

EMPOWERING WOMEN THROUGH TECHNOLOGY: A COMPREHENSIVE STUDY ON THE IMPACT OF DIGITALIZATION ON DECISION-MAKING IN ISLAMABAD, PAKISTAN

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ABSTRACT

Women's Empowerment is a comprehensive and multidimensional idea. It is concerned with the economic, social, political, and other aspects of life. Because it is all-encompassing, it implies that all aspects of life must be empowered. Empowerment with regard to all dimensions of life apparently to be initiated simultaneously. Technological improvements have drastically shaken the status quo of several facets of women's lives in urban areas as compared to rural ones in the last decade in Pakistan. This research examines the influence of contemporary technology on women's decision-making Islamabad utilizing primary data inferred through quantitative methodology. The chances and challenges that women in the post-technological period encountered while making decisions were also noted in this study. According to this study, women feel more empowered to use technology to make decisions about certain issues they face as well as other issues. The study focuses on women's empowerment in Access to information, Financial management and Social communication decision-making. For immediate benefits, the study suggests that women in rural regions who have easy access to technology be made more aware of it. The study also recommends that the government support digital media, low-income training, ICT workshops, cultural inequality, infrastructure spending, and data protection laws. This will help close the gender equality gap and improve Pakistan's overall economic health as half of the population currently has little influence over decision-making.

Keywords: Technology, Women's empowerment, Women's decision making, Digitization, Decision making

INTRODUCTION

The key concept of women's empowerment revolves around a woman's value and her own identity in society, as well as her desire to demand her position, the capability of implementation or some control over her own life, the ability to forge relationships with other people, and the capacity to participate in activities on an equal footing with men (Kabeer, 2017). Women's empowerment can be boosted by bringing awareness on both collective and individual levels (Gill & Ganesh, 2007). Recent years have seen an incredible development of technology, which has resulted in widespread use by individuals of all ages. For the young generation, technology now plays a significant role in both their social and academic lives. Most teenagers have access to computers, the Internet, mobile devices, video games, and a wide range of other modern technologies. "Technology, the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment" (*Technology / Definition, Examples, Types, & Facts / Britannica*, n.d.).

Technology's development has completely transformed society. There are thousands of individuals who use modern technologies worldwide. The broad adoption of information and communications technologies has undergone one of the most significant developments in the past decade. There are some different types of technology (*Digitalize Trends*, n.d.). According to the (*Datareportal*, n.d.):

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- In January 2022, Pakistan had 82.90 million internet users, with 36.5 percent of the population using the internet. However, 144.4 million Pakistanis did not have internet access, accounting for 63.5 percent of the country's population. Pakistan's population is 50.4% men and 49.6% women.
- In January 2023, 71.70 million people use social media, accounting for 30.1% of the population. The country had 191.8 million active mobile phone connections.
- More broadly, in January 2023, 82.1 percent of internet users in Pakistan used at least one social media platform.
- 72.0 percent of Pakistan's social media users were male at the time, compared to 28.0 percent of female users.

