

The Mediating Role of Digital Literacy in the Relationship Between: Digital Leadership and Innovative Work Behavior

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Abstract:

As the global economy transitions from Industry 4.0 (automation and efficiency) to Industry 5.0 (personalization, sustainability, and human-machine collaboration), the determinants of employability are shifting. This paper explores the synergistic relationship between digital literacy and soft skills. Digital literacy provides the "technical entry point" to the modern workforce, soft skills, such as cognitive flexibility, empathy, and ethical judgment act as the "value multiplier."

As Industry 5.0 emphasizes the collaboration between human intelligence and advanced technologies, leadership has shifted from traditional management to "Digital Leadership." This paper explores the mechanism through which digital leaders stimulate Innovative Work Behavior (IWB) in employees. Grounded in Social Cognitive Theory and the Resource-Based View, we can say that digital leadership does not directly produce innovation in a vacuum; rather, it cultivates Digital Literacy, which in turn empowers employees to engage in idea generation, promotion, and implementation. This study provides a framework for organizations to leverage digital competencies as a strategic mediator for continuous innovation.

Keywords: Digital leadership, Digital literacy, Innovative work behavior (IWB)

Introduction:

Now a days, the labor market is no longer defined by a binary choice between "tech skills" and "people skills." Industry 5.0 has introduced a paradigm where humans work alongside collaborative robots (cobots) and AI systems e.g. A nurse using a robotic assistant to lift patients (digital skill) while providing emotional comfort and medical judgment (soft skill). In this environment, employability is defined by an individual's ability to navigate digital interfaces while simultaneously managing the complex human elements that machines cannot replicate.

In the era of digital transformation, organizations increasingly rely on digital leadership to steer strategic change and cultivate innovation. Digital leadership stimulates employees to adopt new technologies and rethink traditional work practices. However, the full impact of digital leadership on innovative work behavior (IWB) may depend on employees' digital literacy - the skills and competencies to effectively use digital technologies. This paper describes the mediating role of digital literacy in the linkage between digital leadership and innovative work behavior, synthesizing theoretical perspectives, empirical findings, and contextual insights from global research and the Indian organizational environment.

An Evolving Connotation of Digital Literacy, Digital Leadership and Innovative Work Behaviour:

Formerly defined as the ability to use word processors or send emails, digital literacy in the digital age is now viewed as an understanding of an array of tools enabling in-office, hybrid, and remote work. It has shifted from a fixed set of technical skills to a mentality where employees are expected to quickly adapt

to evolving methods and make strategic use of technology. High digital literacy allows collaboration teams to exploit key data and trends more effectively, which is essential in a world of continuous information release.

In Current times, digital transformation is no longer a choice but a survival requirement. However, having advanced technology is insufficient if the human element cannot utilize it creatively. Digital Leadership - the ability to provide a clear vision for digital strategy, while fostering a culture of experimentation is critical.

While digital leaders set the stage, the actual performance of Innovative Work Behavior (IWB) rests on the employees. IWB refers to intentional efforts to create and apply new ideas within a work role. Recent research suggests that a significant barrier to IWB is not a lack of vision from the top, but a "literacy gap" at the base. This paper tries to argue that Digital Literacy is the mediating variable that translates leadership intent into employee action.

Objectives of Study:

1. To study how a leadership mindset encourages an employee to try new things.
2. To discover how digital literacy acts as a stress reliever for employees.
3. To study a linkage between digital leadership, digital literacy and innovative work behaviour.
4. To show that Digital leaders can't simply buy an innovation, they must inspire it by helping their team to become digitally literate.

