ASSESSING THE INFORMATION COMMUNICATION TECHNOLOGIES (ICTs) EFFECT ON FEMALE UNIVERSITY STUDENTS PSYCHOLOGICAL, ECONOMICAL, POLITICAL AND LEGAL EMPOWERMENT

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Abstract

The study aimed to assess the levels of empowerment among female university students through the use of ICTs, using the "Women Empowerment Scale through ICTs" developed by Monika Gupta and Sundeep Kumar Srivas. Data were analyzed using descriptive statistics and differential analysis, including t-tests and ANOVA. The study found that ICTs have a significant positive effect on the psychological, economical, political, and legal empowerment of female university students. Interestingly, there were no significant differences in the effect of ICTs on different aspects of empowerment based on students' urban and rural backgrounds and their levels of education. However, there were significant differences in the effect of ICTs on different aspects of empowerment among female university students across three age groups. Finally, there were no significant differences in the psychological and political/legal empowerment of female university students through ICTs between arts and science stream students. These findings highlight the potential of ICTs to empower female university students, regardless of their background, and suggest that age may play a significant role in the effectiveness of ICTs for empowerment

Keywords: Women Empowerment, Psychological, Economical, Political and Legal Empowerment, ICT

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1. Introduction

"There is no chance for the welfare of the society unless, the condition of women improves. It is not possible for a bird to fly with only one wing."
- Swami Vivekanand

Empowered citizens are assets of any nation. Empowerment is the process of enabling individuals to make informed decisions, take action, and exert influence in their personal and social lives. When citizens are empowered, they are better able to contribute to their communities and their countries, and to participate fully in social, economic, and political life. Empowerment for women is as important as man's. Empowering women is particularly important because women have historically faced barriers to education, employment, and political participation. By breaking down these barriers and creating opportunities for women to succeed, we can create a more just and equitable society. Equality and empowerment of women are necessary to bring about an egalitarian human society. India's first Prime Minister Pt. Jawahar Lal Nehru once said – "You can tell the condition of a nation by looking at the status of its women." For a society to thrive, it must fully embrace and utilize the skills and abilities of all its members, rather than stifling the potential of half its population. The former president **A. P. J. Abdul Kalam** says that "Empowering women is a prerequisite for creating a good nation, when women are empowered, society with stability is assured. Empowerment of women is essential as their throughout and their value system led to the development of a good family, good society and ultimately a good nation".

When women are empowered, they are able to contribute their skills, talents, and perspectives to society, and to work towards the common good. In addition, research has shown that empowering women has numerous positive effects on society as a whole. For example, increasing women's education and economic opportunities can lead to lower rates of poverty and improved health outcomes for families and communities. Empowering women is also essential for achieving gender equality and for promoting human rights. Overall, empowering citizens, both men and women, is crucial for building strong, prosperous, and just societies. By investing in education, employment, and political participation for women, we can create a more equitable and inclusive world for everyone.

India is a diverse country with a complex history, culture, traditions, religious customs and other cultural variables that work against women in India which leads the path for gender inequality and of man's ideology and patriarchal society do still exist in certain parts of Indian society, where the status of women is still considerable. At the level of education, employment, politics, decision making the gender bias still exists in society thereby women receive less value than men in every sphere of civic life. Women are unacceptably neglected in the psychological, economical, and political and legal empowerment, also the status of women's empowerment in India is incomparably low to that of developed western countries.

Men have always got the opportunity to monopolize political space. There are many obstacles to understanding women's rights in India as elsewhere Although there has been some notable progress in recent years, the underrepresentation of women in Indian politics remains a significant issue, and there is still much work to be done in achieving gender parity in parliament and state legislature. It is important to recognize the progress that has been made in recent years. Women's representation in politics is crucial for ensuring that their voices are heard and that their interests are represented in policymaking. As rightly pointed out by Beena (2015)"The condition of women in India shows changes over the earlier period of millennia. From equivalent status with men in ancient time through the squat points of the medieval period, to the promotion of equivalent rights by several reformers, the history of women in India has been eventful. The position of women changed with time from ancient period to post independent period. Status of women of the country can be analyzed by literacy rate, sex ratio, life expectancy rate and by the customs of society for women".

Potentials of ICT in Women's Empowerment

Around the world, Information and Communication Technology (ICT) have transformed the life of individuals, organizations and indeed entire nations or across the globe. ICT's can have power to give equal opportunity for both men and women in terms of employment, education, and health and sustainability community development.

