

## Research Article

# Role of Leadership in the World of Digitalization and Information Technology: A Systematic Review

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### Abstract

**Background:** Where digitalization has enhanced and revolutionized leadership, it has had its fair share of drawbacks.

**Objectives:** To determine the impact of digitalization in navigating various types of leadership in the fields of healthcare and education.. This study aims to discuss such limitations and challenges with various styles of leadership that were mentioned in the studies.

**Methods:** Twenty-three studies from the year 2000 to 2023 relevant to digitalization, its impact on leadership and its various styles were reviewed any systematic reviews or meta-analyses were excluded. Only free access to full articles, written in English was included. We gathered studies from Google Scholar, PubMed and Science-direct by using the keywords 'Leadership' OR 'Leadership Styles' AND 'Digitalization' OR 'ICT' AND 'Challenges'. We shortlisted the studies according to PRISMA guidelines.

**Results:** Among all the leadership styles explored, transformational leadership came out to have a greater impact since this leadership encourages the process of digitalization. Transactional and facilitative leaderships also pave the way in achieving digital goals. The rest of the leaderships were less explored in the studies. The challenges reported in the studies concerning leaders include a lack of skills and competency, a communication gap, and an underestimation of the importance of digitalization.

**Conclusion:** It is essential to consider the contextual relationship of leadership styles as different studies revealed different approaches. Moreover, acknowledging and addressing different challenges is crucial for the implementation of digitalization in different organizations.

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**Keywords** | Leadership, Leadership styles, Digitalization, Information Technology.

### Introduction

The word leadership encompasses a vast diversity of definitions, but the attributes that have impacted and elevated the process of digitalization in recent years explore it as a way one can influence the course of events in any circumstance.<sup>1</sup> Leadership at its core is the credibility, earned by an ethical and transparent approach to any criteria.<sup>1</sup> The term “digitalization” or “digital transformation” means the

adaptation of a system to be operated with the use of computers and the Internet. Digitalization has changed people’s personal as well as work lives. Workplaces have been converted into “digital workplaces”. Most jobs now require employees to be tech-savvy in addition to possessing other skills needed for their jobs.<sup>2</sup> It has completely transformed the structure of organizations and issues have arisen in the management of these new structures. Although some organizations claim that digitalization has paved the way for successful leadership, many others depict the challenges faced in the process. Digitalization has also occurred in the field of healthcare and it results in better patient outcomes.<sup>3</sup> However, digital healthcare services often fail due to poor leadership.



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The studies published from 2000 onwards emphasized different challenges that impede effective leadership in the world of digitalization and the ways to deal with such dilemmas. Improper sustainability models, the lack of communication between leaders and subordinates and cultural values are matters of great concern in above mentioned fields. The biggest challenges are the compromise of ethical standards and the lack of research on how digitalization can be relevant to corrupt leadership. Another challenge that was identified by the previously published studies was privacy challenge associated with the digitalization process.<sup>4</sup>

Previous studies were able to summarize the problems that arise with digitalization but didn't map out the ways to manage these obstacles and they did not review the role of leaders in the management of these issues. Digital health leadership is often equated to an enigma due to inadequate research and unstructured healthcare systems still growing to this day.

Our study aimed to highlight the lack of transparency and accountability that accompanies digitalization, with the focus being on digital health leadership. Furthermore, we have summarized the leadership styles that are required in the effective management of such challenges.

## Ethos And Methods

### Search Strategy:

A systematic review was conducted encompassing studies from 2000-2023. PubMed and Google Scholar were used as databases. MeSH keywords used were 'Leadership' AND 'Leadership Styles' AND 'Digitalization' OR 'ICT' AND 'Challenges'.

### Study Selection

**Eligibility Criteria:** We considered studies that were in English language only. Only articles whose free full texts were available were included. Our study includes articles ranging from 2000 to 2023.

**Inclusion Criteria:** Firstly, published studies related to leadership in healthcare and education were included. Secondly, only those studies were included that discussed how digitalization and IT have transformed leadership. Studies discussing challenges posed by digital transformation for leadership and skills required for effective management were also included. Moreover, studies related to the role of leaders in adopting and promoting digitalization were considered. There will be no exclusion based on demography. We will include articles published worldwide.

**Exclusion Criteria:** Firstly, all studies except Healthcare and education i.e. industries, media, economics etc. will be excluded. Secondly, these documents, books, conference outcomes and systematic reviews will be excluded. All articles other than English language and those which are not available in full-free text will be excluded. Moreover, all those articles that didn't manifest an interlink between digitalization and leadership will be excluded too.