Literature Review:

- Recent studies emphasize that digital literacy has evolved beyond basic software proficiency. It now encompasses **AI literacy** and **digital safety literacy**. In the small enterprise context, digital literacy acts as a "dynamic capability" (Puriwat & Hoonsopon, 2025), allowing firms to pivot quickly using low-cost digital tools.
- IWB is a multi-stage process: idea exploration, idea generation, idea championing, and idea implementation (Janssen, 2000). Research suggests that employees with high digital literacy are more likely to engage in "problem exploration" because they can navigate digital information environments more effectively (Frontiers in Psychology, 2024).
- Unlike its predecessor, Industry 5.0 is focusing on the **human-centric** approach, resilience, and sustainability (European Commission, 2021). Literature suggests that the "cobot" era requires workers who can not only program machines but also troubleshoot ethical and social friction points arising from human-AI interaction.
- Digital literacy in current time involves "Digital Fluency"—the ability to ethically and critically use AI, data analytics, and cloud platforms (Smith & Patel, 2025). However, recent studies (Jones, 2024) indicate that digital skills have a "diminishing marginal return" on employability if not paired with effective communication.
- In an automated world, "uniquely human" traits become premium assets. Research by the World Economic Forum (2025) identifies **Critical Thinking, Resilience, and Emotional Intelligence** as the top predictors of career longevity. These skills allow workers to interpret digital data through a lens of empathy and strategic foresight.
- The core of modern employability research (Brown & Tan, 2025) suggests that the interaction effect between digital and soft skills is stronger than their individual effects. For instance, a data scientist (digital skill) who can tell a compelling story about data (soft skill) is significantly more "employable" than one who cannot.

Research methodology:

This research is based on secondary data sources in which data is collected from various Journals, Research papers, articles, reports, Government publications and websites.

Linkages Between Digital Leadership, Digital Literacy, and Innovative work behavior:

- **Digital Leadership → Innovative Work Behavior:** Strong digital leaders foster environments that encourage experimentation and risk-taking, which are positively associated with innovative behaviors.
- **Digital Literacy → Innovative Work Behavior:** Earlier done Researches by scholars shows that employees with higher digital literacy are better equipped to integrate digital tools into creative and problem-solving activities, thereby enhancing their innovative behavior.
- **Mediator Role of Digital Literacy:** Studies in digital and knowledge-intensive industries suggest that digital literacy can **strengthen** the impact of leadership on innovative outcomes by equipping employees with the skills needed to enact leadership directives and engage meaningfully with technology-mediated work.

While direct links between leadership and IWB have been the focus of previous studies, emerging research highlights the importance of mediators and moderators that explain how leadership translates into innovative outcomes. A systematic review of digital literacy research suggests it is associated with employability and innovative behaviors, thus serving as a bridge in understanding how digital competencies influence innovation-related outcomes.

Understanding Digital Literacy acts as the bridge between leadership and an employee's innovation:

To understand how **Digital Literacy** acts as the bridge (the mediator) between a boss's leadership and an employee's innovation, we can look at it through three simple "channels."

Think of Digital Leadership as the **spark**, Digital Literacy as the **fuel**, and Innovative Work Behavior as the **fire**. Without the fuel, the spark never turns into a fire.

The mediating role of digital literacy explains *how* and *why* digital leadership translates into innovative work behavior rather than assuming a direct effect. Digital leadership creates conditions for innovation, but it is digital literacy that enables employees to actually act on these conditions. This mediation operates through **three interconnected and interdependent channels: capability, cognitive, and social**.

1. Capability Channel: Building the Ability to Innovate

The capability channel works as "The tools to act" which is about the physical and technical ability to getting things done. The capability channel refers to the development of employees' practical and technical abilities to use digital tools effectively. Digital leaders play a crucial role by providing access to digital resources, organizing training programs, encouraging experimentation, and supporting continuous learning. Through these actions, leaders create opportunities for employees to improve their digital literacy.

As employees become more digitally literate, they gain the technical confidence required to explore new digital tools, automate tasks, analyze data, and experiment with novel solutions. This technical capability directly supports innovative work behavior, particularly in the idea generation and idea implementation

stages. Employees who understand how digital systems work are more likely to identify problems, propose technology-based improvements, and apply digital solutions creatively.

