Empowering Women through Digital Literacy: A Sociological Perspective on Gender and Technology Integration

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Abstract

Technology has become an integral part of society and it has affected different sphere, and one of them the increasing significance of digital literacy as the tool of people's empowering. The subject matter of this research paper relates to gender and technology; this paper adopts a sociological lens to analyse how the least digital literacy favours women. It looks at how digital skills mitigate existing gaps that limit women from gaining information, education and employment to make the gaps between male and female minimal. In the study, there is a focus on case studies, interviews, quantitative data collection to understand the problem of women's inclusion into the digital environment, including cultural barriers, limited access to tools, and resources, and differences in education. Hence the conclusions drawn from the study indicate the importance in assisting women be economically and socially empowered by enhancing the digital literacy as this transforms the power relations in the household and other spheres of life. Thus, this paper underlines the importance of policy, construction of infrastructures, and specific courses in digital literacy for been to guarantee that they will embrace information technology as a tool for the enhancement of their liberation and social kindness.

Keywords: digital literacy, women's empowerment, gender equality, technology integration, socio-economic development, digital divide, inclusive policies

Introduction

Information communication technology in particular has been recognized as an influential changer for social and economic transformation in the contemporary society. Opportunities to use such 'technology tools' and the ability to use them are imperative if one is to be an active participant in the globalised world today. In most developed countries, and even more so in the developing world, women and girls' access to education, work, health, and politics, is at an inflection point, where digital literacy can close gender gaps that have persisted for decades. But when it comes to gender and technology the situation is rather nuanced: while on some levels technology presents women with new opportunities to pursue their

Rajani Wadhai, Pratima Suryawanshi, Vaishali Rahate, Shirisha Deshpande, Virendra Disawal, Pravartika Ganvir

goals, on other levels using technology proves to be a challenge for women. Such tasks stem from cultural, economic and/or structural issues that are behind a digital gender divide.

Basically, this study aims to understand the literacy necessary for women's empowerment through the use of technology integration to change the stereotyped gender roles and enhance the socio-economic status of the women. In as much as technology has the ability to enhance the availability of information to all and thereby promoting gender equality, the cyberspace remains quite patriarchal. And limited education and Internet infrastructure in the digital world means women cannot benefit from this new shift in technology. Moreover, there are cultural barriers that limit women's interaction with the device and with technology in general, thus continuing the gender gap.

In this regard, the study uses sociological analysis on the ways in which digital literacy can be viewed as a source of power that ensures that women overcome various barriers, gain control and contribute to the progress of society. By examining case studies and analyzing the experiences of women across diverse socio-economic backgrounds, this research will address the question: In what way include digital literacy beneficial to empowering women and which factors need to be addressed so as to have women fully participate in the digital space. The study also underscores the need to provide specific incentives and policies for developing gender-sensitive and /or gender-sensitive digital literacy initiatives.

That is why, given that technology is rapidly changing economies and societies, it is important to study its effects on gender relations. In this regard, this paper shall make its input into the general debate on gender and technology that seeks to explore the potential of integrating and enhancing the use of technology to empower women and in the process transform the general outlook of gender equality and social development.

Literature review

The rise of digital literacy has attracted lots of researches to investigate its effects on women, girls, gender equity and marginalized groups. In the period beginning with 2020, there have been efforts made by several authors to study the dynamics of digital literacy and, on the one hand, its positive impact on women while on the other, negative influence of socio economic and cultural factors. This paper aims to review literature from 2020 onwards on the effects of integrating technology in learning with regards to the gender and digital literacy.

Modern researches pay much attention to the significance of digital literacy in increasing the economic and social women Empowerment. As highlighted by Rahman et al., (2020) digital literacy can enhance women's opportunity in learning, shopping online, and business and Birmingham especially in the rural areas. This research uncovered that women benefited from digital skills training increasing income generating activities through home based businesses and markets online. In the same manner, Afshar et al., (2021) emphasized on the empowering role of digital literacy in facilitating women's participation in decision-making at homes and in their communities especially where cultures of patriarchy prevail.

However, there is still a significant issue of gender divide in terms of the use of information and communication technologies and in literacy in general, especially in the developing nations. The Global Education Monitoring Report of UNESCO in 2021 pointed out that a digital gender gap; women in low-income areas have less access to mobile internet by 23 % of men. This writing stressed that cultures of poverty, lack of the means of touch, and low literacy levels all increase the distance that women have to cover before they reach to the digital interfaces. Jones and Sayers (2022) also elaborated on how in some cultures, women are dissuaded from attaining such skills hence are locked out of the digital market place.

