ACADEMIA International Journal for Social Sciences
Volume 4, Issue 4, 2025 ISSN-L (Online): 3006-6638

Educational Leadership in the Age of Digital Transformation

Farah Faisal
farahfaisalbaloch07@gmail.com
Lecturer Education Department, University of Gwadar

Dr. Sikander Ali
sikander84.ali@gmail.com
Assistant Professor, Department of Mass Communication, Federal Urdu University of Arts Sciences & Technology Karachi Islamabad

Shehnaz
Shehnaz.21@pide.edu.pk
PhD Scholar, PIDE School of Economics (PSE) Islamabad, Pakistan

Rabail Haque
rabail.haque@ceme.nust.edu.pk
Lecturer, Department of Basic Sciences and Humanities, College of Electrical and Mechanical Engineering, National University of Sciences and Technology (NUST), Islamabad, Pakistan.
Corresponding Author: * Farah Faisal farahfaisalbaloch07@gmail.com

Received: 09-07-2025 **Revised:** 20-08-2025 **Accepted:** 15-09-2025 **Published:** 09-10-2025

ABSTRACT
Educational technology has completely transformed the field of education and digital transformation is at the heart of the future of learning institutions. As a result, the idea of educational leadership has evolved and educational leaders need to give up some of their more traditional technical administrative and managerial responsibilities, and adopt a newer approach to leadership based on innovation, vision and technology. The aim of the above paper is to discuss educational leadership in the age of educational digital transformation with a specific focus on those competences, strategies and styles of leadership that need to be more prominent in leading through the transition. The paper explores digital transformation with a focus on the governance of educational institutions, design of curriculum, pedagogical practices, assessment, and engagement with stakeholders across educational contexts, with particular emphasis placed on digital literacy and resilience of educational leaders, teachers and learners, and educators, to support educational institution sustainability and growth with competitive advantage. Significant issues in the complexities of the educational leadership context this research investigates is managing the complexities and issues of equitable access to digital technologies and responsible use, privacy and safety of data, and ultimately, resistance to change. All factors investigated so as to elicit the complexities and issues with implementing institutional technology reform in a large and complex educational context. Drawing upon recent leadership frameworks, international case studies, and applied research, this paper argues for the need for educational leaders to adopt collaborative and participatory styles of leadership to enable innovation, inclusion, and accountability. The evidence reveals that effective digital leadership is not solely about the adoption of new technologies; it is about creating a culture of continuous improvement, sharing power with stakeholders, and the alignment of the missions of educational institutions with the expectations of a digital society. The research indicates that the ability of educational leaders to navigate the established values of education and tenets of educational leadership with the emerging values and imperatives of digital education and technology critical to the capacity for educational change and transformation in the digital age, ensuring that educational institutions thrive and are relevant, resilient and future ready in an unordered, uncertain and ever changing global society.

Keywords: *Education, Leadership, Educational leadership, Digital Transformation*

INTRODUCTION

As we transitioned into the 21st century, the world as we knew it began to change rapidly with the emergence of digital technologies. Artificial intelligence, big data, cloud computing, online learning platforms, and social media have pervaded every aspect of our lives, including education. The transformation we are experiencing is not simply an addition of technology to our living and learning spaces. This is a transformation of the organization of schools and educational systems. It transforms the role of teachers, the manner in which students learn, how we prepare students to live and work in a technological society, and it necessitates a different skill set from educational leaders. (Arsenault, 2007)

Educational leaders have traditionally spent their time organizing staff, supervising teachers, and holding teachers accountable for compliance to the rules and processes so that they could comply with the policy demands for education. Now educational leaders are tasked with thinking about an incredibly expansive skill set. The educational leaders must engage with the means for ways schools intentionally utilize digital tools, and determine if the digital tools positively contribute to the goals of better teaching and better learning for every student. They must also consider if every student equitably has access to the tools. (Bass, 2011)

Contemporary leaders must be adaptable, network based, and collective rather than formalistic and hierarchical in nature. Rather than manage schools and colleges, leaders need to imagine cohorts of learners rather than learners in schools and colleges. We find ourselves in a time where more access to digital tools has transformed teacher's teaching and learner's learning globally. Digital tools create a need for other modalities in sharing lessons, tracking student information, and depth of student knowledge construction learning management systems (LMS), online courses, and A.I tools. (Black, 2015)

While these tools can provide more personalization of learning (Nasir, 2025), there are certain caveats and limits to that mission. How do schools keep up with ever changing technology while trying to facilitate a high standard educational practice? What educational leaders are doing to create bridges to gaps that opportunities which may emerge from technology, and how do they ensure that every learner feels a sense of belonging? What do educational leaders do about cybersecurity and privacy when utilizing student data?

There are several challenges related to the period of digital transformation, in spite of the many possible opportunities. One of the largest challenges is digital equity. Educational leaders are charged with advocating to resolve inequities, and need to make sure they do not exacerbate those inequities in education as they do so. Furthermore, the one possible largest barrier to adopting innovative practices is resistance to change. A challenge to innovation is teachers, families, and school systems may perceive the change in practices as disruptive rather than innovative. The improvements associated with compounding and continuous learning and improvement are often outpacing the ability of institutions to pivot, resulting in an infinite and ongoing demand for adult re-skilling and professional learning and development. (Bolden, 2008)

In our present day with established and distinguished technology leaders participating in emergent practices of leadership, leaders should be working as not only technical users of tools, but develop social structures, or cultures of innovation or inclusion or critical learning, or shared responsibility. Leaders should also be engaged in change agency through relational collaborations with educators, learners (students), caregivers (parents), and policy makers, in addition to believing in digital learning. (Braun, 2009) The notion of leading, is both fluid and innovative, and therefore demands thinking that helps manages it, while also being multi-dimensional, and not simply the technical norm of relationships among people in a complex educational ecosystem.

