



## RESEARCH PAPER

### A Comparative Study of E-Technological Leadership Competencies of Male and Female Head Teacher at Secondary School Level

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#### ABSTRACT

E-Technological leadership competencies have a great importance for educational leaders to cover all the challenges in this rapidly changing world especially in the field of education in Pakistan. e-leadership competencies of secondary school heads plays a vital role to handle the e-technological issues to run the secondary schools smoothly. This research was carried out to compare the e-technological competencies of male and female head teachers at secondary school level. 21 female and 25 male head teachers were selected as a sample for this research study, data was collected through questionnaire from targeted sample. Data was analyzed using SPSS statistical tool, major findings of this research were concluded that the level of competencies of most of the male and female secondary school heads had high level of e- technological competencies in some areas including use of WhatsApp group, printing of documents and use of e-mails. there was also a low level of competencies was identified in some areas, like conducting online meeting, use of multimedia and solving technical problems. There was no significant statistical difference seen between male and female secondary school heads in e-technological competencies This study recommends that use of e-technology is the key factor for both male and female head teachers in the field of e-leadership. Therefore, a comprehensive school leadership development training programs may be launched to enhance the e-technological leadership competencies of male and female head teachers at secondary schools level.

**Keywords:** E- Leadership, E-Technological Leadership Competencies, Secondary School Heads

#### Introduction

The unexpected spread of COVID-19 pandemic has increased the importance of e-technological competencies for school leaders, particularly in the context of remote and blended learning. A study by Teo and Noyes (2011) found that head teachers' attitudes towards technology, their perceived usefulness of technology, and their access to training and support were key factors influencing the development of their e-technological competencies.

A study by Kashif and Ali (2019) found that head teachers' e-technological competencies were positively associated with their ability to lead their schools during the pandemic, including their ability to implement online learning platforms and support their staff in using technology effectively. The IR 4.0 technologies, Internet and Artificial intelligence are transforming classroom design, teaching methods, and the role of school administrators (Hinton, 2018).

Foulger et al. (2017) highlighted the importance of e-technological competencies for school leaders. The authors note that educational leaders must be proficient to use the e-

tools and expertise in order to effectively lead and manage their schools in the digital age. Specifically, they identify key e-technological competencies such as the ability to use data analytics tools, design and deliver online professional development, and facilitate virtual meetings and collaboration. By developing these competencies, school leaders can effectively leverage technology to support teaching and learning outcomes, while also promoting collaboration and communication among stakeholders.

Mishra and Koehler (2006) identified several key technological competencies for effective teaching, such as the ability to use technology to support student learning and engage in ongoing professional development. These competencies are also relevant for educational managers, who are the main stakeholders in an educational system and they have to ensure in effective use of technology. Inadequate training, incompetence in ICT, and limited utilization of ICT has affected leaders' and educators' 'in the use of technology (Abdullah et al., 2015). It is clear that there is a big gap in technology integration, among teachers and school leaders who were not capable to cope with technology integration at school level (Cheok & Wong, 2016). Even though the topic of e-technology is gaining more attention, research on how technology affects leadership and how the technological communication context affects leaders and virtual team performance is still lacking in several areas (Lilian, C. 2014)). Specifically, we are blind because Technology-mediated processes have the potential to trigger the defensive self-system in both leaders and followers.. E-leadership is willing and interested for ever to support the other to lead their team through e- technological tools to promote social and emotional interactions, which leads to enhance relationship among team members that is modest possible in face to face meetings (Powell, A., Piccoli, G., Ives, B 2004) This study is designed to examine the use of e-technologies in the field of education by head teachers at secondary school level This study also compares the e-technological competencies of male and female head teachers at secondary school level based on Six E-Competency (SEC) Model offered by Van Wart et al. (2017).

## Literature Review

According to Yuting, Adams, and Lee's (2022) systematic review of the literature, e-leadership refers to the use of digital communication technologies and other electronic resources by academic leaders to facilitate collaboration, knowledge sharing, and decision-making in higher education settings. This includes the expertise of leaders in the use of online communication tools including email, video conferencing, and social media platforms, as well as the integration of technology-based instructional approaches into teaching practices. E-leadership is seen as a critical competency for academic leaders in higher education as it enables them to leverage technology to enhance teaching and learning outcomes and effectively lead and manage faculty and staff. "E-leadership is defined as the use of information communication technologies and other electronic resources by academic leaders to facilitate collaboration, knowledge sharing, and decision-making in higher education settings" (Yuting, et al., 2022). Digital transformation has become a critical issue for educational leaders, especially during the COVID-19 pandemic. Van Wart et al. (2019) intended to know that how the technology has overcome the challenges in the era of digital revolution and how it impacted the role of administration. He stressed on that leaders should now the use of technology not oneself also for their team members and the betterment of the organization / institutions and in enhancing their competencies to handle these technological tools effectively.