ICT has a critical role to play in women's empowerment. It can be a powerful tool for advancing women's empowerment by providing them with access to information, education, employment opportunities, and networking resources. By investing in ICT infrastructure and expanding access to technology, we can create more equitable and inclusive societies for all.

ICT can provide women with access to information, education, employment, and networking opportunities that were previously unavailable to them. Here are some ways in which ICT can support women's empowerment:

Education: ICT can provide women with access to online courses, tutorials, and resources, allowing them to improve their skills and knowledge. This can lead to better job opportunities and higher incomes.

Employment: ICT can provide women with access to job opportunities, particularly in fields where women have traditionally been underrepresented. For example, online marketplaces and e-commerce platforms can provide women with opportunities to start their own businesses and reach customers beyond their local communities.

Networking: ICT can provide women with opportunities to connect with other women in their fields, enabling them to share ideas and experiences and build supportive networks. This can be particularly valuable for women who are working in male-dominated fields or who are in remote locations.

Health: ICT can provide women with access to information about health and wellness, including sexual and reproductive health. This can be particularly important in areas where women may not have access to healthcare providers or where cultural taboos prevent them from seeking medical care.

Political participation: ICT can provide women with access to information about political issues and candidates, and can enable them to participate in online discussions and advocacy campaigns. This can help to increase women's political participation and representation.

In addressing the, the United Nations Secretary General, Commission on the Status of Women had stated "A focus on the gender dimensions of information and communications technologies is essential not only for preventing an adverse impact of the digital revolution on gender equality or the perpetuation of existing inequalities and discrimination, but also for enhancing women's equitable access to the benefits of information and communication technologies and to ensure that they can become a central tool for the empowerment of women and the promotion of gender equality. Policies, programmes and projects need to ensure that gender differences and inequalities in the access to and use of ICT are identified and fully addressed so that such technologies actively promote gender equality and ensure that gender-based disadvantages are not perpetuated". (Beena 2015)

Psychological, Economical, Political and Legal Empowerment of Women

Women empowerment is an integral part of the development of our nations, to develop our country we have to consider both men and women equally where ICTs play a wonderful role to empower our women.

Psychological empowerment of women refers to the process of enabling women to develop a sense of self-worth, self-confidence, and agency in their lives. This involves supporting women in recognizing their own strengths and abilities, and giving them the tools and resources to take control of their lives and make their own decisions. The use of ICT in personal life provides access to the information, networking supports, creative expressions which increase self-confidence in them and create the feeling of self-worth in them. ICT provides them a platform to interact with different people and helps to remove hesitation by enhancing their communication skills and also it leads to a feeling of self-efficiency. Various programs on radio/ television, magazines, blogs, social networking sites, webs related to women's empowerment can create the feeling of self-development in them which provides them motivation, inspiration, passion and interest to achieve new skills and knowledge.

Women's Economic empowerment refers to the process of enabling women to participate fully in economic activities and to have equal access to resources and opportunities. This involves ensuring that women have the knowledge, skills, and resources to engage in productive economic activities, as well as the ability to control and benefit from the fruits of their labor. ICT plays an important role in the economic empowerment of women which increases their economic awareness like access to finance, markets, purchasing patterns, financial inclusion, skill development, equal pay and working conditions, awareness about any products and its related information and property rights. Online shopping is an option for them to find anything easily. They can make online bill payments from home or any place. To help in job searching, an internet search engine company GOOGLE has launched a new feature Google for jobs which helps women to be self-dependent by searching for any job and providing jobs and opportunities.

Political empowerment of women refers to the process of enabling women to participate fully in political decision-making and to have equal access to political power and representation. This involves removing barriers that prevent women from participating in politics, as well as creating opportunities for women to have a voice in shaping policies and laws that affect their lives. Political empowerment includes access to information, advocacy, activism, political representation, government transparency and accountability, having

knowledge of and the ability to be involved with the political system and being represented in local and national governments. ICT supports the political & legal empowerment of women in many ways, such as ICT helps to increase legal awareness of women and it makes them aware about rights, power and duties. Through ICT they can be aware of government schemes and policies for women up-liftmen and the laws made for women. Expanding access to technology and investing in digital skills development, we can create more inclusive and democratic political systems that represent the voices and perspectives of all citizens, including women.