Background

Changes in social and economic and technological development have altered the educational organizations' needs and also altered the context of educational leadership development. Educational leadership in past definitions draws the ties distinctly to management based in hierarchical and bureaucratic ways, simulating management types practiced out of the world of the business of the industrial revolution. Principals and administrators are called simply managers of efficiency and discipline through promoting and enforcing the institutional policy. The management notion of leadership began to shift during the mid to late 20th century with transformational forms of leadership allowing for a more significant role for vision and collaboration and inspiration to lead others. Leadership had evolved beyond the manager of resources and to see a leader role as one who motivates teachers, supports students, and leads innovation of educational contexts. This shift created the choice to define leadership that included adaptability and innovation related to its current more applicable term for a digital age, learning. (Nasir, 2024)

Over the past 20 years, the integration of digital technology in education has fundamentally changed the work of institutions First, personal computing, access to the internet, and tools for digital communication increased an institution's ability to provide information and knowledge and improve the administration of institutions. More recently, improved computer technologies have included learning management systems, virtual learning environments, artificial intelligence-based, or AI, apps, and mobile learning environments, which is another shift in transformation related to instruction and the governance of higher education institutions. Many of the changes were escalated by the pandemic, as K-12 schools and Higher Education quickly transitioned, in a matter of days and weeks, to an online school experience. Changing to a new, increased comfort with digital increased possibilities for change and increased complexity for educational systems. (Bryman, 2007)

Since the onset of the digital transformation over the last decade, educational leadership is beginning to reflect something much different than simply improving teaching and learning and managing a school or organization. Leaders need to broaden the scope of work for which they are responsible and include supporting technology integration in curriculum and assessment, developing educational systems for students and teachers that foster digital literacy, and managing risks for equity, access to digital environments, data privacy, and cybersecurity for the protection of organizational information. Evolving this kind of responsibility in educational leadership takes on a new model for pedagogical practice or work in education, and requires leaders to maintain some degree of ethical, social, and educational values. (Drugus, 2014)

Contexts around the world provide potentials and constraints near and around each other in a developing world's context. In developed contexts, education leaders are designing and developing smart campuses, using artificial intelligence to move closer to individualised learning and digitally connected research. In the developing context, we have many more concrete inhibitors such as basic infrastructure, and training teachers, and an evident digital divide. For example, Pakistan is an example of socio-economic conditions restricting education from developing digitally while enabling leadership to embed equity, sustainability and reframe globally developed innovations locally. (Hofmeyer, 2015)

While there is a considerable body of research, and even more literature on technology in education, the majority of the research has focused on pedagogy and instructional practices instead of the aspect of leadership in digital transformation. There has been somewhat marginally more emphasis, for example, in evaluation of the effectiveness of the e-learning environment (Nasir, 2025) or on teachers' digital competencies; comparatively less attention has been directed towards the formal strategic role of leaders in creating, maintaining, and expanding those developments. This lack of attention allows us the space to think about how educational leadership is being reconceptualised in a digital transformation context, the demands on leaders to function in a new educational ecosystem, and what conditions, were best at facilitating the digital innovations for equitable or sustainable educational outcomes.

Problem Statement

The higher education landscape is changing quickly due to the digital transformation of higher education, which has transformed the context of education and, importantly, the nature of how knowledge is created, shared, and assessed. The types of tools we refer to, learning management systems, artificial intelligence based assessments, or virtual learning environments, are all influential and have the potential to enhance teaching and learning; however, the reality is that universities are neither innovating their adoption of digital technologies nor out of habit, nor predictable education. OPPORTUNITIES to think or work across institutions or with staff, students and parents are a powerful reason for the adoption of technology in higher education for better or for worse; however, it is dependent on how the institutional leadership characterizes, engages and responds with innovative goodwill to this change in the digital context. (Jenkins, 2016)

Of course, there is an extensive social issue as well, which continues globally. We can have a global conversation about the novelty of the digital transformation and the educator, I agree this is a result of an educational development of a global context; however, the educational leadership needs to find a way to change to properly respond for sustainability and complexity of the digital transformation. Leaders are actively balancing multiple, at time contradictory, challenges including the need for digital equity, various resistance to change, safety and privacy concerns, educational priorities vs curricular priorities and, and so forth. In many developing contexts, like in some areas of Pakistan, these factors are also complicating matters because of limitations on resources, a poor infrastructure, socio-economic inequities, and related issues, which do not allow leaders the full benefits of capitalizing on digital forms of support. (Katuna, 2019)

While prior scholarship has usually considered digital and technology in relation to pedagogic functions, or the digital competencies of practitioners, scant work has considered the leadership role in the digital transformation and this represents an important gap in our understandings of educational leaders' reconceptualization of how they might support strategic visioning, adaptability, and collective practice in responding to the challenges of any digital change initiative. To be clear, for educational leaders to focus solely on the leadership of digital change with the considerations of inclusiveness of education being considered only temporarily, educational institutions have adopted siloed or ineffective approaches to digitalization that may heighten gaps in inequalities, rather than respond, with thoughtfulness, inclusiveness, and educative responses to the future of education. This study addresses a gap in the future of educational leadership by exploring practical challenges to future educational leadership and the strategies and competences needed to lead educational institutions in the digital age.

