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The degree of innovative leadership practice and its relationship to the level of digital leadership among school principals

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ABSTRACT

The study examines the relationship between innovative leadership among public school principals and digital leadership from the perspective of teachers. A correlational descriptive approach was employed. Two questionnaires were developed: one on innovative leadership (22 items) and another on digital leadership (18 items). The sample consisted of 300 teachers purposefully selected from public schools in Ajloun Governorate, Jordan. The results showed that both innovative leadership and digital leadership levels as perceived by teachers were high. Additionally, a statistically significant and positive relationship was found between digital leadership (and its dimensions) and innovative leadership among school principals. The study highlights the importance of both innovative and digital leadership in fostering flexible work environments and driving sustainable change in education. Based on the findings, the study recommends developing innovative training programs for school principals to enhance their administrative and digital leadership capabilities. It also emphasizes the need for appropriate digital infrastructure in schools.

Contribution/Originality: This study specifically focuses on innovative leadership and digital leadership in Jordan, a topic that has not yet been thoroughly studied regarding the effects of digital leadership on school principals' digital entrepreneurship practices. This study adopts an innovative approach that combines rigorous quantitative techniques and a focused survey methodology to uncover innovative leadership and digital leadership practices within the growing education sector.

1. INTRODUCTION

Technology has become closely linked to education due to the twenty-first century's rapid changes and the external environment's rapid advancements, particularly the widespread acceptance of technology and its transformation. The role of technology in education is constantly evolving, marking a new era in how learning is delivered and experienced. In this context, innovation and change have become essential to help educational systems adapt and thrive. There is a growing need to explore how effectively school leaders utilize technology in innovative ways to improve educational outcomes across all levels. In this regard, the importance of school leadership is

particularly emphasized given its critical role in enhancing the organizational climate and fostering creativity among teachers.

The Internet of Things combines technological advancements that transform human behavior into digital humanities within a digital society. The world is becoming increasingly connected, and governments have prioritized the development of a digital economy that emphasizes innovation and creativity across all sectors. Countries have improved telecommunications infrastructure and encouraged the use of digital technology to generate added commercial value.

Institutional leaders in our modern era are required to change, innovate, and open the way for employees to participate in keeping pace with development and innovating methods that ensure the continuity of the institution. They should work to sponsor innovative ideas and follow up on their application. The success of the desired change processes reduces resistance to change in its various forms and ensures maximum use of available resources (Abu Ajwa, 2018). Innovative leadership primarily depends on the academic leader who must possess a forward-thinking mindset, persistence, and an appreciation for innovation in the workplace. The leader is expected to adopt new ideas, encourage creative thinking, and apply innovative strategies to enhance staff performance, manage crises effectively, and keep pace with ongoing educational developments (Shahrani, 2017).

Innovation plays a crucial role in enhancing decision-making related to employee behavior and performance. School leaders adopt innovative approaches to address the evolving needs of students in a rapidly changing world, preparing them for future challenges and careers that may not yet exist (Wagner, 2014). Educational leadership that integrates innovation as a core value fosters dynamic, high-quality education and strategic planning, enabling a shift from rigid bureaucratic systems to creative, productive communities. Innovative leadership strengthens internal evaluation processes and enhances leaders' ability to guide staff behavior and task completion effectively (Jabrini, 2016).

The labor market is undergoing fundamental transformations driven by rapid advancements in digital technologies, which in turn pose new challenges for educational systems. In this context, school leaders particularly principals serve as key drivers of digital transformation within educational institutions acting as pivotal agents of change. There is an increasing need to equip students with skills that extend beyond traditional curricula, enabling them to meet future academic and professional demands as emerging technologies introduce both opportunities and constraints (Friedman & Mandelbaum, 2012). Innovation has become a critical component of economic recovery, especially through leadership practices that strategically leverage automation and digital tools as a means for sustainable development thinking, enabling leaders to navigate the complexities of digital transformation while enhancing their engagement with various stakeholders (Domini, 2017). Digital transformation is a continuous and often disruptive process that reshapes societies, institutions, and markets. Although it presents unpredictable challenges, it also fosters opportunities for creativity and advancement when implemented within a structured and strategic framework particularly in educational environments (Schinninger, 2014). In this context, digital leadership is characterized by the capacity to articulate a clear vision, influence and inspire others, and drive sustainable change through effective use of information, the cultivation of meaningful relationships, and adaptability to the evolving demands of education (Prince, 2018; Tomei, 2016).

Furthermore, the educational leadership system is undergoing a dynamic process of renewal and modernization influenced by global intellectual developments and evolving scientific and pedagogical paradigms. This transformation necessitates the integration of emerging technologies and innovative educational tools aimed at enhancing the efficiency and effectiveness of the teaching and learning process. Such advancements align with the principles of innovative leadership in schools, universities, and other educational institutions (Jabrini, 2016).

Digital leadership indicators include leadership, fostering a culture of learning in the digital age, professional development, system improvement, and digital citizenship (Doğan, 2018). Educational leadership plays a vital role in

enhancing teacher involvement in curriculum development, which in turn emphasizes the need for innovative leadership from teachers to better support effective and objective classroom learning (Faris Berg & Derxwager, 2012).

Digital school administrators utilize technology to advance the educational goals of their institutions. These leaders actively implement and support innovative technological practices within the school setting initially through their own engagement, and subsequently by involving faculty, staff, and students. Essential resources to promote technology-based learning may include management systems, communication tools, and digital platforms. These tools and strategies are seamlessly integrated into the daily responsibilities of the digital leader, becoming part of routine educational leadership practices especially important in a time when technology plays a central role in teaching and learning.

Digital leaders play a key role in implementing innovative technological practices within schools. They begin by personally engaging with these tools, and then extend their efforts to include faculty, staff, and students. They utilize various resources such as management systems and communication platforms to support learning through technology. These practices are embedded in the daily responsibilities of digital leaders and have become an integral part of modern educational leadership particularly in an era where technology is essential to teaching and learning (Sakuray, 2017).

The process of management, teaching, and learning requires effective leaders who provide an environment that stimulates creativity and growth, motivates workers to innovate, create, and utilize technology and digitization to enhance performance, thereby increasing productivity. Researchers will explore the extent of innovative leadership practices and their relationship to the level of digital leadership among school principals in Ajloun Governorate.