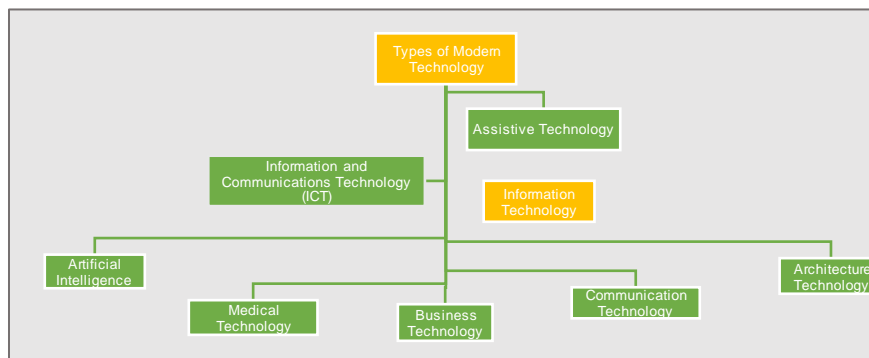


Figure 1 1 Types of Technology

Pakistani women need digital literacy skills to effectively use the internet and technology to raise their quality of life. The study is focusing the overall impact of technology on women's decision-making empowerment in their personal, professional, and financial decision-making. According to financial and digital inclusion studies from the McKinsey Global Institute (MGI), 2.2 billion women (52%) are still not online. Therefore, if women had digital equality in this Internet development period, it would significantly impact gender equality in the workplace (McKinsey, 2015). In India while this is happening, women frequently go unheard and unnoticed. More than men, women must balance the challenges of living in extreme poverty, but these women are rarely discussed because they frequently lack mobility, confidence, and literacy. Even people with low literacy, mobility, or confidence levels can have direct, interactive conversations thanks to ICT (Beena Vidyapith & Madhu Mathur Dean, 2012). According to Indonesia's Minister of Women's Empowerment and Child Protection, quoted by (Farida, 2011) men continue to predominate in the field of ICT, while women are frequently seen as just that. Women's digital media literacy must be increased to boost the country's potential. The gender gap (gender digital divide), through which women have less access to digital media and fewer opportunities to participate in Information Communication Technology (ICT) communities than men, is one factor contributing to the unequal use of computers or digital media worldwide (McLean, 2011).

Women and Technology

Technology has increased women's education options and access to education in finance, mobile money, microfinance, digital health, and agriculture, boosting female participation in the economy and sectors (Asongu & Odhiambo, 2020). The history of technical evolution spans from antiquity to the present. However, in the modern era of globalization, technology is mainly associated with men, although both men and women can greatly benefit from it (Wakhidah, 2012).

Many stereotypes that suggest that women are technophobic, uninterested in technology, and technologically incapable support this. However, women utilize less digital media since they are less likely to be employed, have less education, and earn less money (McLean, 2011). The rise of digital information processing and infrastructure, including the Internet and the World Wide Web, has revolutionized societal and economic changes. Increased women's participation in information technology design can address human capital shortfalls and influence an increasingly information-based society. Strengthening representation in education pipelines is crucial for achieving this goal (Fountain, 2000).

Role of Technology on Women's Decision-Making Empowerment

Women's empowerment enables women to take control of their lives, make decisions, and participate fully in all spheres of society. It includes economic, social, and political empowerment. Giving women the tools and opportunity to assert their rights, take part in decision-making, and take charge of their life is known as "women empowerment" (Reshi, 2022). Here are some areas, (Beena Vidyapith & Madhu Mathur Dean, 2012) life where ICT has a direct impact, particularly on women:

1. ICT enabled advancements in women's entrepreneurship and employment prospects
2. Enhanced social consciousness
3. Easier governance
4. Simpler family communication
5. Indigenous wisdom
6. Better government

Women's empowerment has a long history, dating back to the 19th century. The first wave focused on political rights, while the second focused on social and economic rights. The third wave addressed the intersectionality of gender, race, and class in the 1990s. Women's economic empowerment can result in higher income, better nutrition and health, and more household decision-making authority (Kabeer & Mahmud, 2004). Additionally, by advancing gender equality and reducing discrimination based on gender, women's economic empowerment can benefit the larger community. The success of development is significantly influenced by the empowerment of women. According to studies, women are suffering from a variety of issues as a result of their lack of knowledge and awareness. Having the appropriate information at the right time can help marginalized women overcome obstacles and safeguard them from danger (Sharma et al., 2018). ICT resources like radio, television, mobile phones, and the internet are utilized to educate and inform women and give them greater power because knowledge can lead to more opportunities.

Technology's Contributions to the Empowerment of Women in Decision Making

The study measures the data on women's decision-making empowerment by technology. By using these components the study was focused on how women can now participate in public dialogue, online activism, financial independence, and their communication skills.