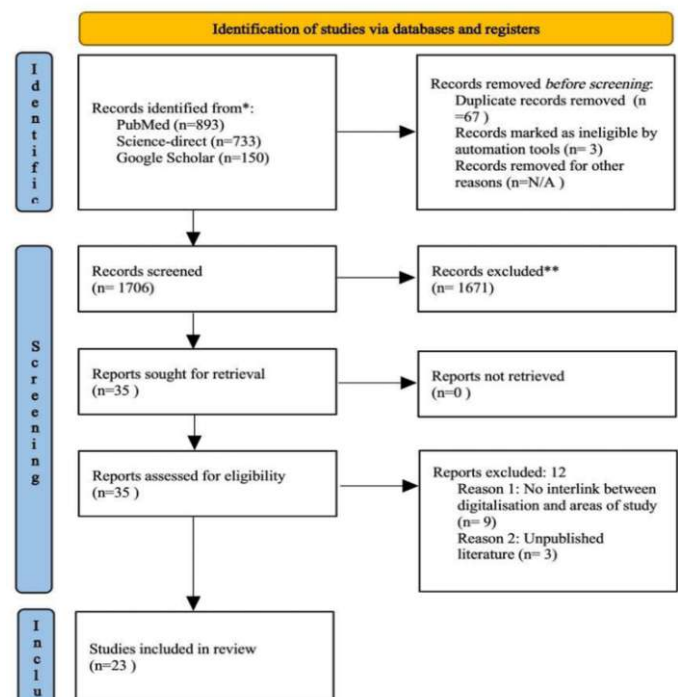
## Data Collection

We collected studies from different databases i.e. Google Scholar, PubMed and Science-direct. The strategy for extracting articles from Google Scholar involve from the first 15 pages with 10 articles per page. We used time duration filters for different studies published during the last 23 years' span (2000-2023) in only the English language, and we used the inclusion criteria of only full free texted articles to be included in our study. Different study designs except systematic review and meta-analysis were selected to extract all the available studies. We imported the studies related to our inclusion-exclusion to Zotero according to the PRISMA guidelines. Then we will remove the duplicate articles collected from different databases and then screened the articles according to the articles' abstracts. Then we reviewed the selected articles.

### Data Analysis:

With the help of the PRISMA Protocol, the screened articles will be documented and articles will be grouped into the Mendeley library supported by references. The strategic data found in the articles will be summarized in tables/ charts/ pie diagrams using MS Excel, and the extracted data will be documented using MS Word. Mendeley will be the sole source of adding references and citing articles. In addition, the quality of the included art will undergo a quality check with a photo of the systematic review process.

**Figure 1:** *Prisma Flowchart*



## Results:

We considered twenty studies. Out of these twenty-three

**Table 1:** *Data Extraction of Selected Studies*

Title	Author and Year	Study Design	Leadership Style
Correlation between Cultural perceptions, Leadership Style and ICT Usage by school principals in Malaysia	Anantha et al (2014)	Descriptive Study	Transformational leadership, Transactional leadership
How leadership for an ICT reform is distributed within a school	David et al (2012)	Case Study	Instructional Leadership, Transformative Leadership, Strategic Leadership
Leadership Types and Digital Leadership in Higher Education: Behavioural Data Analysis from the University of Patras in Greece	Hera et al (2020)	Descriptive Study	Transformational leadership, Transactional leadership, Passive to avoid leadership, Outcome leadership
Digital Leadership: Attributes of Modern Healthcare Leaders	Abdullah et al (2022)	Qualitative Study	Transformational Leadership, Strategic Leadership
Connectivism and leadership: Harnessing a learning theory for the digital Agee to redefine leadership in the twenty-first century	Frederique et al (2020)	Review	Instructional Leadership
School Technology Leadership: An Empirical Investigation of Prevalence and Effect	Ronald et al (2005)	Qualitative Study	Facilitative leadership
Indicators of Digital Leadership in the Context of K-12 Education	Lin et al (2017)	Qualitative Study	Transformational, Instructional, Collaborative
Identifying Roles of Healthcare Leaders in HIT Implementation: A Scoping Review of Quantitative and Qualitative Evidence	Elina et al (2020)	Review	Strategic Leadership, Facilitative Leadership
Importance of Technology Leadership for Technology Integration: Gender and Professional Development Perspective	Arumugam et al (2019)	Review	No relationship exists
Teaching with and about computers in secondary school	Henry et al (1993)	Qualitative Study	Not discussed
Physician leaders and Hospital Performance: Is There an Association?	Amanda et al (2011)	Observational Study	Expert Leaders
Preparing Higher Education Leaders: Conceptual Strategic and Operational Approach	Ralph et al (2017)	Case Study	Not Discussed
Leadership and institutional Change in Higher Education	Stephen et al (2016)	Qualitative Study	Enterpreunial Leadership
DIGITAL LEADERSHIP 4.0	Sophia et al (2018)	Descriptive Study	Autocratic Leadership style, Democratic Leadership Style