Research Gap

Although there has been a considerable amount of research regarding digital transformation in education over the past two decades, much of the available research has examined technology and pedagogy, rather than leadership. Much of the research has examined the effective use of digital tools, learning management systems, and the digital competence of educators to support learning that is either blended or online. Research has also most often been focused on students' experiences and outcomes in the digital space, which often measures the impact of technology on factors engaged, performance, and access to learning. While these topics can provide meaningful background information about the mechanics of digital education, there has often been less focus on the strategic and organizational role of leadership in creating equitable and sustainable conditions in the processes of implementing technology reforms. (Lighton, 2018)

Where leadership has been considered, it has mostly been considered generally, and not specifically to the context challenges that digital transformation creates, For the literature on digital leadership for education, limited use of the leadership literature is based primarily on frameworks of instructional or transformational leadership, without an effort to generate substantive adaptations and contextual relevance to technology enabled teaching and learning settings. While there are empirical studies focused on educational leadership especially during COVID-19 much of the literature draws from research studies situated in developed countries, where there is easier access to infrastructure and resources for educational leadership. As such, there is already a contextual and geographical gap in the literature, especially for educational leaders working in developing countries, such as Pakistan. In such contexts, leaders have to work with infrastructure limitations, broadband inequities, varying degree in socio-economic contexts, and cultural resistance to change, which complicates digital leadership even further. (Mahajan, 2011)

In addition, and a further limitation of the literature, is the lack of focus on the ethical and governance challenges of digital transformation. Challenges such as access, data privacy, and security are rarely considered leadership responsibilities, even though the challenges implications extend to trust/intimacy and ultimately, sustainability of the institution's trading. The literature also rarely focused on the needs of professional development for leaders, under the assumption that learning to lead digitally emerges spontaneously, instead of recognizing the need for developing leadership by way of training, policy direction and institutionally resourcing. (Morgan, 2016)

By scrutinizing the conjunction of leadership and digital transformation, this research aims to extend the body of knowledge to both theory and practice by examining the issues associated with the strategic and ethical role of leadership in determining the future of education, rather than simply examining technology adoption.

Objectives

1. To examine how digital transformation has reshaped the roles and responsibilities of educational leaders in contemporary institutions.

2. To identify the major challenges faced by educational leaders in implementing and sustaining digital transformation initiatives.

3. To explore the leadership strategies, competencies, and practices that contribute to successful digital transformation in education.

Research Questions

1. In what ways has digital transformation influenced the roles, responsibilities, and functions of educational leaders?

2. What are the key challenges that educational leaders encounter in guiding institutions through digital transformation?

3. Which leadership strategies and competencies are most effective in ensuring sustainable, inclusive, and ethical digital transformation in education?

Hypotheses

H1: Digital transformation significantly alters the traditional roles of educational leaders, requiring them to adopt more adaptive and technology driven approaches.

H2: Educational leaders face greater challenges related to digital equity, resistance to change, and data security in contexts with limited resources compared to developed settings.

H3: Leaders who adopt transformational and adaptive leadership strategies are more successful in implementing sustainable and inclusive digital transformation in educational institutions.

Significance of the Study

The significance of this study lies in its contribution to the evolving discourse on educational leadership in the context of digital transformation. As technological innovation continues to reshape the nature of teaching, learning, and institutional governance, there is an urgent need to understand how leaders can effectively navigate these changes. While much of the existing scholarship has focused on the adoption of digital tools and pedagogical practices, comparatively little attention has been devoted to the strategic and visionary role of leadership in guiding institutions through technological reform. By addressing this gap, the study highlights the critical influence of leadership in determining whether digital transformation strengthens or undermines the goals of equity, quality, and sustainability in education.

From a practical standpoint, the study is important to provide insights to inform leadership development programs, educational policymaking, and institutional planning. Educational leaders who comprehend the complexities of digital transformation in a stronger position to make informed decisions about resourcing, professional learning, and technology use. In countries such as Pakistan, it is critical to understand local realities alongside the digital 'haves' and 'have nots'. This study signals a move towards an inclusive and sustainable digital future in which educational reform, improved quality of life, and opportunities of community engaged scholarship are supported.

The study also extends our understanding of leadership, as it situates traditional leadership theory within the lived experience of contemporary realities. The study has revealed the need for leadership prerogatives, i.e. adaptive, transformational, and shared/distributed, to be effective on this line. The study has also illuminated tensions of online safety, ethical use of data, and equitable digital access at least in the context of digital advancements.

In conclusion, this study is a meaningful contribution to scholarship as it starts to build a bridge between leadership theory and lived experiences. The study situates digital transformation as an important mechanism for agency and advancement, not an instrument of inequality.

LITERATURE REVIEW

At present time Europe is examining who are the current leaders in Information and Communication Technology (ICT) as an avenue for innovation and the speed of technology development. The value of institutions and in the end the educators, depend on their level of situational and what type of innovation (Bryman, 2007). However, it needs to be recognized that an effective way to provide that is with a digital leader, in view of new knowledge-based economies depend on innovation and the ongoing growth function of each (Katuna, 2019).