Legal empowerment of women refers to the process of ensuring that women have equal access to justice and legal protection. This involves creating an enabling environment where women can access legal services, and where laws and legal systems are designed to protect and promote women's rights. it includes various forms, including: access to justice, legal literacy, legal reforms, advocacy, law enforcement and legal empowerment ICT plays an important role in the legal empowerment of women in several ways: access to legal information, remote legal services, online reporting mechanisms, online legal forums and mobile-based legal services ICT can play an important role in promoting legal empowerment for women by increasing access to legal information and services, and by facilitating the reporting of gender-based violence and discrimination. This can help to ensure that women are better able to protect their rights and to access justice when their rights are violated

Significance of this Study

ICTs are being presented as a tool having the potential to benefit women's empowerment in all spectrums of life. It has become a powerful force in transforming education, social, economic, psychological and political and legal life globally. There have been studies on the overall empowerment of women; but there is still much work to be done to ensure that women are properly empowered in different fields through the use of ICTs. There is a need for more research to be conducted on the specific ways in which ICTs can be used to empower women in different contexts and fields particularly psychological, economical, political and legal dimensions.

It is great to hear and encouraging that many of the research studies conducted on the use of ICTs for women's empowerment in India, specifically targeting women students from rural areas by women. This is important too because it ensures that the perspectives and experiences of rural women are taken into account in research and policy development related to women's empowerment. It is also true that there are often differences in the levels of women's empowerment in rural and urban areas, and that women in rural areas may face particular challenges in accessing and using ICTs. However, there are also opportunities to use ICTs to address some of these challenges and to promote women's empowerment in rural areas. The significance of assessing the effect of Information Communication Technologies (ICTs) on female university students' psychological, economical, political, and legal empowerment lies in its potential to promote gender equality and women's empowerment in higher education.

This study can help identify the specific areas in which ICTs are most effective in empowering female university students and provide insights into the factors that influence their effectiveness. By understanding how female students are using ICTs to empower themselves, researchers can identify gaps and opportunities for further development of ICT-based initiatives that can promote women's empowerment. Additionally, this study can inform policies and interventions aimed at promoting gender equality and women's empowerment in higher education, creating a more equitable and inclusive educational environment for all. Overall, this study can contribute to the global efforts towards achieving gender equality and promoting women empowerment in all aspects of life. This study aims to determine the ICT's effect on female university students psychological, economical, political and legal dimensions from place of residence, age groups, different streams of study and levels of study. By understanding how female students are using ICTs to empower themselves, researchers can identify gaps and opportunities for further development of ICT-based initiatives that can promote women's empowerment.

Literature Review

Mishra (2020) study revealed that ICT use in empowering rural women within a 'holistic' context. No single socio-economic factor emerged as the dominant variable in planning policies and programs to introduce ICT use in information delivery to rural women. Likewise, no single information delivery technology emerged as 'the' technology to use in delivering information to rural women. Despite the lack of consistency in the regression results several important policy and planning options are suggested by the results from this study. Monika (2020) found that most of the women students use ICTs at average level and have average empowerment through ICTs. They are using various ICTs and it is helping in their personal, social, educational, psychological, economical, and political & legal empowerment.

Baruah (2019) study found that the level of women's empowerment through ICTs in rural areas is not good. A section of women in the rural areas of Assam are still not enjoying the benefits of ICTs for their economic backwardness, lack of knowledge over English language can also be a cause of their failure to benefit from ICTs, lack of computer literacy programmes for women in the rural areas can also be

cited as another cause of failure from benefits from ICTs. Hosseini & Manjunath (2016) study revealed that ICTs play a very important role in the empowerment of weaker segments including women, especially in a rural part of India and promoting gender equality also assists women towards socio-economic development.

Beena (2015) study found that women's empowerment was directly or indirectly influenced by the socio-economic status of respondents and also revealed women living with full facilities of life were more empowered than the women living with the lack of these facilities. Women in the young age group aspire to earn more as compared to middle and old age groups". "Studies have shown that ICTs can play a vital role in empowering rural women, with varying degrees of success depending on factors such as socio-economic status, language barriers, and computer literacy.

While no single socio-economic factor or information delivery technology has emerged as dominant in introducing ICTs to rural women, important policy and planning options have been identified. Additionally, the use of ICTs has been found to contribute to personal, social, educational, psychological, economical, and political and legal empowerment for women. However, despite the potential benefits of ICTs, many women in rural areas still do not have access to them, particularly due to economic barriers and lack of language and computer literacy programs. Ultimately, promoting gender equality and empowering women through ICTs can lead to greater socio-economic development, with younger women showing a particular interest in achieving economic independence.