The study carried out by Ristapawa, Mahyudin, and Martin in 2023 on e-leadership of school principals in implementing online learning during the COVID-19 pandemic at public senior high school, define e-leadership as the use of electronic communication technologies to lead and manage educational organizations in the digital age. Specifically, e-leadership involves the use of online platforms and tools to support teaching and learning outcomes, as well as to facilitate communication, collaboration, and decision-making among

stakeholders. The authors highlight the importance of e-leadership competencies for school principals, as they are the main stakeholder in ensuring the successful implementation of online learning during the pandemic. By leveraging e-leadership competencies, school principals can effectively lead and manage their schools in the digital age, ensuring the continuity of learning and positive educational outcomes for students.

Aldowah et al.,( 2017;) stated that the successful implementation of e-learning initiatives requires not only strong e-leadership skills, but also a deep understanding of e-technological competencies. In particular, the authors note that e-leadership competencies such as visioning, collaboration, and innovation are necessary for educational leaders to effectively plan and implement technology-based initiatives. However, they also emphasize that developing e-technological competencies, such as the ability to design and deliver effective online courses, is critical to ensuring the success of these initiatives. School administrators must help out and support to educators in applying technology in the classroom, particularly using Interne smart whiteboards and other interactive digital media to enhance the competencies of their learners for interactive learning, school administrators need to be aware about the latest innovations in the field of technology. In order to prepare the future leadership who can guide teachers and learners, as learning experiences are turning into virtual, school leadership must make preparation for training to incorporate technology (Esplin, 2017). In a recent study by Kousar et al. (2022), the authors explored the impact of e-leadership practices on the performance of teachers. The findings suggest that head teachers who possess strong e-competencies are better able to communicate with their teachers, provide effective feedback, and use digital tools to support student learning. The findings of the study are consistent with previous literature on the importance of digital literacy and e-competencies in leadership roles. Therefore, it can be inferred that the e-technological competencies of head teachers are likely to be an important factor in facilitating effective e-leadership in secondary schools.

Oh and Chua (2018) conducted an explorative review of e-leadership studies and found that effective e-leadership is essential for successful implementation of technology in education. The authors emphasized the need for leaders to possess e-competencies such as digital literacy, technological expertise, and effective communication skills to guide and support their team members in technology integration.

Digital leaders are required to be flexible, having a deep academic interest and a thirst for new information, and always be willing to identify and create value from a different point of point of view, and to be at ease with ambiguity. Thus, like all leaders, they must be extremely passionate about what they do, look out challenges as well as possibilities, be open to lifelong learning, and maintain a cooperative and results-driven philosophy.( Wilson, 2004).

## **Material and Methods**

Quantitative research design was used for this research study. A questionnaire was developed by researchers themselves composed of 14 statements based on five point likert scale ranges from strongly disagree to strongly agree .reliability of the questionnaire was checked by SPSS through cronbach's alpha which was .99. Validity of the instrument was censured by five (5) Educational experts from education departments of two universities. They suggested some changes in the statements of the instruments which were incorporated and the final incorporated copy was used to collect the data. A sample of 46 head teachers ( 21 female and 25 male head teaches) were selected from Sargodha division by convenient sampling technique. Collected data from the respondents was analyzed through SPSS (Statistical Package for the Social Sciences). T-Test was used to compare the e-technological competencies of male and female head teachers

## Development of Competencies Scale

Collected data through questionnaire based on five point likert scale ranging from strongly disagree to strongly agree was converted in to competency scale ranging from very low competency to very high competency which is given as in table 1

Table 1  
Competency scale

Numerical scale	Responses as per 5-point likert scale	Responses converted in to competency scale	Mean Scores
1	Strongly Disagree	Very low competency	1.00-1.80
2	Disagree	low competency	1.81-2.60
3	Neutral	Moderate competency	2.61-3.40
4	Agree	High Competency	3.41-4.20
5	Strongly Agree	Very High Competency	4.21-5.00

Competence scale based on a research study by: (Aizan et al., 2018)

Table 2  
Description of competencies and sub-competencies

Competency	Sub-Competencies	Codes
E-Technological Competencies	Use of whAtsapp	ETC.1
	Creation of e-mail	ETC.2
	Online feed back	ETC.3
	Online meeting	ETC.4
	Solving technical problems	ETC.5
	Use of multimedia	ETC.6
	Use of smart board	ETC.7
	Monitoring through CCTV	ETC.8
	Installation of apps	ETC.9
	Use of MS office	ETC.10
	Online sharing of Documents	ETC.11
	Operation of School Information System (SIS)	ETC.12
	Use of Printer	ETC.13
	Use of Fax machine	ETC. 14