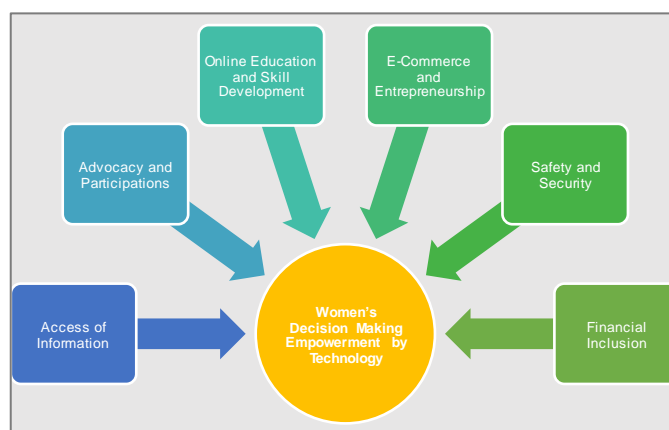


Fig 2: Components of Technology on Women's Decision-Making Empowerment

Access to Information

Women now have access to a wide variety of information through technology, which might affect their decisions. They can learn about various subjects, including entrepreneurship, legal rights, healthcare, and education. Women can better take control of their lives and make educated decisions when they have access to accurate and current information.

Financial Inclusion

Through chances for remote work, freelancing, and online business, technology creates doors for women's economic emancipation. Women can start enterprises, sell their goods or services, and reach a larger audience thanks to e-commerce platforms. Using technology, Women can decide about their economic security, career options, and financial independence.

Thanks to digital banking and financial services, women can manage their finances more effectively. Women can manage their finances, save money, make investments, and launch enterprises by accessing online banking, mobile payment systems, and microfinance platforms. Enhancing decision-making autonomy and economic empowerment is financial independence

Safety and Security

When it comes to improving women's safety and security, technology is essential. Mobile apps (Women's Safety App) and emergency alert systems offer methods for reporting events, getting assistance, and exchanging knowledge about dangerous regions. By utilizing these tools and gaining access to pertinent information, women can decide what steps to take to ensure their safety.

E-Commerce and Entrepreneurship

Women can start enterprises, promote their goods or services, and reach a larger audience thanks to online marketplaces and platforms. E-commerce platforms allow women to start businesses and make autonomous decisions about operations, pricing, and marketing plans.

Online Education and Skill Development

Without being constrained by conventional educational institutions, women in Islamabad and Rawalpindi can expand their knowledge and gain new skills thanks to e-learning platforms and online courses. This allows individuals to pursue educational opportunities and learn useful skills to improve their work prospects and decision-making ability. Technology provides online educational resources and e-learning opportunities. Women can access online courses, webinars, and educational resources to improve their knowledge and abilities. They can then decide on their educational goals, job paths, and personal growth.

Advocacy and Participations

Due to Technology, women may now participate in public dialogue, participate in online activism, and fight for their rights. Online campaigns and social media platforms make sharing women's experiences easier, raising awareness, and rallying support for gender equality. Women can speak up, reject stereotypes, and influence social change.

METHODOLOGY

The research of this study is based on quantitative methods which emphasize statistics analysis through questionnaires. The effective analysis of this data on the impact of technology on women decision making empowerment in Islamabad city. The convenience sampling techniques is used in the study to collect the data through structured questionner. The Independent variable Technology and all others are dependent variables which effect decision making are Personal ,Financial management, Social communication. The data obtained is quantitative having primary data, the source is an online Google form filled out by women in both government and private sectors. The SPSS was used to analyze the primary data. Using convenience sampling techniques, data was collected through questionnaires from 134 participants.

Demographic Information

The first section of the questionnaire aimed at gathering the demographic information of women from the different sectors of Islamabad. In this section, the respondents were asked about their age, qualifications, occupation, and marital status. The frequency with a percentage of individual characteristics: age, qualifications, occupation, and marital status are present in Table 1.