Yamuna (2013) study revealed that there is a significant difference between age, educational qualifications, castes, religions, employment status, marital status, age at the time of marriage, family types, monthly income, and reasons for the employment of the respondents with respect to different levels of empowerment like economical, political, educational and psychological empowerments, except social empowerment which was almost the same across age groups in the study among women. The findings of Patil et al.'s (2009) study indicate that the use of ICTs can enhance rural women's involvement in community and economic development efforts, while also facilitating economic, social, and political empowerment. Specifically, ICTs have been found to support the development of leadership skills among rural women, as well as their participation in various activities related to community and economic development. Additionally, ICTs can help to increase women's economic empowerment and promote greater social and political engagement.

Objectives of the Study

The following objectives are formulated based on the nature of the study

- To evaluate the degree of ICTs effect on female university students psychological, economical, political and legal empowerment
- To investigate the effect of ICTs on the psychological, economical, political and legal empowerment of female university students based on their place of residence.
- To investigate the effect of ICTs on the psychological, economical, political and legal empowerment of female university students based on their age.
- To investigate the effect of ICTs on the psychological, economical, political and legal empowerment of female university students based on their level of education.
- To investigate the effect of ICTs on the psychological, economical, political and legal empowerment of female university students based on their stream of study.

Hypotheses of the Study

The following hypotheses are formulated based on the objectives of the study

- **H_1:** The use of ICTs does not have a significant positive average effect on the psychological, economical, political, and legal empowerment of female university students
- **H_2:** There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their place of residence(urban vs. rural).
- **H_3:** There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their age group (20-22 vs. 23-25 vs.26-28).
- **H_4:** There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their levels of education (undergraduate vs. postgraduate vs. doctoral).
- **H_5:** There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their stream of study (arts vs. science).

2. Research Methodology used in the study

Based on the nature of study, researchers used a descriptive survey design. The data was collected through a questionnaire without affecting their external conditions and without altering their surroundings altering to the respondent's environment.

Sampling Procedure

The methodology used in this study involved the utilization of a simple random sampling technique to gather data from the population of Tezpur University, which includes doctoral, postgraduate and undergraduate students. The sample size consisted of a total of 180 students, with 90 students from arts backgrounds and 90 students from science backgrounds. Within each category (undergraduate, postgraduate, and Ph.D.), there were 30 students from arts stream and 30 science stream.

Delimitation of the Study

The scope of the study is limited to three specific aspects of empowerment (psychological, economical, political and legal), as chosen by the researcher. Other areas of women's empowerment have not been covered. Additionally, the study is based on specific indicators of women's empowerment and does not encompass all relevant indicators.Finally, the study is limited in that it only includes a of 180 female students at Tezpur University

Research Instrument Used in the Study

The study utilized a research instrument called the "Women Empowerment Scale through ICTs," which was developed and standardized by Monika Gupta and Sundeep Kumar Srivas. This instrument was employed to assess the impact of ICTs on the psychological, economical, political, and legal empowerment of female students pursuing courses in university.

3. Data Analysis and Interpretation

For the present study, data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) program. Frequency counts and percentages were used to present the data in tables. Descriptive statistics techniques, such as mean, standard deviation, were used to analyze the data. Additionally, differential analysis, including t-tests and one-way ANOVA, were employed. The study involved selected demographic variables, such as place of residence, age of the students, levels of education and stream of study. The data analysis and findings were presented below.

Demographic profile of the respondents

The represents the distribution of the sample based on place of residence, age, level of education, and stream of study are as follows. The total sample size was 180, with 50% of the students belonging to urban areas and 50% to rural areas. The sample was equally distributed between arts and science streams, with 50% of the students in each. The sample was also equally distributed among undergraduate (33.3%), postgraduate (33.3%), and Ph.D. (33.3%) levels of study. In terms of age, 33.0% of the students were between 20 and 22, 47.3% were between 23 and 25, and 18.7% were between 26 and 28, with a total sample size of 180 students.