Digital leaders are not made fixed in one position as such, it is not one or the other, but fluid, and it is important that all potential leaders received in their institution are aware of it and are facile with it. Digital leadership is a construct, meaning that it is about a way of being/some skills or way of thinking/agreement to do it, approaches that could be problematic to be most effective. Digital leaders are thinkers who formulate some points of view that anticipate possible future needs to lead the institution into the future in changes of technology, while work with colleagues and other staff collaborative process related to 'spaces' with a good academic culture or environment that prepares

educators and learners to be flexible and learn. Digital leadership is about the possibilities and that needs to be developed to integrate changing styles of learning, and re change educational experiences through the analysis of digital, meaning and in my position, planning to or I appreciate that learners have those preferences. (Nasir, 2025)

As the research and investigation continued, some helpful ideas emerged from the INSEAD leadership education platform. These ideas were transposed into actionable frameworks across different technologies, moralities, and times (Pihie et al., 2011). One of the models is a "living" quality assurance, to keep leaders responsive to their organization in light of the broader fluidity of change (Robinson et al., 2015). It's no surprise, that troubling evidence is that leadership capacity is often contingent on individuals' behaviours, leadership styles, and existing policy (Woods, 2005) and the tools and systems put to use. When we reference mobilising leadership into a digital age, it necessitates a focus on those people and the system.

In the same regard, effective digital leadership delivery demonstrate ongoing inconsistency. The digital divide is, arguably, the most apparent mismatch, because inequities sustained grade disparities across really equal areas and same geography institutions. For example, larger and wealthier universities can still employ ICT leadership models, but still struggle with human resources, budget and infrastructure limitations whilst small or poorly funded institutions can do much more than they do. To exacerbate the problem, there often exists disconnect between the policy level perspectives and practice creating gaps between the theoretical blueprints and the practical implementation levels. Not infrequently, this exemplifies the need for contextually located approaches to digital leadership. (Pihie, 2011)

Global perspectives outside of Europe add to this discussion. In the United States, "digital leadership" has increasingly been framed within the idea of educational technology integration, where educational leaders must ensure their ICT strategies align with student learning outcomes and institutional accountability frameworks (Sheninger, 2014). In Asia, particularly countries such as Singapore, South Korea, and China, a digital leader is often viewed through the lens of their involvement in national digital transformation strategies, where educational leaders are understood as facilitators of innovation ecosystems that contribute to broader economic development (Ng, 2015). At the same time, many developing countries around the world, particularly in South Asia and Sub-Saharan Africa, face challenges with digital leadership due to a lack of infrastructure, poorly prepared teachers, and sporadic access to technology (Unwin, 2019). This literature suggests that there is a global divide, which suggests a need for comparative research exploring how varying socio-political contexts shape the adoption and adaptation of digital leadership.

In terms of methodology, research regarding digital leadership has primarily been quantitatively focused, especially on surveys. Quantitative designs aided an organized data collection method, where researchers can examine leadership behaviors, impacts, and relationships to data trends statistically (Cresswell, 2011). The Multifactor Leadership Questionnaire (MLQ) remains widely used to measure transformational and transactional leadership styles (Bass, 1985; Avolio & Bass, 1995), has been validated across cultural and organizational contexts (Drugus et al. 2014). Though, researchers have noted methodological reliance on surveys as a limitation, noting that surveys do not consider contextual complexity, or relevant cultural distinctions towards digital leadership.

Theoretical Framework

This study's theoretical framework is based on leadership theories that provide reasoning for how educational leaders respond to challenges of change, lead change with innovation, and develop decision making practices in the digital space. While the digital transition may provide new challenges, it also provides new opportunities, so the leader's role differs from a traditional administrator role relatively to visioning, collaborating, resiliency, and ethical stewardship. This study

use three theories Transformational Leadership Theory, Distributed Leadership Theory, and Adaptive Leadership Theory to explicate the interrelationship and connections between these aspects for leaders' work as leaders like themselves.

The transformational leadership theory concerns the competencies for leaders to encourage, excite and enable their stakeholders to collaboratively construct and achieve a shared vision of success. In reference to digital transformation, transformational leaders will most likely be asked to assist in developing the culture of innovation; as well, (as a transformational leader), lead the teacher in harnessing technology for pedagogy; and inspire the learner into engaging in increased digital literacy. Furthermore, transformational leaders have an essential stewardship, not just for leading technology adoption with respect to administration, but also to lead from an institutional mission and vision standpoint.

In addition, while distributed leadership theory remains relevant to transformations in education it offers a perspective for collaborative, collective leadership supported within complex, practice based systems. At present, and with relative ease, people can connect, exchange ideas and learn from one another, across all of the roles people occupy as educators, IT leaders, school leaders, policy or state leaders, etc., and we think that it is highly doubtful that any one person is able to keep up with the rapid pace and impact of technology. In fact, this model assumes that there is value experienced in shared or "distributed leadership." In the way that we think about leadership, it includes invoking and engaging people to not only take responsibility for the work but bring in sociocultural differences to in order to hopefully create in the sharing of roles in building norms of community, working collaboratively, and with shared learning experience.

Adaptive leadership helps leaders learn how to adjust to inevitable change and uncertainty in a responsible way. It shifts the onus to adapt amidst the constant flux of social and technical change, especially where it is instigated by technological change. Adaptive leaders acknowledge new technologies and tools that disrupt established models and routines of working, while also believing that those same tools open new worlds of disciplines, better practices, decision making, and if done well re-energize in the face of change. Adaptive leadership keeps schools, organizations, and systems grounded in the here and now, while engaging in practice that grows and improves. Distributed leadership allows the possibilities of acting on current needs, while still hoping for future goals, objectives, and aspirations.