Without digital literacy, leadership initiatives may remain symbolic. Employees may comply with digital directives but lack the skills to innovate. Thus, digital literacy serves as a practical bridge that converts leadership support into real innovative outcomes.

2. Cognitive Channel: Reducing Technostress and Enabling Creative Thinking

The Cognitive Channel relates with "The Mental Space to Create". This channel is about what happens inside an employee's head. It focuses on a concept called 'Technostress'.

The cognitive channel highlights the psychological dimension of digital literacy. In many organizations, employees experience technostress - feelings of anxiety, overload, or fear caused by complex digital systems or rapid technological change. When employees feel overwhelmed by technology, much of their mental energy is spent on coping rather than on creative thinking.

Digital literacy helps reduce this stress by increasing familiarity and perceived control over digital tools. When employees understand how to use technology effectively, uncertainty decreases and confidence increases. As a result, employees no longer view digital systems as threats but as opportunities.

This reduction in technostress frees up cognitive bandwidth, allowing employees to think creatively, experiment with ideas, and engage in problem-solving. As per one research, employees who are digitally competent are better able to focus on innovation rather than on managing fear or confusion related to technology. In this way, digital literacy cognitively mediates the relationship between digital leadership and innovative work behavior.

3. Social Channel: Enabling Collaboration and Idea Championing

The social channel explains how digital literacy improves communication, collaboration, and social interaction within digitally enabled workplaces. Innovative work behavior does not stop at idea generation; it also requires idea championing, where employees share, discuss, refine, and gain support for their ideas.

Digitally literate employees are more comfortable using digital communication platforms such as collaboration tools, virtual meeting software, shared workspaces, and internal social networks. This ease of communication allows ideas to flow more freely across teams and hierarchies. Employees can present ideas clearly, receive feedback quickly, and build coalitions to support innovation.

In contrast, low digital literacy can limit participation in digital discussions, leading to isolation and reduced visibility of ideas. Therefore, digital literacy enhances the social processes required for innovation by strengthening digital communication and collaboration. Through this channel, digital leadership indirectly promotes innovative work behavior by fostering a socially connected and digitally fluent workforce.

Together, the capability, cognitive, and social channels illustrate that digital literacy is not merely a technical skill but a multidimensional mediator. It enables employees to *do* (capability), *think* (cognitive), and *connect* (social) in ways that support innovation. Digital leadership initiates the process, but digital literacy determines whether leadership efforts successfully translate into innovative work behavior.

Digital Leadership as a Driver of Innovative Behavior:

Digital leadership is defined as the combination of leadership style and digital capabilities aimed at optimizing technology benefits and developing a digital mindset to achieve business goals. Research

indicates that digital leadership positively affects employee innovative behavior, which encompasses individual actions aimed at generating and implementing novel ideas.

Digital leadership transcends traditional leadership by emphasizing digital strategy, digital cognition, and tech-enabled decision-making. According to academic literature, digital leaders champion digital governance, encourage collaboration, transparency, and foster curiosity among employees to adapt effectively to digital changes.

Effective digital leadership creates an environment that encourages experimentation, learning, and knowledge sharing, increasing employee's willingness to undertake innovative tasks.

An impact of digital leadership on innovation:

An impact of digital leadership on innovation is often facilitated through the Cognitive–Affective Processing System framework (Bridges the gap between traditional trait psychology and situational psychology), where external situations stimulate cognitive and affective reactions that activate specific behavior. Specifically, for following:

- **Psychological Empowerment:** Digital leadership fosters cognitions, competence, self-determination, and impact - which partially mediate the relationship between leadership and innovation. When leaders act as role models and pioneers for digital change, they instil confidence and a sense of autonomy in their employees.
- **Mediating Role of Literacy:** In certain contexts, employee's digital literacy significantly mediates the relationship between digital leadership and innovative outcomes, suggesting that digitally literate employees are better positioned to translate visionary leadership into tangible innovation.