Table 1: 1 Demographic Information of Respondents

	Category	<i>f</i>	%
Age Group	Up to 20	13	9.7
	21-30	79	59.0
	31-40	37	27.6
	41-50	05	3.7
	Total	134	100.0
Qualification	Martic	17	12.7
	Bachelor	07	5.2
	Master	95	70.9
	Doctorate	15	11.2

	Total	134	100.0
Occupation	Employed full time	50	37.3
	Employed part-time	05	3.7
	Self-employed	07	5.2
	Student	35	26.1
	Housewife	28	20.9
	Unemployed	09	6.7
	Total	134	100.0
Marital status	Single	92	68.7
	Married	42	31.3
	Total	134	100.0

**Frequency*

Table 1 explains the demographic information of the respondent of the study respondents. A total of 13 (9.7%) participants belonged to the age group of up to 20 years; 79 (59.0%) were between 21-30 years of age; 37 (27.6%) were of 31- 40 years, and 05(3.7%) were of 41-50 years. It showed that most respondents belonged to the age group of 21-30 years' while the least was from the age group of between '41-50 years'. According to the data in this table, 17 (12.7%) women have matric degrees, 07(5.2%) have Bachelor's degrees, 95(70.9%) have a Master's' and 15(11.2%) have a Doctorate. It shows that 70.9% of women have a master's degree. According to this table, 50 (37.3%) women were full-time employed, 05 (3.7%) had part-time jobs, self-employed 07 (5.2%), Unemployed 09 (6.7%), students 35 (26.1%), housewives 28(20.9%). It showed that most % of the respondents belonged to 37.3% of women and were fully employed. According to the data, 92(68.7%) women were single, and 42(31.3%) were married.

Impact of Technology on women's Decision-Making Empowerment

Respondents were asked to identify the impact of technology on their decision-making by asking them five variables which is multi-response. Data are presented in Tables 2 and 3.

Table 2: Impact of Technology on Women' Decision-Making Empowerment

	<i>n</i>	Mean	S.D	Rank
Technology influences my career choices and opportunities for advancement	132	4.08	1.034	1
Technology has improved my access to information resources necessary for decision-making	134	4.03	1.156	2
Technology empowers me to make choices in my personal and professional life	134	4.01	1.037	3
The use of Technology has significantly enhanced my decision-making empowerment.	134	3.84	1.116	4
Technology enhances my ability to make informed decisions.	134	3.81	1.091	5

Scale: Strongly Disagree = SD, Disagree = D, Neutral = N, Agree = A, Strongly Agree = SA

According to Table 2 , respondents believe that technology significantly influences career choices and opportunities for advancement (4.08), improves access to information resources for decision-making(4.03), empowers individuals to make choices in personal and professional life(4.01), significantly enhances decision-making empowerment, and enhances their ability to make informed decisions(3.84). Overall, respondents perceive technology positively in career choices, access to information resources, and decision-making empowerment.

Table 3: 2 Technology Positively Influenced By Decision-Making Empowerment

	Responses		Percentage of Cases
	<i>n</i>	%	
Technology positively influenced my decision-making empowerment in these areas	65	24.7%	53.3%
Decisions about a job or career	40	15.2%	32.8%
Decisions pertaining to education	53	20.2%	43.4%
Decisions pertaining to health	35	13.3%	28.7%

Networking or social decisions	70	26.6%	57.4%
Total	263	100.0%	215.6%

**Multiple Response*

The data presented in Table 3 indicate that the respondents perceive technology as having a favorable impact on decision-making empowerment across a range of domains, including employment or career decisions, financial decisions, decisions related to education, decisions related to health, and social or networking. The percentages show the share of respondents who agreed that contemporary technology had a good effect in each particular field.

Financial Decision Making

Participants were asked to indicate their financial decision-making empowerment by using four variables. The data is presented in Table 4.