The Distributed Leadership Theory presents a robust way to conceptualize leadership as achieved in tandem with others and as contingent on complex systems. The digital age has invited different contributors and stakeholders to support and augment the work of each faculty, information technology people, administrators and policymakers no one individual can, nor should, be responsible for carrying roles, responsibilities or leading technology change efforts. Distributed leadership posits the opportunity for shared responsibility, collective voice, and creating shared knowledge, educational research leaders could operationalize a more equitable and sustainable implementation of technology innovation and activate the individual and collective leadership of the individuals involved.

RESEARCH METHODOLOGY

Research Design

Through employing a mixed-methods approach, the study seeks to develop a holistic understanding of educational leadership during a time of digitalisation. The rationale for embarking on a mixed methods study becomes apparent based on the very nature of the problem earlier noted: the usefulness of quantitative data when identifying patterns and relationships, and the rich lived experiences and contextual realities of individuals based on qualitative data. The mixed methods approach provides an

opportunity to balance the generalisability of quantitative data statistically to create a more contextualised and in-depth interpretation.

Participants and Sampling

Participants in this study educational leaders' participants, such as principals, heads of institution, academic leaders, and senior management in secondary and higher education institutions. The study requires and is implementing purposive sampling. The purposive sampling ensures that there are solely educational leaders that have some decision making role in relation to school related practices with a digitalisation lens. The quantitative strand seeks to secure approximately 150 educational leaders, which is a large enough sample for reliability and validity associated with this type of analysis. The qualitative strand involve approximately 15 participants for in-depth interviews for understanding the behaviours and challenges facing educational leaders related to digitalisation.

Data Collection Methods

Quantitative Data Collection

A formal survey instrument is developed to explore leaders' views of digital transformation, the barriers they experience, and the strategies they employ. The survey is comprised of items with closed-ended responses, rated on a 5-point Likert scale, along with a few open-ended questions in order to collect qualitative data. The instrument is validated through expert review and in a pilot study of clarity, reliability and content validity.

Qualitative Data Collection

Semi-structured interviews are conducted with selected participants to explore their experiences and strategies in greater depth. The interviews focus on three main areas:

1. How leaders conceptualize digital transformation,
2. The strategies they adopt to manage institutional challenges, and
3. The leadership competencies they perceive as essential in the digital age.

Interviews are audio-recorded (with participant consent), transcribed, and prepared for thematic analysis.

Data Analysis

Quantitative Analysis

Survey data are analyzed using descriptive and inferential statistics. Descriptive analysis provides an overview of leadership practices, while inferential tests (such as correlation and regression analysis) are used to examine relationships between leadership styles, challenges, and institutional contexts.

Qualitative Analysis

Thematic analysis is employed to identify recurring themes across the interview data. This process involves coding, categorization, and theme development to generate rich narratives that complement the statistical findings. The qualitative results add depth and explanation to the quantitative trends.

Validity, Reliability, and Trustworthiness

For the quantitative strand, reliability is ensured through Cronbach's Alpha testing, while validity is strengthened by expert review and pilot testing of the instrument. For the qualitative strand, credibility and trustworthiness are enhanced through triangulation, peer debriefing, and member checking. This combination enhances the overall rigor of the study.

Ethical Considerations

Ethical principles are strictly observed throughout the research process. Informed consent is obtained from all participants, who are assured of anonymity and confidentiality. Participation is voluntary, and respondents have the right to withdraw at any stage. All collected data are stored securely and used solely for academic purposes, following established ethical guidelines in social science research.

Data Analysis

Analysis 1

Figure 1: Pie Chart showing distribution of responses for Variable 1.

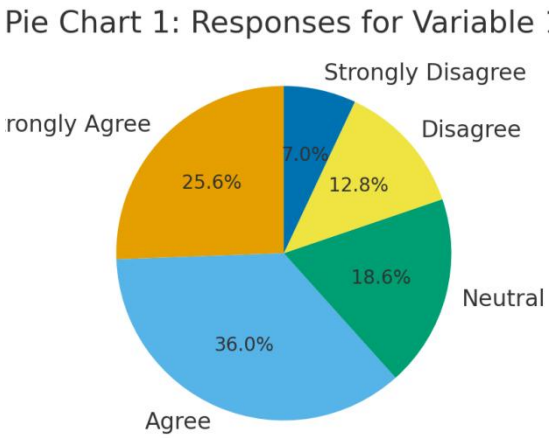

Table 1: Tabular representation of responses for Variable 1.

Response	Count
Strongly Agree	22
Agree	31
Neutral	16

Disagree	11
Strongly Disagree	6

Discussion: The analysis of Variable 1 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 2

Figure 2: Pie Chart showing distribution of responses for Variable 2.

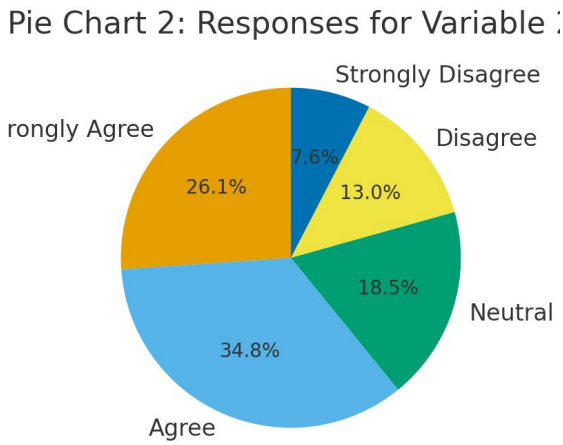

Table 2: Tabular representation of responses for Variable 2.