1.1. Study Problem

Digital transformation has a significant positive impact on human resource management practices, improving organizational plans and enhancing processes within organizations. Moreover, in the twenty-first century, school leaders must adopt innovative approaches to effectively address students' evolving needs and prepare them for a rapidly changing future. In Jordan, the educational system faces significant challenges due to rapid technological advancements and the increasing importance of educational technology in enhancing learning across all school levels. These transformations demand that school principals assume a central role in integrating technology to advance their institutions' educational missions. Principals are required to exhibit innovative capabilities and digital competencies that enable them to address ongoing challenges and drive digitalization within their schools. This process involves fostering and facilitating innovative technological practices within the school environment, embedding them into daily leadership operations and pedagogical routines. The effectiveness of digital transformation is enhanced when driven by an innovative digital leader who works collaboratively with key school stakeholders especially teachers and students to ensure successful technology integration, increased satisfaction, and improved educational outcomes. Based on these dynamics, the current study aims to investigate the degree to which school principals in Ajloun Governorate demonstrate innovative leadership and how this relates to their practice of digital leadership. To the best of the researcher's knowledge, this may be the first study in the Jordanian context to examine the relationship between these two leadership variables. Relevant literature addressing innovative leadership includes the works of Al-Shrigeh and Waters (2012), Sakuray (2017), Majableh (2019), Al-Hajjaj (2019), Al-Banna (2020), and Dweik (2020). In contrast, research focusing on digital leadership includes Karakose, Polat, and Papadakis (2021), Al-Ajmi (2022), and Agostina, Camdi, Mladi, and Nourhadi (2020). Accordingly, feeling the problem of the subject of the study, the problem of the study crystallized in the need to conduct a field study to investigate the degree of innovative leadership practice and its relationship to the level of digital leadership among school principals in Ajloun Governorate. The study's challenge is to provide answers to the following questions:

1. What is the degree of innovative leadership practice among school principals in Ajloun Governorate of teachers?

2. What is the level of digital leadership among school principals in the Ajloun Governorate?
3. Is there a statistically significant relationship at the level of (≤ 0.05) between the average response of teachers to the degree of innovative leadership practice of school principals in Ajloun Governorate and digital leadership?

1.2. The Importance of the Study

The significance of this study emerges from both theoretical and practical perspectives, as outlined below:

- The findings of this study may provide school principals with valuable insights into the relationship between the degree of their innovative leadership practices and their digital leadership capabilities as perceived by teachers.
- The study may serve as a resource for researchers and scholars by offering empirical results that can inform future investigations into the extent to which faculty members across various colleges and universities demonstrate innovative leadership, its correlation with digital leadership, and the influence of additional emerging variables.
- The Ministry of Education may benefit from the study by utilizing its findings to develop innovative training programs aimed at enhancing school principals' administrative competencies and digital leadership skills.
- The study may support educational administrators and policymakers in evaluating school leaders based on their proficiency in innovative practices and digital leadership.
- It contributes to the enrichment of academic literature and university libraries, offering a scholarly resource for future research in the field.

1.3. Objectives of the Study

The study aims to

- Identify the degree of innovative leadership practice among school principals in Ajloun Governorate from teachers.
- Disclosing the extent to which school principals in Ajloun Governorate possess digital leadership from teachers.
- Showing the relationship between teachers' response averages and the degree of innovative leadership practice among school principals in Ajloun Governorate, with a focus on digital leadership.

1.4. Terminological and Procedural Definitions

- Innovative Leadership: "A set of ideas and practices presented by managers and employees that lead to the establishment of more effective management processes and methods in achieving the goals of companies, institutions, and government departments"(Dahshan, 2018).

The researcher defines it procedurally as, "the ability of school principals to produce creative, innovative, and motivational ideas that are unfamiliar to individuals working in the school by solving problems and working to renew new ideas and distinguish them under effective and conscious leadership. Innovative leadership will be measured through the response of the sample members to the tool prepared for this study." It is also procedurally defined as, "the set of scores obtained by the respondent on the innovative leadership scale used in the present study."

- Digital Leadership: "Strategic Use of School Digital Tools to Achieve Business Goals" (Brett, 2020).

The researcher defines it procedurally as, "the degree of digital leadership practice obtained by the researcher on the digital leadership scale, which includes the following dimensions: e-leadership skills, digital business environment management, and digital knowledge management."

1.5. Study Limits and Limitations

The study limitations are as follows:

1. Objective limits: The study was limited to the disclosure of the degree of innovative leadership practice and its relationship to the level of digital leadership among school principals in Ajloun Governorate.
2. Human limits: The study was limited to teachers in governmental schools in the Directorate of Education in Ajloun Governorate.
3. Spatial boundaries: Governmental schools in the Directorate of Education in Ajloun Governorate in Jordan.
4. Deadlines: During the first semester of 2023/2024.
5. The study is limited to the tools used and the validity and stability of these tools.

1.6. Literature Review

1.6.1. Innovative Leadership

1.6.1.1. The Concept of Innovative Leadership

Innovation is a word we constantly hear in today's society. Educational leaders who aspire to be more creative and teachers seek to educate students to become innovators. Innovation is defined as "a way of thinking that creates something new or better" (Couros, 2015). In addition to defining innovation, it draws on the growth mindset of Dweck (2006) and defines the mindset of the innovator as being "the belief that abilities, intelligence, and talent are developed to create new and better ideas." Couros (2015) believes that people should be free to fail and possess qualities such as flexibility and determination. Couros identifies eight characteristics of the innovator's mindset, including empathy, problem finders/solvers, risk-taking, networking, observers, creators, flexibility, and meditation (33Couros).

Kahn (2018) refers to innovation as three things: mentality, process, and outcome. Mentality suggests that it is inherent in individuals. Only when these individuals are in an environment that supports general culture will innovation thrive in them. As a process, it means that some steps must be followed in an organized manner to achieve the goal. Finally, it means that innovation is the result achieved. Ayad (2019) defines innovative leadership as "the methods that a leader can use and adopt to achieve the goals of the organization and address the problems and challenges facing him."

Gledon (2006) sees innovation leadership as a philosophy and technique that combines different leadership styles to influence employees to produce creative ideas, products, and services. The main role in the practice of innovation leadership is the innovation leader.

Jabrini (2016) defined innovative leadership as "everything that is new, modern, and not previously tried, and innovation comes from individual self-initiative that the individual demonstrates in positions in a managerial or leadership position or in an environment where he is active so that he works to try it and pass it on to others." Anisur Rahman and Sultana (2012) defined it as "the process of fostering innovation by developing an innovation-friendly culture and setting a strategic direction that symbolizes building trust between employees to innovate."

Researchers define innovative leadership as the set of ideas and practices presented by leaders to provide an interactive learning environment to achieve goals by building trust with employees, developing work methods, and keeping pace with changes.