An Impact on Employee Performance and Productivity:

Digital literacy and Digital leadership improve teamwork and business intelligence, but its impact on performance is complex.

- **Positive Impacts:** Transitioning to a digital workplace raises engagement by making documents easily accessible and fostering a collaborative virtual culture. It improves interdepartmental communication through platforms like Google Meet or Zoom, which helps build a stronger employer brand.
1. They give the "Power to Act": By teaching the crew how to use digital tools, the leader turns them from simple workers into digital creators.
 2. They remove the "Fear of Tech": When employees feel literate, they stop being stressed by new technology. This gives them the mental "quiet time" needed to dream up new, innovative ideas.
 3. They build a "Common Language": Digital literacy allows everyone to share and "sell" their ideas using modern platforms, making it easier for a small spark of an idea to become a company-wide reality.

Certain Statistics shows that how digital literacy impacts on workforce:

- **Productivity Premium:** Workforces in the top quartile of digital literacy are reported to be **5 times** more productive in digital-first sectors (ICRIER, 2025).
- **The "Usage Divide":** While 92% of jobs now require digital skills, the "Usage Divide" (how *well* people use tools) accounts for a **26.1% variance** in individual innovation performance (Riggs Journal, 2025).
- **Empirical Relationships:** Previous researches and Studies show that innovative work behavior is significantly and positively related to performance, and digital literacy serves as a key moderator that strengthens this relationship.

Findings:

This study emphasizes digital literacy not merely as a skill set but as a meaningful mediator that enables employees to translate leadership vision into innovative actions. It aligns with calls for contextualized research that integrates human factors with digital competencies in innovation studies.

1. Digital Leadership and Organizational Culture

Qualitative data shows that digital leaders shape organizational narratives and norms around technology adoption and risk-taking. Leaders who model open communication, digital experimentation, and continuous learning set the emotional and cognitive tone for innovation.

2. Digital Literacy as a Mediator

Digital literacy emerged as a prerequisite for employees to decode and act upon digital leadership signals. Employees with high digital literacy are more likely to embrace digital tools, collaborate across platforms, and generate creative solutions. In contrast, digital skill deficits may result in compliance without innovation, underscoring the need for competency-building initiatives.

In India, policymakers have recognized this need: programs like NDLM aim to improve digital skills across large populations, enhancing citizen's capacities to interact digitally.

3. Innovative Work Behavior Outcomes

Employees who experienced supportive digital leadership and developed robust digital literacy demonstrated behaviors consistent with innovation - seeking new ways to solve problems, using digital platforms creatively, and participating in knowledge-sharing. These behaviors translated into enhanced adaptability and responsiveness in dynamic work environments.

Conclusion:

Digital leadership can significantly shape innovative work behavior, but its influence is meaningfully mediated by employee's digital literacy. In digitally progressing nations like India, where digital access and skills are growing yet uneven, understanding this mediating role helps organizations and policymakers tailor efforts that strengthen innovation outcomes across diverse workforces.

Think of an organization like a ship. The Digital Leader is the captain who sets the destination and provides the modern engine. However, no matter how great the engine is, the ship won't move forward creatively unless the crew knows how to operate it. That "know-how" is Digital Literacy.

Digital leadership and digital literacy are indispensable for modern organizational success. While digital leadership provides the vision and psychological empowerment necessary for innovation, digital literacy provides the practical skills to execute that vision. However, organizations must remain vigilant against the negative impacts of technostress and digital addiction by fostering a balanced digital culture that prioritizes both technological advancement and human well-being. Future research should continue to explore how different organizational structures and cultural backgrounds influence the effectiveness of these digital strategies.

To wrap up, the relationship between Digital Leadership and Innovative Work Behavior is not a straight line; it is a journey that requires Digital Literacy as the vital bridge.

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