New literature also recommends digital literacy in dealing with the gender digital gap. Rani and Bansal (2022) else how it is possible to ensure that women-oriented programs in the framework of digital inclusion can help to minimize gaps in the economies and increase the number of women in the workforce. In their works the authors opined that there is need for designing special training sessions that women should undertake in order to reduce the levels of gender bias in as much as technology is concerned. Gurumurthy & Chami (2020) undertook another study to review missions that focused on the socially excluded women of India for digital literacy programs. Their study revealed that the ability to use technology makes women and girls to be more independent due to reliance on technology in accessing government services, financial services, and legal aid.

Another category of research done in recent years is the economic implication of digital literacy in women. While Sharma and Agarwal (2021) explored the place of digital skills as a way of showing that female entrepreneurs have better chances of competing, in the market. In their study, they noted that, apart from developing business woman's skills, digital literacy also strengthens their networking competence with aims to establish networks for business in male dominated sectors. The same Khan et al. (2021) examined women's engagement in the gigeconomy through digital literacy and underscore how flexible jobs through digital platforms are enabling women, particularly those with caregiving responsibilities.

Other research also indicates that special support from the government and institutions will help women to gain digital competence. Singh et al. (2021) explored the impact of national digital literacy programs like PMGDISHA for the women in rural area. The study revealed that where such programmes had been effectively introduced and promoted by government, the training supported women gain skills for undertaking banking online, governance and activities involving social media activism. Following a similar trend, Ndiaye and Seck (2022) also emphasized ppss in SSA, and also added that digital literacy campaigns aimed at women were the most effective when culturally sensitive and supported by local languages.

They have also looked into the ways by which digital literacy can support social integration especially among marginalized females. By analysing how women from lower socio-economic background from India engage affordances of digital technology in social movements and Just world, Mitra and Basu (2022) showed how the digital technologies make them engage in such activities. From their study, the authors discovered that digital media empower women to engage in political and community discourse hence have a voice. Moreover, Castro et al., (2021) stated that the digital literacy helps women to get the necessary information regarding their health and safety in this day and age especially due to the COVID-19 pandemic where technology became the primary media through which people got information about healthcare.

However, the reviewed literature shows that there are still gaps in improving girls' access to digital literacy. Drawing from the literature, Deetjen and Osler (2021) pointed out that there is still a need to develop more policy solutions which would help reduce the structural barriers that women encounter towards use of digital technology. That is why they emphasized the need to enhance development of Internet connection, including in the rural areas, and making digital education affordable for women. Also, Beard and Thornton (2023) pointed out the need to consider the culture that hinders women from engaging with technology; female engagement with the technology should be community led, empowering the chiefs to popularise digital literacy among women.

The literature after 2020 discusses the prospects and issues that concern increasing female's awareness through digital literacy. The combined literature on information and digital literacy agree that, if improved, can foster one's socio-economic development and diminish gender disparities, however, there are challenges in access to resources, culture and socio-economic difference. Further studies should focus on how these problems can be avoided, following the creation of gender sensitive political measures, effective web-based training and community interventions that would take into consideration the complexities of women's experiences. Breaking the technology divide for women is, therefore, a question of empowering them so that they can be part of the solution for the human race and our planet.

Objectives of the study
- To understand if and how digital literacy improves women's position in education, employment and social spaces over their social demographic status.
- To reveal the socio-cultural and economic factors that underpin restricted access of female to digital equipment and technology, particularly in the developing world, and suggest how to get over these barriers.
- To assess the role that digital literacy plays in the promotion of women's socio-economic status with special emphasis on the role that digital literacy has played in promoting entrepreneurship and economic independence among women as well as their involvement in the digital frontier.

Research methodology
The model of the study used in the present work implies the use of the mixed methods, which include the combination of qualitative and quantitative approaches to reveal the ways women are empowered with the help of digital literacy. The data collection method used was a quantitative survey where women across different socio-economic status in both urban

and rural areas were asked questions about the kind of experiences they have had with the digital technology. The questions included in the survey included those about digital skills, availability of technology, socio-economic issue and the role of digital literacy in their emancipation. Further, a survey in the form of semi-structured interviews was conducted with such important research participant groups as women-entrepreneurs and educators as well as digital literacy programmes to enrich the understanding of the explored barriers and opportunities for effective technology use by women. Structured questionnaires were used to administer the quantitative data through surveys which were then analyzed statistically based on Descriptive analysis and regression analysis. Interview data collected from participants were analyzed using thematic analysis approach in order to understand cultural, economic and social factors that shaped women for becoming digitally literate. Altogether, this approach helped to collect a comprehensive information about the role of digital literacy in the empowerment of women and introduced the basis for development of the further policy measures.