1.6.2. Types of Innovation Leadership Techniques

Different technologies play an important role in driving innovation, as each is used at different stages of the innovation process or for different types of innovation (value-added versus exploratory). Frequently associated leadership techniques include transformational leadership (Chen, Lin, Lin, & McDonough III, 2012), transactional leadership, and unfamiliar driving. The type of leadership most associated with innovation is transformational leadership (Jansen, Vera, & Crossan, 2009).

1.6.3. Innovation and Innovative Leadership Skills

Wagner (2014) drew on his seven survival skills outlined in the Global Achievement Gap. His original seven survival skills are listed as follows: 1. Critical thinking and problem-solving. 2. Collaborating across networks and leading with impact. 3. Agility and adaptability. 4. Initiative and leadership. 5. Accessing and analyzing information. 6. Effective oral and written communication. 7. Curiosity and imagination.

Dyer, Gregerson, and Christensen (2011) refer to the five skills they identified that distinguish innovative from non-innovative individuals. These five skills include action and thinking: 1. Conjugation. 2. Interrogation. 3. Surveillance. 4. Experimentation. 5. Networks.

Ayad (2019) indicates that the leader must possess innovative skills that help him achieve the desired goals, and the advancement of the institution or organization he heads. He must keep pace with the development around him so that he and his organization and its employees always remain at the forefront. Additionally, he must train and encourage those around him to persevere in proposing innovation, new, and creative ideas constantly, so that an atmosphere of innovation and creativity prevails in the organization.

1.6.4. Characteristics and Traits of an Innovative Leader

Brown and Katz (2011) list the five characteristics of design thinkers as follows: 1. Empathy. 2. Integrative thinking. 3. Optimism. 4. Experimental. 5. Collaborators.

Ayad (2019) pointed out that if leadership is an activity, influence, collaboration, and a vital goal, then its characteristics can be summarized as follows:

- Leadership is an activity and movement because the leader deals with people who have dangerous, rational, and emotional situations. A successful leader is one who directs these abilities constructively, not destructively.

Leadership influences individuals and groups to move toward a common goal that the group seeks to achieve, and the influence usually occurs through discussion and persuasion, not through order and imposition.

Leadership is a vital goal, and it is the duty of the leader to motivate individuals to be active in reaching their goals.

Mumford, Scott, Jadis, and String (2002) noted that successful innovation leadership requires a leader with certain characteristics, including industry experience, creativity, the ability to implement transformational leadership behaviors, planning and logic, and social skills. Innovative leaders can be recruited and hired through professional networks and referrals or found instead through succession planning, which involves identifying innovative leaders who are already working within the organization (McEntire & Greene-Shortridge, 2011).

Different leadership styles and behaviors may be more appropriate at different stages of the innovation process. Research supports the idea that innovation leadership requires a leader in the idea generation process to use a more transformative leadership style. The core activities of innovation leadership are as follows: generating ideas, evaluating, and implementing the idea.

1.6.5. Innovative Leadership Qualities

Wagner and Compton (2015) concluded that successful innovators need basic qualities that form the basis for innovative practices.

- Curiosity: Usually asks good questions and wants to understand more deeply.
- Collaboration: which begins by listening and learning from others who have views and experiences that are very different from yours.
- Associative or integrative thinking.
- Bias towards work and experimentation.

Innovative leadership is also characterized by many qualities, as defined by psychologists, administrators, and modern management studies, as reported (Al-Sayrafi, 2005): * Openness to other opinions. A scientific mindset in dealing with problems.* Belief in the talents of others.

Al-Harbi (2007) believes that a successful leader must seek good ideas among employees and select from these ideas, which leads to improving and developing their work. These are characteristics of an educational leader, the most important of which is the ability to innovate. Sen and Eren (2012) suggest that innovative leaders possess common qualities, including knowledge, skills, values, talents, and leadership desires that play a key role in the success of their innovative leadership practices. The nature of the followers and internal and external factors also play important roles in their success.

1.6.6. Characteristics of an Innovative Pedagogical Leader

The educational leader who aims to practice innovation must possess certain characteristics as mentioned by Harim, as referenced in Ayad (2019).

- Sensitivity to problems: He must identify the problem before it occurs through the situations he faces in the organization, and solve it in new and innovative ways.
- Reorganization: The ability to easily reorganize and synthesize ideas according to a plan.
- Flexibility: The ability to shape according to the posture he is facing.
- Ability to analyze: Analyze situations carefully without rushing to make decisions.
- Evaluation: Knowing any problem and any curriculum from which to choose, considering the possibilities available and the skills that must be acquired.

1.6.7. Components of Innovative Leadership

Dweik (2020) noted that innovation has components, which are as follows:

- Fluency: Verbal fluency. Expressive fluency. Relational fluency. Intellectual fluency.
- Originality: Produce as many strange and unfamiliar ideas as possible that were previously unknown.
- Flexibility: The ability of an individual to produce multiple and different ideas, and to move from one category of ideas to another.

1.6.8. Innovation Leadership and Impact

The leader may have a direct or indirect impact on their employees depending on the type of leadership style adopted by the innovation leader. Direct impacts include: (Schmidt, 2010).

1. Provide creative input and propose ideas to employees.
2. Provide employees with clear and concrete goals.
3. Allocate organizational resources (spending and manpower) to implement ideas.

* Indirect effects: Indirect effects produce the same results without explicit guidance to employees. These types of effects include (Schmidt, 2010):

1. Create a supportive environment for creativity within the organization.
2. Work as a role model in creative thinking.
3. Give employees rewards and recognition for creative thinking.
4. Team formation (assembling teams with specific skill sets required for creative thinking or hiring employees with creative personalities without planning what they are working on).

1.6.9. Digital Driving or Leadership

1.6.9.1. The Concept of Leadership or Digital Leadership

Mwita and Jonathan (2022) described digital leadership as "exerting influence to adopt strategies for digital transformation processes." Others asserted that digital leadership is a combination of digital competence and a culture of digital competence. Bonfor (2016) defined digital leadership as "resource mobilization, leadership processes, and structural leadership whose role lies in building awareness and convincing community members to access new ICTs and resources that can help reach their goals."

The concept of digital leadership has been defined in various ways. According to IGI Global (2021), digital leadership refers to leadership that actively seeks innovations necessary to drive digital transformation. It entails a long-term strategic vision that utilizes existing resources to facilitate and implement anticipated changes, fostering a shared digital competence embedded within the organization's culture. This approach is grounded in forward-thinking principles that can be applied and further developed over time.

Similarly, Zubancic and Hernyuga (2016) describe digital leadership as "the integration of a set of methods and techniques that consolidate skills and knowledge, motivating organizational members to promote and share knowledge within a team or group, thereby deepening understanding or transferring knowledge from external sources into the organization."