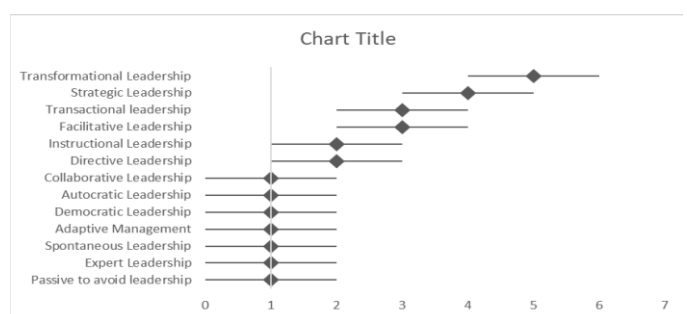
Management challenges for future digitalization of healthcare services	Camilla et al (2020)	Focus Group Interview	Command and Control Leadership Style, Adaptive Management, Learning oriented Leadership
The Language of Health Reform and Health Management: critical issues in the management of health systems	DS Brigg et al (2016)	Qualitative Study	Not discussed
Exploring Teacher Leadership and the Factors Contributing to It: An Empirical Study on Chinese Private Higher Education Institutions	Zhang et al (2021)	Qualitative Study	Facilitative Leadership
Digital leadership: State governance in the era of digital technology	Peng et al (2021)	Qualitative Study	Not discussed
Leadership style desired by youth in Asia	Nor Amin et al (2017)	Descriptive Study	Directive Leadership
Digital Transformation	Christof et al (2018)	Qualitative Study	Spontaneous Leadership
Validating a Model of Strategic Leadership Practices for Malaysian Vocational College Educational Leaders A structural equation modelling approach	Hairuddin et al (2019)	Quantitative Study	Strategic Leadership
Exploring visual methods in the field of educational leadership: Co-creating understandings of educational leadership and authority in school organizations	Grimm et al (2021)	Qualitative Study	Middle managers

studies, five commented on transformational leadership which is the highest reported number of any leadership style.<sup>5-9</sup> Strategic Leadership style was discussed in four studies.<sup>6,8,10,11</sup> Transactional leadership and Facilitative Leadership styles were both discussed in three studies.<sup>10,12,13</sup> Instructional Leadership<sup>9,14</sup> and Directive Leadership<sup>15,16</sup> were commented on in two studies. In addition, Collaborative Leadership,<sup>9</sup> Autocratic Leadership,<sup>17</sup> Democratic Leadership,<sup>17</sup> Adaptive

**Table 2:** Percentage of Each Leadership Style

Style	No. Of Studies	Percentage
Transformational Leadership	5	21.7
Strategic Leadership	4	17.3
Transactional leadership	3	13
Facilitative Leadership	3	13
Instructional Leadership	2	8.6
Directive Leadership	2	8.6
Collaborative Leadership	1	4.3
Autocratic Leadership	1	4.3
Democratic Leadership	1	4.3
Adaptive Management	1	4.3
Spontaneous Leadership	1	4.3
Expert Leadership	1	4.3
Passive to avoid leadership	1	4.3

Management, Spontaneous Leadership<sup>18</sup>, Expert Leadership<sup>19</sup> and Passive to avoid leadership styles were discussed in only one study each. Out of our twenty-three studies, only one claimed that there exists no relationship between any particular leadership style and ICT implementation,<sup>20</sup> while four did not comment on leadership styles.<sup>21-24</sup>



**Figure 2:** Forest Plot

### Challenges:

Another variable that we considered while reviewing our studies was the challenges that leaders face while implementing digitalization and increasing the use of ICT. These challenges can be grouped into the following subheadings:

Factors Related to the Leaders:

#### Lack of skills/competete

- Cities
- Lack of communication
- Underestimating the importance of digitalization
- Lack of Understanding of his/her role