Table 4: 3 Financial Decision-Making Empowerment

Variable	N	Mean	S.D	Rank
Access to Internet business or income production has improved my ability to make financial decisions	134	3.91	1.029	1
Access to financial resources and knowledge has improved my ability to make wise financial decisions	134	3.78	1.108	2
Technology gives me access to financial planning and investing options, enhancing my ability to make independent financial decisions	134	3.73	1.105	3
Technological advancements allow me to bargain for better financial terms (such as salary and contracts) in my professional and personal life.	134	3.49	1.039	4

Scale: Strongly Disagree = SD, Disagree = D, Neutral = N, Agree = A, Strongly Agree = SA

The study found that respondents generally agree that access to online income or business production has increased their capacity for making financial decisions. The second-highest mean score indicates that access to financial information and resources has enhanced their capacity to make prudent financial decisions. The lowest mean score indicates that respondents were less likely to agree that technological advances enable them to negotiate better financial conditions in their professional and personal lives. The standard deviations show some variation in responses, suggesting several points of view on these claims.

Personal Decision-Making Empowerment

The perceived importance of technology in women's decision-making. Five variables are used to collect data. Relevant data is presented below in Table 5.

Table 5: 4 Personal Decision-Making Empowerment

	N	Mean	S.D	Rank
Technology has improved my understanding of legal and financial aspects to make more informed decisions	134	3.87	0.836	1
Technology improved employment and entrepreneurial options that enhance my ability to make independent decisions	134	3.83	1.008	2
Technology has increased my access to reliable and diverse sources of information that aid in making informed decisions regarding their children's education.	134	3.83	1.242	3
Technology has provided the necessary tools and resources to evaluate and compare different job opportunities, leading to more informed employment decisions	134	3.72	0.947	4
Technology enhanced my education for decision-making capabilities and empowerment, compared to the pre-technological era	134	3.71	1.116	5

Scale: Strongly Disagree = SD, Disagree = D, Neutral = N, Agree = A, Strongly Agree = SA

This table provides interpretations, and we can examine each variable's mean scores and standard deviations. Respondents generally agreed that technology has improved their awareness of legal and financial issues, expanded employment and entrepreneurial choices, and increased access to

information for making decisions about children's education. The highest mean score (3.87) indicates a resounding consensus. The second-highest mean score (3.83) suggests technology has boosted job and entrepreneurial alternatives, improving independent decision-making capacity. The lowest mean score (3.71) indicates a wider range of viewpoints on the statement. Overall, respondents concur that technology has improved their understanding of legal and financial elements, expanded employment and entrepreneurial choices, and increased access to information for decision-making.

Social Communication Decision-Making Empowerment

The influence of technology on women's communication decision-making empowerment has shown in Table 6.

Table 6:5 Communication Decision-Making Empowerment

	N	Mean	S.D	Rank
Technology has improved my communication during decision-making processes.	134	3.81	0.911	1
Communication and networking made possible by technology impacted your ability to make decisions.	134	3.78	0.984	2

Scale: Strongly Disagree = SD, Disagree = D, Neutral = N, Agree = A, Strongly Agree = SA

The study found that technology has improved communication and teamwork in decision-making processes, with a high mean score of 3.81. The low standard deviation indicates a consensus on the impact of technology on decision-making capacity. The findings suggest that technology enhances networking and communication, positively influencing decision-making processes.

Challenges in Accessing in Technology

Data on the barriers and challenges in accessing technology by women has shown in Table 7 . Three variables were used one was multi responses. The respondent data is shown in Tables 7 and 8 below.

Table 7: 6 Challenges in Accessing and Utilizing Technology

	N	Mean	S.D	Rank
Technology has reduced societal barriers and biases in decision-making processes compared to the pre-technological era	134	3.77	0.965	1
Technology has helped me to overcome barriers and obstacles in decision-making that were more prevalent in the pre-technological era.	130	3.49	1.115	2

Scale: Strongly Disagree = SD, Disagree = D, Neutral = N, Agree = A, Strongly Agree = SA

In Table 7 the highest mean score (3.77) indicates that societal barriers and biases in decision-making processes have decreased due to technology compared to the pre-technological era. Respondents partially agreed that technology has helped them overcome pre-technological barriers and impediments. The lower mean score (3.49) indicates greater response variability and a wider range of viewpoints. Overall, respondents generally agree that technology has helped them overcome challenges and roadblocks in decision-making.