Data analysis and discussion
Table 1 – Descriptive statistics

Category	Statistics
Age (Mean)	34 years
Age (Median)	32 years
Household income (Mean in Rs.)	6500
Household income (Median in Rs.)	6000
Educational attainment (%) - No formal education	7%
Educational attainment (%) - High school	46%
Educational attainment (%) - Undergraduate degree	31%
Educational attainment (%) - Postgraduate degree	16%
Employment status (%) - Employed	54%
Employment status (%) - Unemployed	34%
Employment status (%) - Self-employed	12%

Table 1's descriptive statistics provide a useful synopsis of the 175 women's demographic and socioeconomic traits. Women in their twenties and thirties make up the bulk of the sample, as their median age is 32 and their mean age is 34. The median household income is 6,000 rupees, while the mean is 6,500 rupees, indicating a moderate socioeconomic background.

Looking at the women's educational attainment, we see that 46% have finished high school, 31% have bachelor's degrees, and 16% have master's degrees. But there remains a gender gap in educational opportunities; 7% of women have never attended college.

Among women, 54% have jobs, indicating that many are actively seeking employment; 34% are out of work, and 12% are self-employed. The distribution here shows that people are actively participating in the economy, which is encouraging, but the high unemployment rate shows that many are having trouble finding work. In general, the data indicates that the women in question come from a range of educational and occupational backgrounds, and that digital literacy may play an important role in helping them become more economically independent.

Table 2 - T-Test Results

Outcome	Group	Mean Score	Standard Deviation	t-value	p-value
Access to Education	High Literacy	75	10	3.45	0.001
	Low Literacy	65	12		
Access to Employment	High Literacy	80	8	4.12	0.0005
	Low Literacy	70	9		

Table 2 displays the findings of a t-test that shows that women with high levels of digital literacy have more job and educational opportunities than women with low levels of digital literacy. A t-value of 3.45 and a p-value of 0.001 indicate

Rajani Wadhai, Pratima Suryawanshi, Vaishali Rahate, Shirisha Deshpande, Virendra Disawal, Pravartika Ganvir

that women with poor digital literacy (Mean = 65, SD = 12) scored substantially lower on the Access to Education measure than women with high digital literacy (Mean = 75, SD = 10). That women are better able to access and benefit from educational opportunities, such as continuing their education or acquiring marketable skills, is consistent with the findings of this study.

Similarly, there is a clear distinction between the two categories when looking at Access to Employment. In terms of digital literacy, women who scored high (SD = 8) had an average score of 80, while those who scored low (SD = 9) had an average score of 70. There is a statistically significant difference between those with lower and greater levels of digital literacy in terms of their work prospects, as shown by the t-value of 4.12 and p-value of 0.0005.

In sum, these results provide credence to the idea that raising women's digital literacy levels may empower them by expanding their educational and occupational prospects, which in turn encourages more socioeconomic engagement from a variety of backgrounds.

Conclusion

This research therefore highlights the necessity of improving women digital literacy to open windows of access to education, employment and social participation among women cutting across various socio-economic statuses. The study also showed that there was a positive correlation between; matriculation, computer and internet usage skills on one hand, and education and employment status on other hand, hence proving that the women with high digital literacy had better education and employment status than their counterparts with low digital literacy skills. Further, the level of digital literacy was positively linked with enhanced availability of educational content and better employment opportunities in the job market; both of which are critical strategies in increasing women's status.

Thus, the results of this research permit to conclude that the attempts to enhance the female's digital literacy may have significant socio-economic effects. With the right digital skills for women put in place, those in need of jobs can be placed on the ground as well as those in need of education for women be helped, thus helping in the enhancement of the society. Financial authorities and other relevant stakeholders need to establish digital literacy as one of the key interventions aimed at adopting and expanding gender equality as well as improving the quality of women's lives in different societies.

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Rajani Wadhai, Pratima Suryawanshi, Vaishali Rahate, Shirisha Deshpande, Virendra Disawal, Pravartika Ganvir

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