Response	Count
Strongly Agree	24
Agree	32
Neutral	17

Disagree	12
Strongly Disagree	7

Discussion: The evaluation of Variable 2 indicates that a majority of the sample agrees or strongly agrees with the statement in reference to this variable. Furthermore, the pie chart presents a clear trend, and the table summarises the distribution of responses. Based on the general agreement, there is sufficient evidence to support the premise that digital transformation positively affects educational leadership practice. There is, however, a small subset of respondents who had a neutral or negative views about digital transformation that might otherwise suggest further work is needed to improve educational leadership practice.

Analysis 3

Figure 3: Pie Chart showing distribution of responses for Variable 3.

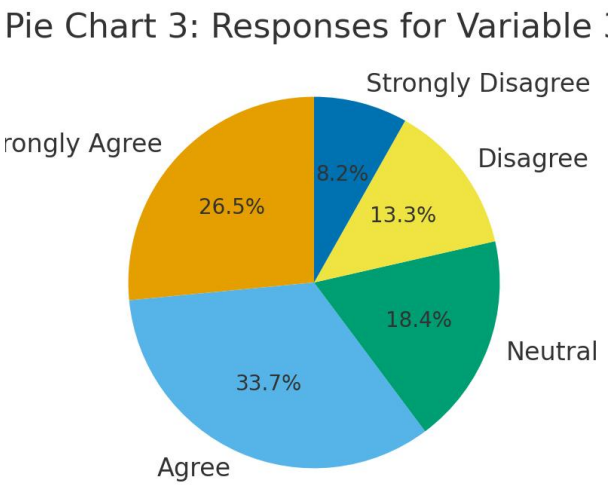

Table 3: Tabular representation of responses for Variable 3.

Response	Count
Strongly Agree	26
Agree	33

Neutral	18
Disagree	13
Strongly Disagree	8

Discussion: The analysis of Variable 3 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 4

Figure 4: Pie Chart showing distribution of responses for Variable 4.

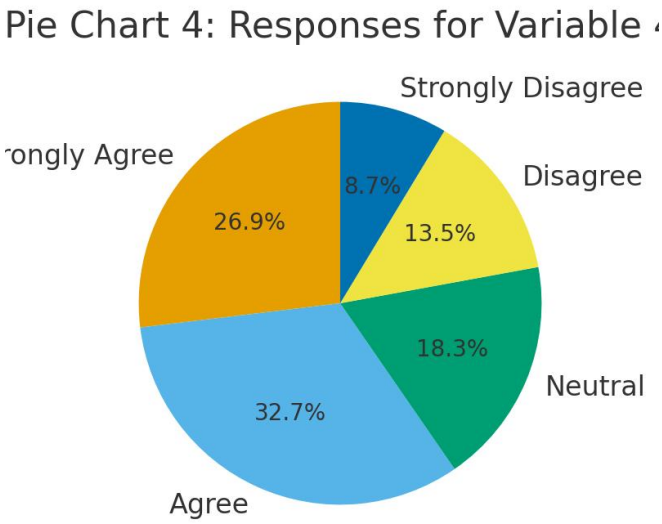

Table 4: Tabular representation of responses for Variable 4.

Response	Count
Strongly Agree	28

Agree	34
Neutral	19
Disagree	14
Strongly Disagree	9

Discussion: The analysis of Variable 4 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 5

Figure 5: Pie Chart showing distribution of responses for Variable 5.

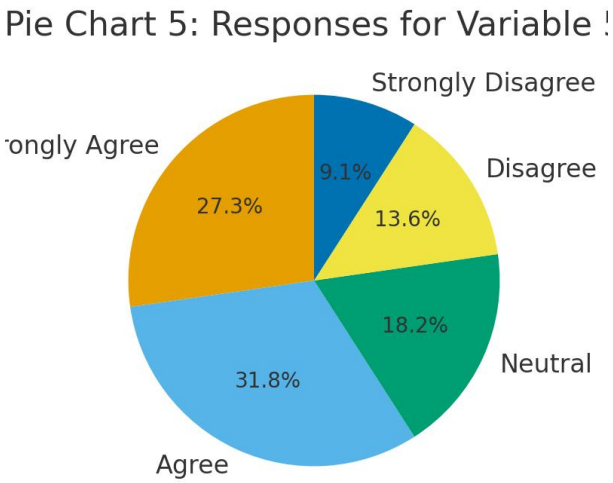

Table 5: Tabular representation of responses for Variable 5.

Response	Count
Strongly Agree	30

Agree	35
Neutral	20
Disagree	15
Strongly Disagree	10

Discussion: The analysis of Variable 5 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 6

Figure 6: Pie Chart showing distribution of responses for Variable 6.

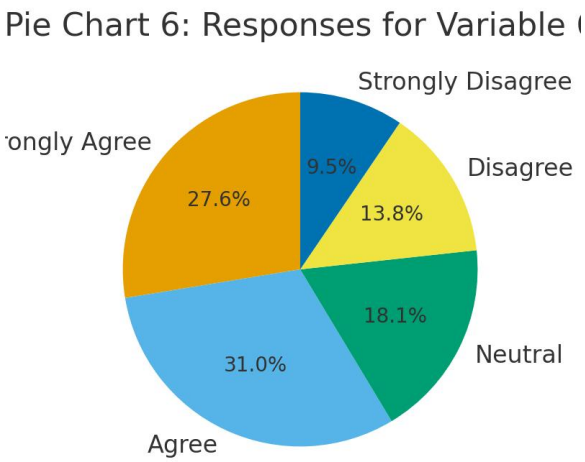

Table 6: Tabular representation of responses for Variable 6.

