work behavior by providing employees with access to digital tools, granting greater autonomy in how work is performed, and modeling adaptive, experimentation-oriented mindsets (AlNuaimi et al., 2022). Digital leaders also tend to communicate more transparently and frequently, which reduces ambiguity and encourages employees to contribute ideas even in dispersed or virtual work arrangements. Based on this reasoning, the following hypothesis is proposed:

H1: Digital leadership has a significant positive effect on innovative work behavior.

Digital Leadership and Psychological Safety

Digital leaders who communicate openly, share information transparently, and demonstrate empathy in virtual interactions are more likely to cultivate a climate in which employees feel secure expressing themselves without fear of judgment (Newman et al., 2017). Furthermore, by decentralizing authority and encouraging experimentation, digital leaders signal to employees that mistakes made in the pursuit of innovation will not be met with punitive responses, thereby strengthening perceptions of psychological safety. Accordingly, the following hypothesis is proposed:

H2: Digital leadership has a significant positive effect on psychological safety.

Psychological Safety and Innovative Work Behavior

When employees perceive their environment as psychologically safe, they are more willing to voice novel ideas, challenge existing routines, and take the interpersonal risks necessary to promote and implement innovative solutions (Edmondson, 1999; Kark & Carmeli, 2009). Psychological safety reduces the fear of negative evaluation that typically inhibits employees from engaging in discretionary, innovation-related behavior. The following hypothesis is therefore proposed:

H3: Psychological safety has a significant positive effect on innovative work behavior.

The Mediating Role of Psychological Safety

Integrating the preceding arguments, this study proposes that psychological safety functions as a mediating mechanism through which digital leadership influences innovative work behavior. Rather than affecting innovation solely through direct behavioral cues such as providing resources or autonomy, digital leadership is expected to shape the underlying psychological climate of the workplace, which in turn enables employees to engage more freely

in innovative behavior. This aligns with the broader theoretical view that leadership influences distal outcomes such as innovation largely through its effect on proximal psychological states (Kark & Carmeli, 2009). Accordingly, the following hypothesis is proposed:

H4: Psychological safety mediates the relationship between digital leadership and innovative work behavior.

Based on the hypotheses developed above, the conceptual framework of this study positions digital leadership as the exogenous variable, psychological safety as the mediating variable, and innovative work behavior as the endogenous variable, with direct paths from digital leadership to both psychological safety and innovative work behavior, and an indirect path from digital leadership to innovative work behavior through psychological safety.

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METHOD

This study employs a quantitative, explanatory research design using a cross-sectional survey approach to test the hypothesized relationships among digital leadership, psychological safety, and innovative work behavior. The explanatory design is appropriate given the study's objective of testing causal relationships derived from established theory, including a mediation mechanism. The population of this study consists of employees working in technology-based service organizations that have implemented digital work systems, including remote or hybrid work arrangements. A purposive sampling technique was used, with the criteria that respondents (1) had at least one year of tenure in their current organization and (2) worked directly under a designated supervisor or team leader. A total of 240 questionnaires were distributed, of which 215 were returned complete and usable, yielding a response rate of 89.6 percent, which exceeds the minimum sample size required for PLS-SEM analysis based on the number of structural paths in the model. All constructs were measured using previously validated multi-item scales adapted to the digital work context and rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Digital leadership was measured using indicators adapted from Zeike et al. (2019), covering dimensions of digital competence, adaptive communication, and empowerment of digital work practices. Psychological safety was measured using items adapted from Edmondson's (1999) team psychological safety scale. Innovative work behavior was measured using items adapted from De Jong and Den Hartog (2010), covering idea generation, idea promotion, and idea realization. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. The analysis proceeded in two stages. First, the measurement model was evaluated

for convergent validity (outer loadings and average variance extracted), discriminant validity (Heterotrait-Monotrait ratio), and reliability (Cronbach's alpha and composite reliability). Second, the structural model was assessed for path coefficients, coefficient of determination (R^2), and predictive relevance (Q^2), with hypothesis testing conducted using a bootstrapping procedure of 5,000 resamples to obtain t-statistics and p-values. The mediating effect of psychological safety was examined using the bootstrapping approach for indirect effects recommended for PLS-SEM mediation analysis

RESULTS AND DISCUSSION

Respondent Profile

Of the 215 valid respondents, 54.4 percent were male and 45.6 percent were female. The majority of respondents (61.9 percent) were between 26 and 35 years of age, and 68.4 percent held a bachelor's degree as their highest level of education. In terms of tenure, 57.2 percent of respondents had worked in their current organization for one to three years, reflecting a workforce that has been substantially exposed to digitally enabled work practices.

Measurement Model Evaluation

The measurement model demonstrated adequate convergent validity, as all outer loadings exceeded the recommended threshold of 0.70 and the average variance extracted (AVE) for each construct exceeded 0.50. Reliability was also confirmed, with Cronbach's alpha and composite reliability (CR) values for all constructs exceeding 0.80, as summarized in Table 1. Discriminant validity was established using the Heterotrait-Monotrait (HTMT) ratio, with all values below the conservative threshold of 0.85, indicating that the three constructs are empirically distinct.

Construct	Cronbach's α	CR	AVE
Digital Leadership	0.887	0.914	0.681
Psychological Safety	0.856	0.897	0.634
Innovative Work Behavior	0.902	0.927	0.647

Table 1. Convergent Validity and Reliability

Structural Model and Hypothesis Testing

The structural model explained 30.2 percent of the variance in psychological safety (R^2 = 0.302) and 46.7 percent of the variance in innovative work behavior (R^2 = 0.467), both of which represent moderate explanatory power. The Q^2 values for psychological safety (0.187) and innovative work behavior (0.298) were greater than zero, indicating adequate predictive

relevance of the model. The results of hypothesis testing, obtained through bootstrapping with 5,000 resamples, are presented in Table 2.