Mahmoud (2022) defined digital leadership as "the ability of school leaders to exercise leadership roles using multiple digital technologies and tools such as mobile devices, communication applications, web applications, electronic platforms, artificial intelligence, and big data, and enable employees (administrators and teachers) to use them to bring about sustainable changes in the organizational culture of the school, mission, goals, and administrative processes."

Digital leadership in education has also been defined as "integrating digital technologies such as mobile devices, communication applications, and web applications into leadership practices to lead schools towards sustainable change in the use of technology" (Yusof, Yaakob, & Ibrahim, 2019).

From the above discussion, researchers define leadership as the ability of school principals to use open educational resources, modern technology, and digitization to enhance management, teaching, and the learning process to develop the educational process in schools.

1.6.9.2. The Importance of Digital Leadership and Its Goals

Al-Raqab (2022) and other researchers pointed to the importance of digital leadership (Kahn, 2018; Nawawi, Mohamed Nour, & Pseudonym, 2022).

- The ability to address students' scientific and cognitive needs and interests more effectively.
- Enhanced retention and recall of acquired knowledge, along with continuous updating of information, which contributes to maintaining a comprehensive digital database for the school.
- Improved overall performance, reduced error rates, and increased parental engagement in monitoring and supporting their children's educational progress.
- Greater efficiency through the saving of time, effort, and financial resources. Improve the quantity and quality of human resources and output. Enhance interaction among school communities.
- Improving the level of services provided by simplifying procedures.
- Facilitate communication between different educational and school departments as well as with other organizations.
- Ensure accuracy and objectivity in conducting various activities in the school.
- Restrict the use of paper.
- Increase communication through digital tools and social media, and share information and best practices between enterprise parties that enhance productivity and quality.

- Reduce time lag and improve information availability.
- Increased transparency and complexity.
- Remove personal hierarchies and barriers.
- Enable decision-making and enhance integrity.
- Enhancing human relationships and interactions through various means and tools of technology.

According to Kahn (2018), the concept of the "Fast Leader" embodies a dynamic integration of three key roles: the digital strategist, the digital innovator, and the digital engine. The digital strategist consistently stays well-informed of emerging trends and technologies, engaging in hands-on experimentation whenever possible, and identifying strategic applications that can facilitate transformative change. The digital innovator challenges the status quo and continuously propels the organization toward a forward-looking vision of success. Meanwhile, the digital engine plays a vital role in fostering organizational trust and enabling swift, coordinated action by collaborating with diverse internal and external stakeholders. Together, these roles form a comprehensive leadership model capable of steering organizations through the complexities of digital transformation. Al-Raqab (2022) pointed out that digital leadership is of great importance, but it has become an essential requirement rather than a luxury. The use of digital leadership by school principals achieves many goals that contribute to providing a positive organizational climate for employees and a digital school environment that enhances productivity and the quality of work. It also improves the learning process in line with the spirit of the times and strengthens the relationship between teachers and students, as well as teachers and parents.

1.6.9.3. Attributes and Qualities of Digital Leaders

Sakuray (2017) emphasizes that digital leaders must critically examine their own qualities, innovative capabilities, and proficiency in leveraging technology within educational settings. Particularly in contexts where only a portion of the school community are digital natives, making the leadership task increasingly complex. By analyzing the digital backgrounds of school leaders, including their training, personality traits, technological skills, and practical actions, it becomes possible to better understand how these individuals cultivate their leadership styles and guide their institutions. He identifies two key characteristics of effective digital leaders: a distinct leadership style and the purposeful use of technology to implement innovative digital principles. In this view, management functions as a strategic tool to achieve targeted goals, requiring leaders to devise novel solutions to overcome obstacles encountered in the pursuit of educational objectives. As global transformations reshape educational demands, there is a growing emphasis on developing core competencies that ensure student success. Wagner (2014) and others highlight multiple essential skills, including twenty-first century competencies (Dufour & Dufour, 2010), a growth mindset and innovative leadership (Sparks, 2013), perseverance and grit (Perkins Gough & Duckworth, 2013), as well as non-cognitive and interpersonal traits (Pellegrino & Hilton, 2013). These attributes are increasingly recognized as foundational for fostering resilient, adaptive learners in digitally enhanced learning environments.

1.6.9.4. Digital Driving Components

The organizational landscape of the twenty-first century is experiencing rapid transformation driven in large part by the evolving technological environment, which serves as both a catalyst and a challenge for effective management. Within this dynamic context, digital leadership has become a vital competency for educational leaders. It empowers them to navigate change and lead their institutions through the strategic and systematic integration of digital technologies and innovations, ultimately enhancing both operational efficiency and educational outcomes (Chamchoi, 2018). According to Sullivan (2017), the digital leadership necessary to drive an organization toward success consists of several key components, which are as follows:

1. **Digital Literacy**: Proficiency in using digital technologies effectively.
2. **Digital Vision**: The ability to create strategic plans that align with technological advancements.

3. **Public Engagement**: Inspiring others to adopt and embrace a forward-thinking digital mindset.
4. **Visionary Leadership**: Leading with a clear, compelling vision and offering strong and consistent support to team members.
5. **Vision Communication**: Effectively communicating the digital vision to employees and guiding its implementation.
6. **Technological Adaptability**: Adjusting and integrating new technological developments into daily work practices.
7. **Self-Awareness**: Anticipating events and changes that may impact oneself and others in the organization.
8. **Cultural and Collaborative Competence**: Understanding diverse perspectives, fostering communication, and promoting collaborative work through digital tools.

These elements together form the foundation of effective digital leadership in today's fast-evolving educational and organizational environments.

The International Association for Educational Technology (ISTE Bureau of the Basic Education Commission, 2019) and the Association for Vocational Education have outlined a set of international standards aimed at enhancing the integration of information technology within educational leadership. These standards, known as the National Educational Technology Standards for Administrators (NETS-A), encompass five core domains.

1. Visionary leadership
2. Fostering a culture of digital learning
3. Personalized approaches to professional practices
4. Strategic and ongoing improvement
5. Promoting responsible digital citizenship

Each of these domains outlines specific responsibilities and expectations for leaders in ICT within education (ISTE Bureau of the Basic Education Commission, 2019).