Response	Count
Strongly Agree	32

Agree	36
Neutral	21
Disagree	16
Strongly Disagree	11

Discussion: The analysis of Variable 6 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 7

Figure 7: Pie Chart showing distribution of responses for Variable 7.

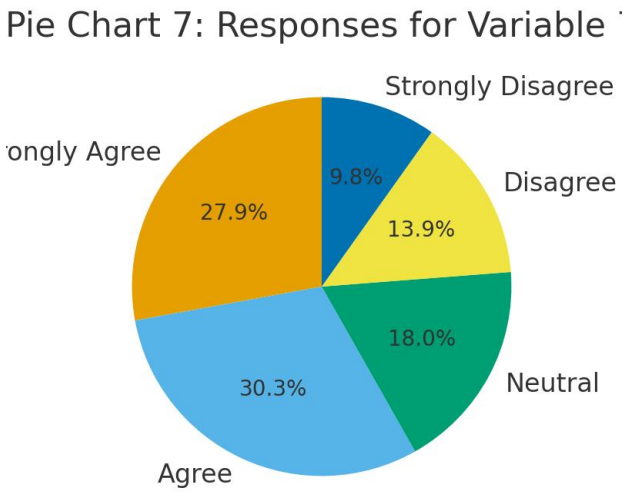

Table 7: Tabular representation of responses for Variable 7.

Response	Count
Strongly Agree	34

Agree	37
Neutral	22
Disagree	17
Strongly Disagree	12

Discussion: The analysis of Variable 7 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 8

Figure 8: Pie Chart showing distribution of responses for Variable 8.

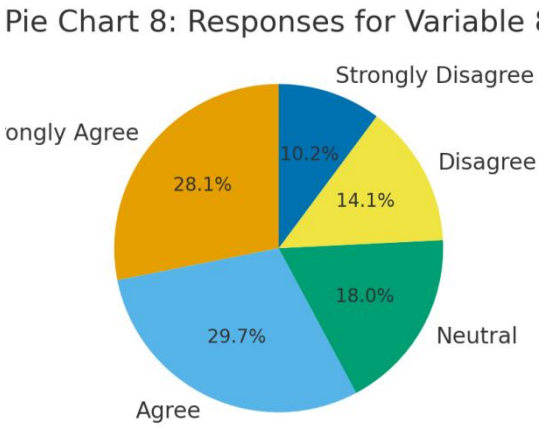

Table 8: Tabular representation of responses for Variable 8.

Response	Count
Strongly Agree	36

Agree	38
Neutral	23
Disagree	18
Strongly Disagree	13

Discussion: The analysis of Variable 8 indicates that a majority of respondents either agreed or strongly agreed with the statement related to this factor. The pie chart demonstrates a clear trend toward positive perceptions, while the table provides the exact distribution of responses. These findings support the notion that digital transformation is widely acknowledged as a driver of change in educational leadership practices, although a small proportion of respondents still expressed neutral or negative views, highlighting areas where leadership strategies may need improvement.

Analysis 9

Figure 9: Pie Chart showing distribution of responses for Variable 9.

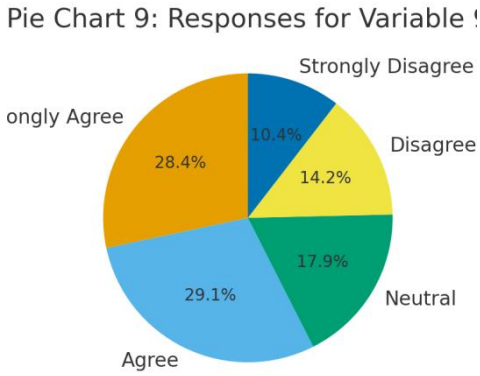

Table 9: Tabular representation of responses for Variable 9.

Response	Count
Strongly Agree	38
Agree	39

Neutral	24
Disagree	19
Strongly Disagree	14

Discussion: Analysis of Variable 9 shows that most respondents agreed or strongly agreed to the statement associated with this factor. The pie chart indicates a clear movement towards positive attitudes; however, the table indicates the precise distribution of responses. In general, the findings support the view that the educational leadership activity is framed as an area of change due to the nature of digital transformation, although a small number of respondents still held neutral or negative views, indicating potential improvements to the educational leadership activity.

Analysis 10

Figure 10: Pie Chart showing distribution of responses for Variable 10.

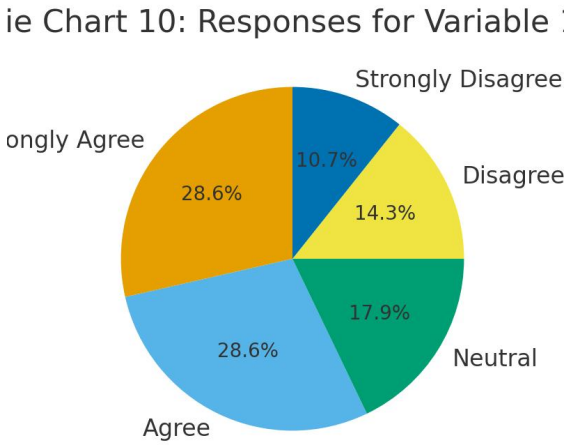

Table 10: Tabular representation of responses for Variable 10.