This table clarifies the description of main competency, sub competencies and codes allotted to the sub competencies

## Results and Discussion

Table 3  
Demographic Categories of The Head teachers by Gender

Gender)	Frequencies	Percentage
Male	25	54.3
Female	21	45.7
Total	46	100.0

This table depicts the gender of respondents and shows that there were 25 (54.3%) male head teachers and 21(45.7%) female head teachers in this research study

Table 4  
Level of competencies of Male Head teachers

Competency	Sub Competencies	Mean Score	Level of competency
E. Technological Competencies	ETC.1	3.92	High
	ETC.2	3.48	High
	ETC.3	3.84	High
	ETC.4	2,64	Moderate
	ETC.5	2.48	Low
	ETC.6	1.86	Low
	ETC.7	2.36	Low
	ETC.8	4.40	Very High
	ETC.9	4.58	Very High
	ETC.10	3,28	Moderate
	ETC.11	4.48	Very High
	ETC.12	4.46	Very High
	ETC.13	4.40	Very High
	ETC. 14	2.20	Low

This table shows the level of competencies of male head teachers. This table identifies that most of the male head teachers have high level of competencies in some competencies areas like use of WhatsApp group, creating e-mails, giving online feedback whereas, most of the head teachers were very high competent in monitoring through CCTV cameras, installation of Apps, and use of printers while, most of the male head teachers have low level of competence in the use of smart board, use of multimedia, and use of fax machines and solving technical related problems of e-equipments although most of the respondents' have moderate level of competency in operating MS office and conducting online meetings

**Table 5**  
**Level of competencies of Female Head teachers**

Competency	Sub Competencies	Mean Score	Level of competency
E. Technological	ETC.1	4.43	High
	ETC.2	4.24	High
	ETC.3	3.19	Moderate
	ETC.4	2.00	Low
	ETC.5	1.88	Low
	ETC.6	2.62	Moderate
	ETC.7	1.86	Low
	ETC.8	4.40	Very High
	ETC.9	4.56	Very High
	ETC.10	3.28	Moderate
	ETC.11	4.48	Very High
	ETC.12	4.36	Very High
	ETC.13	4.40	Very High
	ETC. 14	2.20	Low

This table identifies the level of competencies of female head teachers. This table shows that most of the female head teachers have high level of competencies in some competencies areas like use of WhatsApp group, creating e-mails, whereas most of the female head teachers were highly competent in monitoring through CCTV cameras, installation of Apps and use of printers while most of the female head teachers have low competency in the use of smart board, use of multimedia, online meetings and use of fax machines and technical related problems of e-equipments and near about most of the

respondents have moderate level of competency in operating MS office, giving rapid feedback and use of multimedia,

**Table 6**  
**Sample T-test for Gender based Difference**

<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>T</i>	<i>Df</i>	<i>Sig. (2-tailed)</i>
Male	25	3.448	.464	.892	44	.337
Female	21	3.329	.430			

This table indicates that mean score of male is 3.448 and female is 3.329, values of standard deviation is male .464 and female .430 value of  $t=4.892$ , degree of freedom is 44 and sig (2-tailed) value is .337 which is  $>$  than .05 the results suggests that there is no statistically significant difference between two groups at the 0.05 significance level.

## Discussion

This study was intended to explore the level of e- technological competencies of male and female head teachers at secondary school level. And to compare the level of competency on gender base Outcomes of this study depict that gender wise head teachers are competent enough in some areas of e- technological competencies whereas some areas are neglected. Difference has also been seen in this study between the level of competencies between two groups results of this research are inclined with the results of study cried out by ( Eileen Winter, Aisling Costello, Moya O'Brien & Grainne Hickey 2021). A study by Kashif and Ali (2019) on e-leadership and its contemporary needs in secondary schools found that head teachers' e-technological competencies were positively associated with their ability to lead their schools during the pandemic, including their ability to implement online learning platforms and support their staff in using technology effectively.

## Conclusion

E-technological competencies is a very vast area in this research study only 14 aspects has been explored in which head teachers are competent in some areas and have low competency in some areas on the basis of the results of this research study it is found that there is a need to conduct more studies on this area deeply to under stands the gaps of this competency on elementary school level, college level and university level to compete this global world. It is highly recommended that school education department must arrange a training program for head teachers to make aware about the changing concepts and new emerging trends in the use of technology.

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