1.6.9.5. The Relationship between Innovative and Digital Leadership

Researchers such as Al-Ajmi (2022), Al-Banna (2020), Ayad (2019), and Bonfor (2016) emphasize that educational leaders in the digital age are a crucial variable in shaping modern educational systems. Consequently, these leaders must continually develop their knowledge, competencies, personal attributes, skills, and experiences in educational administration to ensure that institutions remain aligned with the dynamic transformations of the digital era. Essential capabilities include innovative thinking, technological leadership, and the capacity for innovation-driven leadership. Furthermore, effective educational leaders must be equipped to cultivate digital citizenship among students and possess a comprehensive understanding of the contemporary educational landscape. This includes adopting creative approaches to integrating technology in pedagogy and leveraging digital tools for efficient learning management. In this context, school administrators are encouraged to utilize digital platforms such as Facebook, Line, YouTube, and institutional websites to communicate transparently with parents, communities, and stakeholders, thereby enhancing engagement and supporting institutional goals through digital leadership.

Innovative school principals in the digital age must possess a deep understanding of technology and play an influential role in guiding educational institutions toward the effective utilization of Information and Communication Technology (ICT) to maximize educational value and performance (Keesukphan, 2016). Their responsibilities also extend to fostering the professional development of teachers and educational staff by promoting digital literacy, digital pedagogy, and effective communication skills. Moreover, such leaders are expected to demonstrate innovative leadership capabilities to successfully navigate and lead educational transformation in a rapidly evolving digital environment (Sparks, 2013).

Educational officials are increasingly required to redefine the direction of education by adopting a forward-looking vision that leverages digital technologies to inform decision-making and enhance strategic planning. This

need became especially evident during the COVID-19 pandemic, which emerged in 2019 and continues to pose global challenges. One of the most critical containment measures was social distancing, necessitating a shift to remote work and virtual communication. Educational leaders were compelled to conduct meetings with teachers and administrative staff through video conferencing platforms and implement distance learning strategies using ICT tools (Ruloff & Petko, 2021).

In response to the crisis, numerous studies have highlighted a widespread lack of digital leadership among school principals. These studies advocate for the development of targeted digital leadership training programs tailored to the evolving needs of educational institutions. Furthermore, there is a consensus among policymakers and practitioners on the necessity of adopting a new learning management model for the 21st century one that enhances managerial practices through a focus on commitment, accountability, and operational effectiveness. Strategic planning efforts should also include the formulation of digital leadership policies aimed at improving educational quality and equipping students with essential future-ready skills (Al-Ajmi, 2022; Luicha, Chantharasubat, & Serissothe, 2022; Ruloff & Petko, 2021).

Al-Ajmi (2022) emphasized that digital leadership among school principals had a positive impact on the integration of technology by teachers during the COVID-19 pandemic. In a related context, Al-Shrigeh and Waters (2012) found that innovative leadership strategies adopted by school principals played a significant role in facilitating the integration of ICT in educational settings. These strategies included encouraging faculty members to incorporate ICT in their teaching, supporting both the material and human resource needs of ICT-using faculty, and providing ongoing instructional guidance on the importance and implementation of ICT practices.

Majableh (2019) revealed a positive relationship between teachers' perceptions of female principals' innovative leadership and the level of creativity in their performance. She recommended the adoption of modern strategies that empower school leaders to embrace new ideas and innovation as tools to sustain change and drive creativity. Similarly, Al-Banna (2020) found a significant relationship between various dimensions of innovative leadership and the quality of school performance. She advocated for training programs that enhance school principals' knowledge of innovative leadership styles to enable them to anticipate and effectively manage future challenges.

Karakose et al. (2021) observed that the digital technology usage levels among school administrators during the COVID-19 pandemic were well-received by teachers. Their findings highlighted the role of school principals in supporting digital transformation, facilitating technology-based professional development, and cultivating a digital learning culture. The digital leadership skills of school principals were categorized into three core areas: technological competencies, managerial capabilities, and personal attributes. These competencies are critical in fostering digital transformation across all educational levels, from kindergarten through secondary education.

Ayad (2019) emphasized the importance of school leaders possessing innovative skills that enable them to achieve institutional goals and lead their organizations toward advancement. Effective leaders must remain adaptable, future-focused, and responsive to ongoing technological and cognitive developments to maintain institutional relevance and performance.

In a nutshell, the literature underscores the pivotal role of school principals as educational leaders who must be equipped with the necessary competencies and skills to foster a work environment that values creativity, innovation, and participation. Such leaders are essential in motivating staff to contribute meaningfully to decision-making processes, embrace digital change, and sustain organizational growth through visionary and adaptive leadership.

1.6.9.6. Previous Studies

Al-Shrigeh and Waters (2012) examined ICT integration strategies in Kuwaiti schools through a case study of two principals, identifying key leadership practices such as encouraging ICT use, providing support, and offering instructional guidance, leading to a change leadership model for developing countries.

Sakuray (2017) study explored the traits of "digital principals" using mixed methods, finding that these leaders blend creativity, perseverance, and minimal technology to improve learning, connect with others, and drive transformative change.

Majableh (2019) studied innovative leadership among female and male public school principals in Jordan and found an average level of innovative leadership and its correlation with performance creativity. Al-Hajjaj, 2019 reported a low level of such practices, influenced by demographic variables.

The study of Al-Hajjaj (2019) aimed to determine the degree of practicing innovative leadership among government secondary school principals in education. The study relied on a descriptive analytical approach. The study sample was selected using a stratified random method, and its size amounted to 310 principals and teachers in government secondary schools in university areas. A questionnaire was used, and the results showed that the degree of practicing innovative leadership among government secondary school principals, from the point of view of sample members, was low to moderate, indicating a need for targeted interventions to enhance leadership practices in educational settings.

Al-Banna (2020) found a statistically significant relationship between innovative leadership and school performance quality in Wadi Al-Seer, while Dweik (2020) reported high levels of creative leadership and teacher performance in Hebron, with a strong positive correlation ($r = 0.70$).

Dweik (2020) demonstrated a high degree of creative leadership practice among government secondary school principals in the Hebron Governorate, which correlated with high teacher performance. The study also revealed a statistically significant direct relationship between the various aspects of creative leadership practice and the quality of teacher performance in these schools. Additionally, the research conducted by Agostina et al. (2020) emphasized the indirect influence of digital leadership on teachers' reflective practice through factors such as confidence, self-efficacy, and engagement, using SEM with a sample of 637 teachers in Indonesia.

Karakose et al. (2021) revealed that during COVID-19, principals supported digital transformation, PD, and digital culture. Ruloff and Petko (2021) demonstrated that transformational leadership facilitated faster digital adoption with clearer student-centered goals in Switzerland.

Ruloff and Petko (2021) suggest that all school leaders should express a clear orientation toward student-centered learning when integrating technology into their schools. However, there are fundamental differences in the leadership processes used to address this change. One transformational leadership principle indicated faster and more profound changes than all principles oriented toward a more charismatic leadership style. In this case, transformational leadership is associated with a faster adoption of digital technologies and a clearer focus on educational goals rather than tools.