Table 8: 7 Challenges in Accessing and Utilizing Technology

		Responses		Percent of Cases
		n	%	
Challenges in Accessing and Utilizing Technology	Limited access to affordable technology devices or internet connectivity	46	24.1%	46.5%
	Lack of digital literacy or skills to effectively use of Technology	37	19.4%	37.4%
	Cultural or social norms that discourage women's use of technology	18	9.4%	18.2%
	Privacy and security concerns	48	25.1%	48.5%
	Limited availability of relevant content or services tailored to women's needs	42	22.0%	42.4%
	Total	Total	191	100.0%

*Multiple Response

Most respondents (24.1%) identified barriers to technology access, including a lack of affordable products and internet connectivity. The second-highest barrier was a lack of digital literacy or skills, indicating many people struggling with technology. Social or cultural standards were also identified as a barrier, with a higher percentage identifying privacy and security concerns (25.1%). Privacy and security concerns were also identified as a significant barrier, with a significant percentage (22.0%) highlighting the scarcity of content or services tailored to women's needs. These barriers highlight the importance of removing these obstacles to ensure equal access to modern technologies. The respondents stated that technology influences career decisions significantly, enhances access to information resources for decision-making, gives people more power to make decisions in both their personal and professional lives, and increases their ability to make well-informed decisions. They also believed that technology gave them the ability to make decisions about social networking, jobs, finances, education, and health, among other things. Access to financial resources and information, as well as online revenue streams and business opportunities, has improved one's capacity for making wise financial decisions. The report claims that technology has improved decision-making by encouraging improved collaboration and communication. Self-reported problems with affordability, internet connectivity, digital literacy, cultural or societal norms, privacy and security concerns, and a lack of resources tailored to women's needs were found to be barriers to accessing modern technology. These limitations serve as a reminder of how crucial it is to remove them in order to grant everyone access to modern technologies.

CONCLUSION

This study explores how technology empowers women through decision making in society. The linkages between the data and women's decision-making empowerment are positively impacted by technology in various contexts, including the Financial, personal, and Social communication spheres. Since many nations around the world understand how important women's empowerment is to a nation's economic growth. The entire empowerment of women is crucial for the long-term prosperity of emerging nations. Women must be empowered to make decisions for themselves by having access to higher education and other fundamental rights. Based on this research, it is suggested that the government create new policies or review existing ones to ensure that maximizing the advantages of contemporary technology and fostering fair access and utilization for decision-making empowerment can be accomplished by being aware of and responding to these obstacles. The government should ensure the participation of women in the economy and minimize obstacles that must be overcome, such as access restrictions, gaps in digital literacy, cultural norms, and privacy and security concerns. Given its inherent significance to women's well-being and capacity to advance in domains like receiving salaries and assets, decent labor is essential to economic empowerment.

RECOMMENDATIONS

This research includes some recommendations for the policymakers to help them understand technology's role in women's decision-making empowerment:

- The government should make awareness of utilizing digital media, training for low educational backgrounds, giving skills and facilities, arranging ICT workshops and training for women, reducing inequality, and also point the cultural impact on their decision-making of women and also promote greater infrastructure spending to provide internet access in inaccessible and less fortunate areas.
- Legislators should fund digital literacy initiatives to assist women in acquiring the abilities needed to use technology efficiently. Women will be able to access resources and information that will enable them to make well-informed decisions.
- Launch awareness-raising initiatives to highlight and transform cultural perceptions about women's use of technology, highlighting its advantages for personal and professional growth.
- Legislators should support the creation of technology that takes the needs of women into consideration. This includes easily usable, reasonably priced, and easily available technology.
- For user privacy, advocate for strict data protection laws and regulations.

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