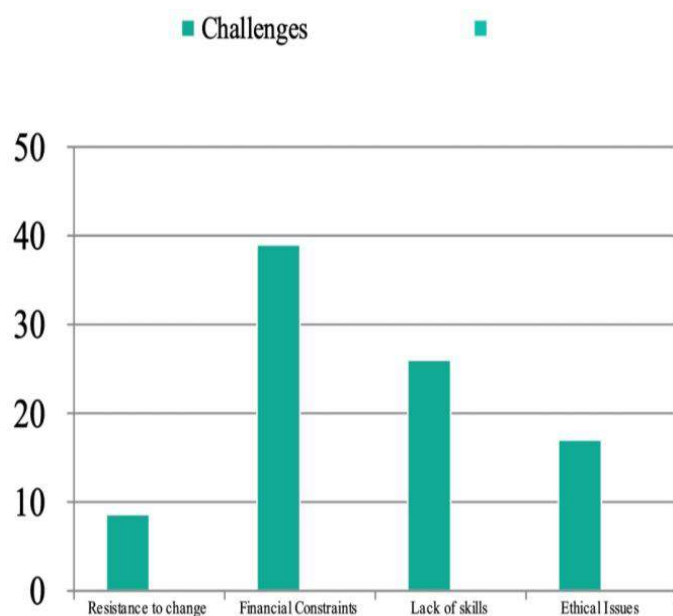
Factors Related to General Public:

- Cultural Perceptions
- Resistance of Change
- Unawareness about the importance of digitalization
- Digital divide
- Wealth Gap
- Uneven Urban-Rural Development
- Lack of skills

Other Factors:

- Financial Constraints/Lack of Resources
- Ethical issues such as lack of authenticity of information
- Legal issues

Out of the 22 studies that we reviewed, nine mentioned financial constraints as the biggest challenge. Six discussed a lack of skills and competencies. Four talked about ethics issues related to digitalization. Two studies highlighted cultural perceptions, legal issues, resistance to change and lack of understanding of the importance of digitalization. The rest of the issues were mentioned in one study each. Out of 22 studies, four studies did not discuss the issues posed in the way of digitalization:



**Figure 3:** Bar graph of Challenges Discussed in Studies

In this systematic review, we examined the role of leadership in the world of digitalization and information computer technology (ICT) by analyzing twenty-three relevant studies done earlier. The findings highlighted various leadership styles and the challenges faced during the implementation of digitalization and the use of ICT in the advancement of different departments of society.

#### Discussion

In this systematic review, we examined the role of leadership in the world of digitalization and information computer technology (ICT) by analyzing twenty-three relevant studies done earlier. The findings highlighted various leadership styles and the challenges faced during the implementation of digitalization and the use of ICT in advance cement of different departments of society.

#### Leadership Styles:

Among all the highlighted various leadership styles, transformational leadership proved to be the most prominent leadership style with a greater impact with five different studies shed light on its importance. Transformational leaders aim to train their followers to look beyond their self-interests for a bigger goal. They achieve this by being charismatic, considerate, inspirational and intellectually stimulating.<sup>27</sup> These qualities make the transformational leadership style an excellent style to be adopted by leaders for the digitalization of workplaces. Digitalization demands that leaders have the qualities of communication, innovation and adaptability. All of these qualities are found in transformational leaders. They make strategic decisions and provide a solid structure to introduce changes within an organization. Conservative leaders, on the other hand, lack the knowledge of the importance the of introduction of technology within an organization and hence do not make very effective leaders for digitalization.

The second most commonly discussed leadership style was strategic leadership style. Strategic leaders devise new ways and strategies to deal with problems. The difference between strategic and transformational leadership styles is that strategic leadership is heavily focused on decision making whereas transformational leadership is focused less on decision-making. Strategic leadership proves fruitful for digitalization if the leader has digital competencies. Then the leader can formulate strategies to help drive digitalization. It is essential that the leader be open to experimenting with innovative strategies. Another one of the highly discussed leadership style is Transactional Leadership. Transactional Leadership is a style where the leader and the follower mutually benefit. The leader relies on rewards and punishment to get the tasks done. Some researchers have commented that trans-

formational and transactional leadership styles are not mutually exclusive. A leader possessing transformational qualities may also possess transactional qualities<sup>27</sup>. In theory, transactional leadership sounds outdated and ineffective, but that is not the case. Employees work better if their needs are met and they have an incentive to do work.

Previous studies have no direct relationship between transactional qualities and digital transformation<sup>28</sup>.

Facilitative leadership enables employees to make their own decisions. Leaders do not take direct control in this type of leadership but only facilitate employees to take action. This type of leadership style acknowledges the sovereignty, competency and feelings of the followers. In the modern digital world, this style of leadership has a huge importance but its role in digital transformation remains yet to be explored.