Al-Ajmi (2022) study was designed to explore the impact of digital leadership among school principals on teachers' integration of technology during the COVID-19 pandemic in Kuwait. The study used a descriptive survey methodology. The sample consisted of 113 school principals and 404 teachers from public primary schools in Kuwait. The study employed two questionnaires: the main assessment of technology leadership and the teachers' technology integration questionnaire. The study revealed that digital leadership among school principals had a positive impact on teachers' integration of technology during the COVID-19 pandemic.

Al-Raqab (2022) confirmed that digital leadership positively influenced technology integration among Kuwaiti teachers during COVID-19 and identified a high level of digital leadership in Oman, with experience being a key variable.

1.6.9.7. Comment on Previous Studies

This study is the first to explore the extent of innovative leadership practices and their relationship with digital leadership among school principals in Ajloun Governorate, setting it apart from previous research. While earlier studies guided aspects such as sample selection, methodology, and statistical analysis, they also supported the

development and validation of the research instrument. This study makes a unique contribution by examining the dynamic relationship between two essential leadership constructs within a specific geographic and educational context.

2. MATERIALS AND METHODS

2.1. Study Methodology

In this study, the correlational descriptive approach was adopted for its suitability for the purposes of this study, as it is an approach based on a set of research procedures that depend on collecting, classifying, processing, and analyzing facts and data to extract their indications, find correlations between some variables, and reach the desired results.

2.2. Study Population

The study population consisted of all governmental school teachers in Ajloun Governorate during the first semester of the academic year 2023/2024. The number of teachers reached 1,084 male and female teachers, according to the statistics of the Planning Department in the Directorate of Education in Ajloun Governorate.

2.3. Study Sample

The study sample consisted of 300 public school teachers (111 male and 189 female) who were intentionally selected from schools in Ajloun Governorate, Jordan, due to their cooperation with the researchers during the study's implementation. The participants were drawn from the following schools: Abin Comprehensive Secondary School for Girls, Abin Comprehensive Secondary School for Boys, Sakhra Comprehensive Secondary School for Girls, Sakhra Basic School for Boys, Ain Jana Comprehensive Secondary School for Girls, and Ain Jana Comprehensive Secondary School for Boys.

2.4. Study Tools

The researchers developed two instruments designed to measure the degree of innovative leadership practice and its relationship to the level of digital leadership among school principals in Ajloun Governorate to achieve the objectives of the study. The construction of these tools was informed by a comprehensive review of relevant educational literature and prior empirical studies, ensuring both theoretical grounding and methodological rigor.

2.5. First: Innovative Leadership Tool

The study involved a comprehensive review of theoretical literature and previous research concerning innovative leadership. A specific measurement tool from a related study was adapted for this purpose. Majableh (2019), Al-Banna (2020), and Al-Shrigeh and Waters (2012) were used to develop the scale related to innovative leadership. The scale included 22 items distributed across three dimensions: work environment, school administration's treatment of teachers, and innovative behavior. Responses were recorded on a five-point Likert scale, with options ranging from very large score to very low score. The weights assigned to each response were 1, 2, 3, 4, and 5, corresponding to the degree of approval expressed by the teacher.

2.6. Believe the Innovative Driving Scale

- To verify the validity of the content of the innovative leadership scale and its suitability for the purposes of the current study, it was presented in its initial form to a group of experts and specialists in the fields of educational administration, measurement, and evaluation in Jordanian universities to express their opinions on the paragraphs regarding their relevance, clarity in language, and appropriateness. The evaluation was based on

the consensus of more than 80% of the group of arbitrators. The paragraphs of the scale were retained as they are due to their suitability for the purposes of the current study.

- Validity indicators for the construction of the innovative leadership scale were also established. This was achieved by calculating the correlation coefficients between each item and the total score, as well as between each item and the specific domain to which it belongs. Additionally, inter-domain correlations and correlations with the total score were examined. These analyses were conducted after administering the scale to an exploratory sample of 25 teachers selected from outside the main study sample. The results of these analyses are presented in Table 1.

Table 1. Correlation coefficients between paragraph and overall score and field to which it belongs

Paragraph number	Correlation coefficient with domain	Correlation coefficient with the tool	Paragraph number	Correlation coefficient with domain	Correlation coefficient with the tool
1	0.42*	0.46*	12	0.63**	0.63**
2	0.61**	0.37*	13	0.72**	0.66**
3	0.76**	0.45*	14	0.81**	0.79**
4	0.68**	0.52**	15	0.68**	0.61**
5	0.83**	0.50**	16	0.52**	0.46*
6	0.57**	0.69**	17	0.73**	0.66**
7	0.83**	0.76**	18	0.84**	0.74**
8	0.75**	0.58**	19	0.58**	0.63**
9	0.64**	0.43*	20	0.74**	0.64**
10	0.73**	0.47**	21	0.81**	0.65**
11	0.81**	0.61**	22	0.62**	0.53**

Note: * Statistically significant at the significance level (0.05).
** Statistically significant at the significance level (0.01).

Table 1 indicates that the correlation coefficients between the individual items and the overall scale ranged from 0.37 to 0.79, while the item-to-domain correlations ranged from 0.42 to 0.83. All values were statistically significant and within acceptable limits, which confirms the validity of the items; therefore, no items were excluded from the scale. Additionally, the correlation coefficients between each domain and the total score were calculated, along with inter-domain correlations. These results are presented in Table 2

Table 2. Correlation coefficients between domains and the overall score

Dimensions	Working environment	The school administration deals with teachers.	Innovative behavior	Innovative leadership
Working environment	1			
The school administration deals with teachers.	0.526*	1		
Innovative behavior	0.750**	0.625**	1	
Innovative leadership	0.473*	0.384*	0.691**	1

Note: * Statistically significant at the significance level (0.05).
** Statistically significant at the significance level (0.01).

Table 2 shows that all correlation coefficients were acceptable and statistically significant, indicating an appropriate degree of construct validity (Odeh, 2014).

2.7. Innovative Driving Stability Meter

To verify the stability of the scale, the internal consistency stability coefficient was calculated according to the Kuder-Richardson (KR) formula -20, where it was applied to a group outside the study sample consisting of 25 male and female teachers (see Table 3).