H_1: The use of ICTs does not have a significant positive average effect on the psychological, economical, political, and legal empowerment of female university students

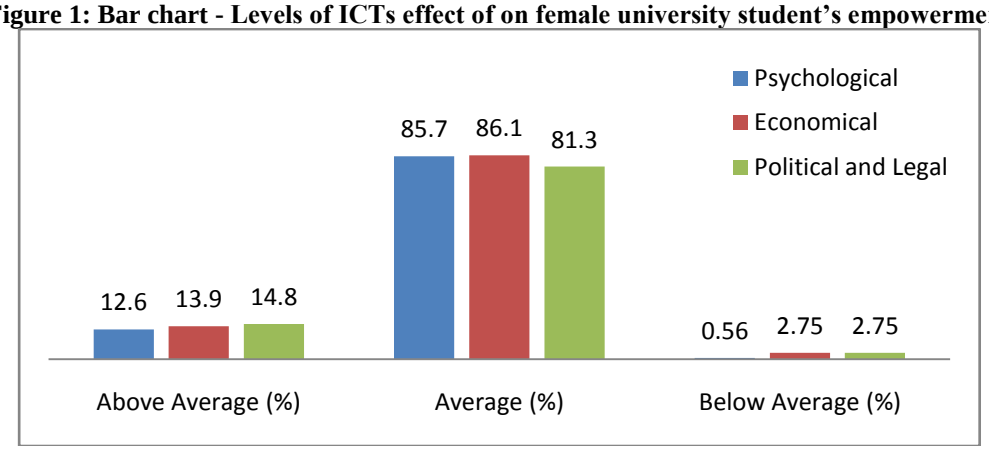
The effect of ICT on female university students' psychological empowerment is indicated by Table 1 and Fig 1, which show that 85.7% of students have average psychological empowerment through ICT, while 12.6% have above-average psychological empowerment, and only 0.5% have below-average psychological empowerment. Additionally, the study examines the impact of ICT on other aspects of empowerment, including economic, political, and legal empowerment.

The data in Table 1 suggests that 13.9% of students have above-average economical empowerment through ICT, while 86.1% fall in the average range, and 2.7% have below-average economical empowerment. Moreover, Table 1 shows that 14.8% of students have above-average political and legal empowerment through ICT, while 81.3% fall in the average range, and 2.7% have below-average political and legal empowerment. Therefore, the use of ICTs has a significant positive effect (more than 80% of student's falls in average) on the psychological, economical, political, and legal empowerment of female university students. In other words, the psychological, economical, political, and legal empowerment of female university students is significantly positively impacted (on average) by the use of ICTs.

Table 1: Showing the levels of ICTs effect of on female university student's empowerment

Empowerment Dimensions	Above Average (%)	Average (%)	Below Average (%)
Psychological	12.6	85.7	0.56
Economical	13.9	86.1	2.75
Political and Legal	14.8	81.3	2.75

Figure 1: Bar chart - Levels of ICTs effect of on female university student's empowerment



H_2: There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their place of residence(urban vs. rural).

As inferred from Table 2, the mean score for the effect of ICTs on the psychological empowerment of urban female university students is 48.67 with a standard deviation of 1.513, while for rural students it is 48.76 with a standard deviation of 1.726. The negligible differences in mean and standard deviation scores indicate no significant difference in the effect of ICTs between urban and rural female university students on psychological empowerment. The obtained t-value of 0.388, with a degree of freedom of 178 and a significance level of 0.580 (> 0.05), supports the acceptance of the null hypothesis. Therefore, it can be concluded that there exists no statistically significant difference in the psychological empowerment of female university students through ICT between urban and rural students.

Similarly the mean score for the effect of ICTs on the economical empowerment of urban female university students is 77.21with a standard deviation of 1.929, while for rural students it is 77.26 with a standard deviation of 2.203.

Regarding the mean score for the effect of ICTs on the political and legal empowerment of urban female university students is 60.97 with a standard deviation of 1.472, while for rural students it is 60.67 with a standard deviation of 1.670. The negligible differences in mean and standard deviation scores indicate no significant difference in the effect of ICTs between urban and rural female university students on psychological empowerment. The obtained t-value of 1.249, with a degree of freedom of 178 and a significance level of 0.389 (> 0.05), supports the acceptance of the null hypothesis. Therefore, it can be concluded that there exists no statistically significant difference in the political and legal empowerment of female university students through ICT between urban and rural students.

Table 2: ICTs effect on the female university student's psychological, economical, political and legal empowerment based on their place of residence

Empowerment Dimensions	Place of residence	N	Mean	SD	t-value(df)	Sign. (2-tailed)
Psychological	Urban	90	48.67	1.513	0.388 (178)	0.580
	Rural	90	48.76	1.726		
Economical	Urban	90	77.21	1.929	0.161 (178)	0.280
	Rural	90	77.26	2.203		
Political and Legal	Urban	90	60.97	1.472	1.249 (178)	0.389
	Rural	90	60.67	1.670		

H_3: There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their age group (20-22 vs. 23-25 vs.26-28).