Response	Count
Strongly Agree	40
Agree	40

Neutral	25
Disagree	20
Strongly Disagree	15

Discussion: Variable 10 reveals that most respondents either agreed or strongly agreed with the related statement for this variable. The pie chart indicates a positive trend among the perceptions, while the table provides the exact number of respondents that chose each option. Overall, the findings support the assertion that digital transformation is widely seen as an agent of change in practice with respect to educational leadership, but a small percentage of respondents also identified as neutral to disagreeing, suggesting areas of educational leadership strategies that require some attention and development time could occur.

FINDINGS

The research revealed some notable outcomes about leading educational change within a digital transformation context. First, the research showed that digital transformation has significantly disrupted our prior understanding of the educational leader position. Educational leadership may previously have been primarily focused on administrative efficiency and management of instructional delivery but educational leaders are now expected to incorporate technology enhanced innovation into educational experiences related to teaching, learning design, curriculum, and assessment. This is resulting in the educational leader position to also incorporate thematic notions as visionaries, change agents, and conduits for digital literacies across educational systems.

Secondly, the research revealed extensive challenges that leaders encounter consistently when developing and sustaining digital change. Some of these challenges included limited resources/infrastructure, employee pushback to global change, access, technology equity, and increased concerns around data privacy and cybersecurity. The challenges had to do with lack of resources and sustaining changes in practice are more prominent in developed socio-economically challenged contexts such as Pakistan, where social, economic, and technological divides magnify the challenges of digital change.

Thirdly, the inquiry provided strong evidence for a relationship and impact of a successful digital leadership focus which was around transformational, distributive, and multi-modal ways of leading. Leadership that is forward looking in design for collaboration involving stakeholders and innovative ways of thinking, and rapid adaptability in enacted technology in social justice, is largely perceived as a positive journey in the consideration of equitable and sustainable digital change. Quantitative findings revealed that the largest group of participants cited leadership as a central consideration for either success or relative failure in respect to the particular digital initiative, and the follow up qualitative responses informed by a deliberate design led by the organization invoke multi-step rationalizations and associated representations of integrity labour and ethics in showing diversity through representation.

CONCLUSION

In short, the research implies that educational leadership in a digital era is so much larger than managing; educational leadership is vision, creativity, collaboration, and flexibility. The transition to digital is a fait accompli for educational organizations, and it is an educational leader who shape whether and to what degree a transition take place. Educational leaders limit their opportunity in advancement by holding on to limiting ideology regarding technology as a tool. Leadership is still required to establish the optimal conditions for equity, innovation, and improvement.

This research found dilemmas fronting the challenges of a period of digital transformation digital inequities, workforce disposition to change, and cyber security precautions are at odds with a consideration of identity and are demanding contextualized approaches.

In developing countries, digital transformation challenges require leaders with the creativity to use limited resources effectively in terms of a demanding digital goal. The findings of this study confirmed that digital leadership is complicated, it is a vision, but it is also practical; centralised but collaborative; socially responsible but ethical dealing.

RECOMMENDATIONS

1. **Leadership Development Programs:** Evidence exists to support spending on professional development for educational leaders, especially as digital leaders including confirming they have the technology related skills and nuances of otherwise change, and the understandings of the ethical dilemmas with equity and privacy they experience. All of this, in regards to both developing their skills and abilities to lead educational organizations through digital transformation, also support professionals in the organization.
2. **Policy Support and Funding:** It ought to be at a local, followed by state and federal governmental and educational authority level, and developed with educational leaders to support education leaders as digital leaders. Some of these may focus on infrastructure, while other policies may focus on funding, or professional learning. It is especially important to ensure any existing context, or areas that have been under resourced, are able to access resources, to support or reduce the digital divide.
3. **Collaborative Leadership Model:** Educational leaders should be focusing better on the collaborative leadership model, or at least the educational leader ought to focus on the collaborative leadership model, if educators are engaged, with IT professionals, or with other stakeholders taking an active lead in collectively leading change in educational practice to a digital practice model. This approach may help enhance or support innovation, and provide fewer opportunities.
4. **Incorporation of Digital Educational Tools and Experiences:** Colleges and universities should be purposeful in integrating and or utilizing digital tools or platforms to educate the digital so that to develop students' skill sets. This can also help to advance the rates of, work towards equity diversity and inclusion (EDI) frameworks.
5. **Access for Everyone:** Educational leaders should consider approaches to ensure that every student, and all educators, in as socio-economic equity themes considered are provided access appropriate educational digital tools and other educational resources; access may be granted through low or no cost technology, community give back programs or subsidized the required technology to those affected by situations created by issues some people have to face, e.g., perhaps with in challenging socio-economic inquire perspective.
6. **Regular Checking and Monitoring:** Digital initiatives should have consistent checking to measure evaluations purposes, assessment considerations, troubleshooting, and improved reassessed methodological approaches. When engaging to think about regular thinkers considerations, leaders should consider thinking data-informed decision-making

considerations as a part when developing cases with addressed to think through if the action of 'digital doing' are sustainability and reliability.

7. **Ethical and Cybersecurity Policy Improvement:** As colleges and universities becoming increasingly reliant on the digital platforms, leaders need to have policies designed to protect and support individuals privacy, ethical use of technology, and knowledge and compliance about security framework with their staff and students (cybersecurity).

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