Table 3. Cronbach's alpha internal consistency coefficient for dimensions and overall score of the innovative driving scale

Dimensions	Internal consistency
Working environment	0.87
The school administration deals with teachers.	0.84
Innovative behavior	0.86
Innovative driving scale as a whole	0.88

According to Table 3, the value of the internal consistency coefficient of the scale according to the Coder Richardson equation, -20 was 0.88 for the scale as a whole, while for the fields it ranged between 0.81 and 0.87. These values were considered suitable for the purposes of this study (Odeh, 2014).

2.8. Second: Leadership Tool

The researchers referred to the theoretical literature and previous studies related to the subject of leadership, where the scale contained in the study of Al-Banna (2020) and Dweik (2020) was used to build the scale related to leadership. The scale included 18 items distributed over three dimensions: e-leadership skills, management of the digital business environment, and leadership management. It was answered according to the Likert pentatonic scale (very large score, large degree, medium, low score, and very low score). The weights correspond to the order (1, 2, 3, 4, and 5), where the teacher responds by choosing the degree of their approval of each item.

2.9. Believe the Driving Scale

- To verify the content validity of the leadership scale and ensure its alignment with the study's objectives, the preliminary version of the instrument was presented to a group of experts in educational administration as well as specialists in measurement and evaluation, representing several Jordanian universities. The panel reviewed the items based on their relevance, clarity of language, and overall suitability. Items were maintained in their original form when over 80% of the experts agreed on their adequacy, confirming their appropriateness for use in this research.
- Construct validity indicators for the leadership scale were also established by calculating the correlation coefficients between individual items and the overall scale score as well as their respective subdomains to which they belong. Additionally, inter-domain correlations and correlations between each domain and the total score were examined. These analyses were conducted after administering the scale to an exploratory sample of 25 teachers selected from outside the main study sample. The results of these analyses are presented in Table 4.

Table 4. Correlation coefficients between paragraph and overall score and field to which it belongs

Paragraph number	Correlation coefficient with domain	Correlation coefficient with the tool	Paragraph number	Correlation coefficient with domain	Correlation coefficient with the tool
1	0.52*	0.39*	10	0.63**	0.73**
2	0.71**	0.42*	11	0.62**	0.56**
3	0.76**	0.49*	12	0.81**	0.69**
4	0.68**	0.69**	13	0.78**	0.61**
5	0.83**	0.50**	14	0.52**	0.46*
6	0.57**	0.59**	15	0.73**	0.76**
7	0.63**	0.66**	16	0.84**	0.81**
8	0.85**	0.58**	17	0.58**	0.63**
9	0.64**	0.53*	18	0.74**	0.64**

Note: * Statistically significant at the significance level (0.05).
** Statistically significant at the significance level (0.01).

Table 4 shows that the coefficients of the paragraphs related to the tool as a whole ranged between 0.39-0.81, and with the domain 0.52-0.85. All of them were acceptable and statistically significant, so none of these paragraphs

were deleted. The domain correlation coefficient was extracted by the total degree, and the correlation coefficients between the domains together are shown in Table 5.

Table 5. Correlation coefficients between domains and the overall score.

Dimensions	Electronic leadership skills	Digital business environment management	Digital knowledge management	Digital leadership
Electronic leadership skills	1			
Digital business environment management	0.457*	1		
Digital knowledge management	0.635**	0.725**	1	
Digital leadership	0.758*	0.546*	0.682**	1

Note: * Statistically significant at the significance level (0.05).
** Statistically significant at the significance level (0.01).

Table 5 shows that all correlation coefficients were acceptable and statistically significant, indicating an appropriate degree of construct validity (Odeh, 2014).

2.10. Digital Driving Stability Meter

Table 6 demonstrates that the internal consistency stability coefficient, calculated using Cronbach's alpha ($\alpha = 0.20$), and applied to a group of twenty-five male and female teachers outside the study sample, was used to confirm the stability of the scale.

Table 6. Cronbach's alpha internal consistency coefficient for dimensions and overall score of the digital driving scale

Dimensions	Internal consistency
Electronic leadership skills	0.87
Digital business environment management	0.84
Digital knowledge management	0.86
Digital command size as a whole	0.88

It is noted from Table 6 that the value of the stability coefficient for the internal consistency of the scale according to the Coder Richardson equation -20 was 0.88 for the scale as a whole, while it ranged between 0.81 and 0.87 for the fields. These values were considered suitable for this study (Odeh, 2014).

2.11. Statistical Standard of the Study Instrument

To determine the level of innovative leadership practice and the level of digital leadership among school principals in Ajloun Governorate, use the statistical standard based on the arithmetic averages shown in Table 7.

Table 7. Statistical standard for determining the level of innovative leadership practice and the level of digital leadership of school principals in Ajloun Governorate based on arithmetic averages.

Arithmetic mean	Level
1.00- 1.80	Very low
1.81- 2.61	Low
2.62 - 3.42	Medium
3.43 – 4.23	High
4.24 – 5.00	Very high

2.12. Study Scale and Statistical Processing

Identify the study problem and questions.

- Building the two study tools and verifying the indications of their accuracy and stability.

- Selects the study sample and chooses it randomly.
- Distributing the two study tools to the sample members, collecting them, and entering them into the computer memory.
- Data processing using the statistical package program (SPSS) and reaching results and coming up with recommendations.
- To answer the first and second questions, arithmetic averages and standard deviations were used to determine the level of innovative leadership practice and the level of digital leadership among school principals in Ajloun Governorate from the teachers' point of view.

To answer the third question, Pearson's correlation coefficient was used, and the significance of the test was assessed to evaluate correlations.

3. RESULTS

The results came from the first question: What is the degree of innovative leadership practice among school principals in Ajloun Governorate from the teachers' point of view?

To address this research question, the means and standard deviations were calculated for the responses of the study sample on each dimension of the instrument related to innovative leadership among school principals in Ajloun Governorate, as perceived by teachers, both individually and collectively. The following table presents the results in detail.

Table 8. Arithmetic averages and standard deviations of the items of the tool related to innovative leadership among school principals in Ajloun Governorate from the point of view of teachers, arranged in descending order according to the arithmetic averages.

Number	Dimensions	Account average	Standard deviation	Rank	Degree
2	The school administration deals with teachers.	3.88	0.87	1	High
1	Working environment	3.79	0.84	2	High
3	Innovative behavior	3.78	0.91	3	High
	Dimensions together	3.82	0.83		High

As presented in Table 8, the overall level of innovative leadership practiced by school principals was found to be high, with a mean score of 3.82 and a standard deviation of 0.83. Among the three dimensions examined, "school administration in its dealings with teachers" ranked highest, with a mean score of 3.88, indicating a high level of practice. This was followed by the dimension of "work environment," which recorded a mean of 3.79, also reflecting a high level. The third dimension, "innovative behavior," ranked last with a mean score of 3.78, still within the high range. These findings suggest that school principals demonstrate a consistently high engagement with innovative leadership across all dimensions, with slight variations in emphasis. The results came from the second question, which stated, "What is the level of school principals in Ajloun Governorate in digital leadership from the point of view of teachers?" To answer this research question, the arithmetic means and standard deviations of the participants' responses were computed for each dimension of the instrument measuring digital leadership among school principals in Ajloun Governorate. The analysis was conducted based on teachers' perspectives, both at the individual level and in aggregate. The results are summarized in the table below.