Only one study emphasized other leadership styles, including collaborative, autocratic, democratic, adaptive management, spontaneous, expert, and passive-avoidant leadership styles. Though these styles were less frequently explored, they provided key insights to potential nuances and contextual variations within leadership approaches in the context of the digitalized world.

It is noteworthy that one study claimed no specific relationship between any leadership style and IT implementation, while four studies did not directly comment on leadership styles.

It is noteworthy that among all leadership styles that have been discussed, only Transformational leadership has substantial backing as being effective in digitalization of work places.

### **Challenges:**

These above mentioned leadership styles are accompanied by several challenges that leaders confront during the implementation of digitalization and increased use of ICT. These Challenges can be categorized into three main categories:

- Factors related to leaders
- Factors related to the general public
- Other factors

### **Challenges Related to the Leaders:**

One of the most common challenges interposed in the way of digitalization is the lack of skills and competencies of digital leaders. Leaders who are less skilled in the digital realm will have less chances to effectively lead their organizations through the digital transformation process. Digital leaders can only build and develop their employee's technological skills if they have skills of their own.

One of the most important characteristic of any leader in any

sphere is effective communication. Leaders who do not communicate effectively with their team and organizationalordinates will be unable to build the trust and support necessary for successful implementation of any framework necessary for their organization. Digitalization alters the entire structure of an organization and this includes the means of communication. Thus it is essential for digital leaders to develop their communication skills by the new requirements.<sup>29</sup>

Conservative leaders, who underestimate the importance of digitalization, will be unable to take advantage of the opportunities that it offers.<sup>27</sup> For a leader to implement digitalization in his or her organization, he or she must understand that digitalization is a need of time.

### **Challenges Related to the General Public:**

The most common challenges related to the general public were cultural knowledge, attitudes, perceptions, resistance to change, and unawareness about the importance of digitalization. Cultural perceptions can create barriers to the adoption of new technologies, especially in countries with strong traditional values. Resistance to change is a natural human reaction to new things, and it can be especially difficult to overcome when people are not aware of the benefits of digitalization. It is important to understand that digitalization is a relatively new concept, especially in South-Asian countries like Pakistan. The general public here does not have basic technological skills. It is the responsibility of the leaders to ensure the development of the digital skills of their employees. This can be done by holding workshops and trainings that inculcate these skills amongst the employees.<sup>30</sup>

### **Other Challenges:**

The other challenges that leaders face when implementing digitalization include financial deficits, ethical considerations, and legal issues.

Out of all the challenges reported in our studies, financial constraints were the most frequently reported. Financial constraints can make it difficult to acquire the necessary technology and training. Digitalization requires equipment, like computers, cables, internet and other technology. Lack of proper funding will hamper the process of digitalization.<sup>29</sup>

Ethical issues can arise when data is collected and used, and leaders need to be aware of these issues in order to protect the privacy and security of their users.

Legal issues can also arise, especially in countries with strict regulations on the use of technology

Our research article has several limitations that should be taken into consideration. Firstly, the study is qualitative in nature, which means that it relies on researcher's observations and interpretations rather than numerical data. Additionally,

we didn't conduct any meta-analysis or randomized controlled trials (RCTs), which limits the ability to draw definitive conclusions. Furthermore, the number of studies included in the analysis is only twenty-two, which may impact the generalizability of the findings. Lastly, we haven't assessed the quality of the included studies or didn't consider the potential bias, which may affect the validity of the results.

### Solutions:

**Investment in resources:** Digitalization requires new tools and equipment. So it is the responsibility of the leader to provide necessary resources to aid in the process of digital transformation.

**Development of skills:** Leaders can hold workshop and training course to develop these new skills in their employees.

**Awareness:** Leaders can educate the public regarding the importance of digital development. They can give examples of more digitally advanced nations and the heights they have achieved because of this.

**Better Communication:** Digitalization offers a whole new realm of communication such as emails, texts, WhatsApp, video calls. Leaders should take advantage of these to forge better relationships with their employees. They should talk in clear and easy terms that is understandable for their employees.

**Privacy:** Privacy is a big issue with digital technology. Leaders should invest in cybersecurity.

**Ethical Considerations:** Leaders should teach their employees the ethical aspects of technology like privacy and intellectual property theft.

**Strategic Management:** Leaders should devise innovative strategies to deal with the problems posed by digitalization.

### Conclusions

Different leadership styles have different effects on digitalization with the focus being on Transformational Leadership. However, these relationships are not clear-cut. Moreover, this study addresses various challenges that are interposed in the way of digitalization.

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