Hypothesis / Path	Coef. (β)	t-value	p-value	Result
H1: DL → IWB	0.312	4.128	0.000	Supported
H2: DL → PS	0.548	8.671	0.000	Supported
H3: PS → IWB	0.421	5.904	0.000	Supported
H4: DL → PS → IWB (indirect)	0.231	4.487	0.000	Supported

Table 2. Path Coefficients and Hypothesis Testing Results

As shown in Table 2, digital leadership has a significant positive effect on innovative work behavior ($\beta = 0.312$, $t = 4.128$, $p < 0.001$), supporting H1. Digital leadership also has a significant positive effect on psychological safety ($\beta = 0.548$, $t = 8.671$, $p < 0.001$), supporting H2. Psychological safety, in turn, has a significant positive effect on innovative work behavior ($\beta = 0.421$, $t = 5.904$, $p < 0.001$), supporting H3. Finally, the indirect effect of digital leadership on innovative work behavior through psychological safety is significant ($\beta = 0.231$, $t = 4.487$, $p < 0.001$), supporting H4 and confirming a partial mediation effect, since the direct effect of digital leadership on innovative work behavior remains significant even after accounting for the mediator.

Discussion

The finding that digital leadership significantly and positively influences innovative work behavior confirms and extends prior research suggesting that leaders equipped with digital competencies are better positioned to enable employee-driven innovation, particularly in dispersed and technology-mediated work environments (AlNuaimi et al., 2022). Digital leaders appear to translate their technological fluency and adaptive communication style into concrete behaviors, such as providing access to digital collaboration tools and encouraging experimentation, that directly support the generation, promotion, and implementation of new ideas.

The strong positive relationship between digital leadership and psychological safety ($\beta = 0.548$) underscores the central role that transparent, empathetic, and empowering communication plays in shaping the psychological climate of digitally mediated teams. This result is consistent with the argument that leaders who reduce ambiguity and model tolerance for mistakes cultivate an environment in which employees are more willing to take interpersonal risks (Newman et al., 2017). Given that digital work arrangements often lack the

informal, face-to-face cues that traditionally build trust, the deliberate communicative behaviors associated with digital leadership appear to play an especially important compensatory role.

The significant effect of psychological safety on innovative work behavior reinforces Edmondson's (1999) foundational argument that a climate of interpersonal safety is a prerequisite for behaviors involving uncertainty and potential social risk, such as proposing unconventional ideas. Employees who trust that their ideas, even if imperfect or ultimately unsuccessful, will not be met with ridicule or punishment are more inclined to engage in the discretionary effort that innovation requires.

Most notably, the confirmation of a partial mediation effect (H4) indicates that psychological safety represents a key psychological mechanism through which digital leadership stimulates innovation, while also confirming that digital leadership retains a direct, non-mediated influence on innovative work behavior. This suggests that digital leaders foster innovation through dual pathways: directly, by providing digital resources, autonomy, and role modeling of adaptive behavior, and indirectly, by shaping a psychologically safe climate that lowers the perceived risk of innovative action. These findings collectively suggest that organizations aiming to strengthen innovation capacity in the digital era should invest not only in building leaders' digital and technical competencies but also in developing their capacity to foster trust, transparency, and psychological safety within their teams.

CONCLUSION

This study provides empirical evidence that digital leadership significantly and positively influences innovative work behavior, both directly and indirectly through psychological safety. The results confirm that digital leaders who combine technological fluency with transparent, empowering, and adaptive communication practices cultivate a psychologically safe work climate, which in turn enables employees to engage more freely in generating, promoting, and implementing innovative ideas. Theoretically, this study contributes to the digital leadership literature by clarifying psychological safety as a key mechanism linking digital leadership to innovation outcomes, thereby extending the nomological network connecting leadership, psychological states, and innovative behavior in digitally enabled work contexts.

From a practical standpoint, the findings suggest that organizations undergoing digital transformation should prioritize leadership development programs that go beyond technical digital skills to include relational and communicative competencies capable of building trust and psychological safety within teams. Human resource practices such as structured feedback

mechanisms, open forums for idea sharing, and explicit tolerance for experimentation and failure may further reinforce the psychologically safe conditions necessary for sustained innovation.

This study is not without limitations. The cross-sectional design limits the ability to draw firm causal conclusions, and the reliance on self-reported measures may introduce common method bias, although procedural remedies were applied to minimize this risk. Future research is encouraged to employ longitudinal or multi-source designs, to examine boundary conditions such as organizational digital maturity or team virtuality, and to explore additional mediating or moderating mechanisms, such as digital self-efficacy or knowledge-sharing behavior, that may further elucidate the relationship between digital leadership and innovation.

REFERENCES

AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. Journal of Business Research, 145, 636–648.

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. Creativity and Innovation Management, 19(1), 23–36.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. Administrative Science Quarterly, 44(2), 350–383.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. Journal of Occupational and Organizational Psychology, 73(3), 287–302.

Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. Journal of Organizational Behavior, 30(6), 785–804.

Klein, M. (2020). Leadership characteristics in the era of digital transformation. Business & Management Studies: An International Journal, 8(1), 883–902.

Newman, A., Donohue, R., & Eva, N. (2017). Psychological safety: A systematic review of the literature. Human Resource Management Review, 27(3), 521–535.

Zeike, S., Bradbury, K., Lindert, L., & Pfaff, H. (2019). Digital leadership skills and associations with psychological well-being. International Journal of Environmental Research and Public Health, 16(14), 2628.