Table 9. Arithmetic averages and standard deviations of the paragraphs of the tool related to digital leadership among school principals in Ajloun Governorate from the point of view of teachers. They are arranged in descending order according to the arithmetic averages.

Number	Paragraphs	Account average	Standard deviation	Rank	Degree
1	Electronic leadership skills	3.91	0.89	1	High
3	Digital knowledge management	3.74	0.94	2	High
2	Digital business environment management	3.73	0.95	3	High
	Dimension together	3.79	0.88		High

It is noted from Table 9 that the level of school principals practicing digital entrepreneurship as a whole is high, with an arithmetic mean of 3.79 and a standard deviation of 0.88. The first dimension (e-leadership skills) ranked first with an average score of 3.91, indicating a high level, followed by the second dimension (digital knowledge management) with an average score of 3.74, also indicating a high level. The third dimension (digital business environment management) ranked third with an average score of 3.73, maintaining a high level.

The results appeared on the third question, which stated: "Is there a statistically significant relationship at the level of (≤ 0.05) between the average response of teachers to the degree of innovative leadership practice among school principals in Ajloun Governorate and digital leadership?"

Digital leadership as a whole and its sub-dimensions among school principals in the Ajloun Governorate were compared using Pearson's correlation coefficient to answer this question. The results are shown in Table 10.

Table 10. Pearson's correlation coefficient for the relationship between innovative leadership and its dimensions, and digital leadership and its dimensions.

Dimensions	r × p	Electronic leadership skills	Digital business environment management	Digital knowledge management	Digital leadership
Working environment	Correlation coefficient x	0.457**	0.420**	0.435**	0.428**
	Statistical significance	0.000	0.000	0.000	0.000
	Number	300	300	300	300
The school administration deals with teachers.	Correlation coefficient x	0.612**	0.321**	0.426**	0.554**
	Statistical significance	0.000	0.000	0.000	0.000
	Number	300	300	300	300
Innovative behavior	Correlation coefficient x	0.312**	0.541**	0.499**	0.410**
	Statistical significance	0.000	0.001	0.001	0.000
	Number	300	300	300	300
Innovative leadership	Correlation coefficient x	0.524**	0.290**	0.630**	0.531**
	Statistical significance	0.000	0.000	0.000	0.000
	number	300	300	300	300

Note: * Statistically significant at the significance level (0.05).
** Statistically significant at the significance level (0.01).

4. DISCUSSION

The results showed that innovative leadership among public school principals from the teachers' perspective in Ajloun Governorate, Jordan, was high. This may be due to the orientation of the Ministry of Education in Jordan to select school principals characterized by effective leadership qualities and to direct them toward providing a work environment that fosters creativity, encourages innovative ideas, and contributes to the progress and excellence of the school. Additionally, school principals adopt leadership practices that motivate employees to develop their skills and enhance the quality of the educational learning environment. The results of the study align with Dweik (2020), which found that the degree of innovative leadership exercised by government secondary school principals in the Hebron governorate was significantly increased. However, they disagree with the findings of Al-Hajjaj (2019), which indicated that the degree of innovative leadership practice among school principals was low.

This may be due to the ability of school principals to work in light of technical changes and possess the skills of using e-learning platforms, digital communication tools, interactive content, and technology in education, and providing them with a supportive work environment for the culture of learning and self-development of employees, exchanging knowledge and experiences between them, and activating the use of knowledge which contributes to improving the teaching and learning process, increasing efficiency, and enhancing the quality of services. The results of the study agreed with Dweik (2020), which indicated that the degree of performance quality was significantly higher. It disagreed with the results of Al-Banna (2020), which indicated an average level of school performance quality among school principals in Wadi Al-Seer District in Jordan. There is a statistically significant relationship between the level of digital leadership as a whole and its sub-dimensions among school principals in Ajloun

governorate. This may be due to the fact that the digital and technical development we are experiencing today in technology, modern technologies, and digitization prompted the Ministry of Education to direct its staff of school principals and teachers to keep abreast of cognitive, technical, and digital changes and developments, including digital tools, resources, and modern educational technologies, to benefit from them and employ them in the administrative and educational process, fostering creativity, excellence, and digital leadership, and to be more efficient and effective. The findings of the current study are consistent with those of Al-Banna (2020), which demonstrated a significant correlation between the dimensions of innovative leadership and the quality of school performance.

The observed positive relationship between innovative leadership and digital leadership among school principals indicates a close interconnection between the two leadership dimensions. Principals who demonstrate innovative leadership tendencies characterized by openness to change, support for creative problem solving, and a proactive approach to addressing challenges are more likely to adopt and effectively implement digital tools and strategies in their schools. This convergence suggests that innovation-oriented leaders tend to recognize the transformative potential of digital technologies to improve educational outcomes. Furthermore, digital leadership requires a visionary and future-oriented mindset, traits common to innovative leaders. Therefore, the ability to lead digital transformation in educational settings is likely to be enhanced when principals possess innovative leadership traits. These findings support existing studies that emphasize leadership for innovation as a key pillar for successful digital integration in schools.

5. CONCLUSION AND RECOMMENDATION

The findings of this study confirm that both innovative leadership and digital leadership are highly practiced among public school principals in Ajloun Governorate, as perceived by the participating teachers. The statistically significant correlation between the two leadership styles suggests that principals who adopt innovative practices are more likely to excel in digital leadership, and vice versa. This interconnection reflects the evolving nature of educational leadership in the digital age, where innovation and technology go hand in hand to improve school effectiveness and responsiveness to change. These results highlight the need for educational policymakers and training institutions to design targeted professional development programs that enhance principals' capabilities in both domains. Furthermore, the study sheds light on the critical role of infrastructure and institutional support in enabling school leaders to implement innovative and digital strategies effectively. Investing in these areas will not only improve school performance but also contribute to preparing educational environments that are adaptive, future-ready, and student-centered. Preparing innovative programs for managers and teachers improves the level of administrative processes and digital leadership. Motivating teachers to use innovative methods within the classroom and paying attention to the creation of appropriate infrastructure in schools are essential steps toward this goal.

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