According to Table 3, the mean and standard deviation of psychological empowerment for female undergraduate students age group 20-22 are 48.33 and 1.791, for students age group 23-25 are 49.05 and 1.518, and for students age group 26-28 it is 48.56 and 1.397.

Comparison of the mean scores indicates that there is difference in psychological empowerment among the three groups of students. The obtained f-ratio of 3.745 (df-2,177) is significant at the 0.05 level. However, the calculated p-value of 0.026 is less than 0.05, indicating statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is a statistically significant difference among three groups of students in psychological empowerment of female university students using ICTs. Post hoc tests revealed that female university students' ages ranged 23-25 shows a higher level of ICTs effect on psychological empowerment than their counterparts.

It is observed from Table 3 that the mean and standard deviation of economical empowerment female undergraduate students age group 20-22 are 77.63 and 2.008, for students age group 23-25 are 76.95 and 2.040, and for students age group 26-28 it is 77.24 and 2.161. Comparison of the mean scores indicates that there is difference in economical empowerment among the three groups of students. The obtained f-ratio of 1.938 (df-2,177) is significant at the 0.05 level. However, the calculated p-value of 0.014 is less than 0.05, indicating statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is a statistically significant difference among three groups of students in economical empowerment of female university students using ICTs.. Post hoc tests revealed that female university students aged 20-22 showed a higher level of ICTs' effect on economic empowerment than their counterparts.

In same way regards political and legal empowerment from Table 3, mean and standard deviation for female undergraduate students age group 20-22 are 60.72and 1.688,for students age group 23-25 are 60.64 and 1.455, and for students age group 26-28 it is 61.47 and 1.542. Comparison of the mean scores indicates that there is a difference in political and legal empowerment among the three groups of students. The obtained f-ratio of 3.700 (df-2,177) is significant at the 0.05 level. However, the calculated p-value of 0.027 is less than 0.05, indicating statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is statistically significant difference among three groups of students in v empowerment of female university students using ICTs. Post hoc tests revealed that female university students aged 26-28 showed a higher level of ICTs' effect on political and legal empowerment than their counterparts.

Table 3: showing Mean, SD and f-test value for ICTs effect on the female university student's psychological, economical, political and legal empowerment based on their age

Empowerment Dimensions	Age Group	N	Mean	SD	f-value (df)	Sign. (2-tailed)
Psychological	20-22	60	48.33	1.791	3.745 (2,177)	0.026
	23-25	86	49.05	1.518		
	26-28	34	48.56	1.397		
Economical	20-22	60	77.63	2.008	1.938 (2,177)	0.014
	23-25	86	76.95	2.040		
	26-28	34	77.24	2.161		
Political and Legal	20-22	60	60.72	1.688	3.700 (2,177)	0.027
	23-25	86	60.64	1.455		
	26-28	34	61.47	1.542		

H_4: There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal empowerment of female university students based on their levels of education (undergraduate vs. postgraduate vs. doctoral).

According to Table 4, the mean and standard deviation of psychological empowerment for female undergraduate (U.G) students are 48.52 and 1.751, for postgraduate (P.G) students they are 48.75 and 1.762, and for doctoral (Ph.D) students it is 48.88 and 1.303. Comparison of the mean scores indicates that there is no major difference in ICTs effect on psychological empowerment among U.G, P.G, and Ph.D. students. The obtained f-ratio of 0.788 (df-2,177) is significant at the 0.05 level. However, the calculated p-value of 0.456 is greater than 0.05, indicating no statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is no statistically significant difference in the ICTs effect on psychological empowerment of female university students based on their U.G, P.G, and Ph.D. levels of education.

It is observed from Table 4 that the mean and

standard deviation for female undergraduate (U.G) students regarding economical empowerment is 77.55 and 1.780, for postgraduate (P.G) students it is 77.25 and 2.152, and for doctoral (Ph.D) students it is 76.90 and 2.212.

Comparison of the mean scores indicates that there is no major difference in ICTs effect on economic empowerment among U.G, P.G, and Ph.D. students. The obtained f-ratio of 1.742 (df=2,177) is significant at the 0.05 level. However, the calculated p-value of 0.178 is greater than 0.05, indicating no statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is no statistically significant difference in the ICTs effect on economical empowerment of female university students based on their U.G, P.G, and Ph.D.levels of education.

In same way regards political and legal empowerment from Table 4, the mean and standard deviation for female undergraduate (U.G) students is 60.80 and 1.459, for postgraduate (P.G) students it is 60.51 and 1.681, and for doctoral (Ph.D) students it is 61.90 and 1.559. Comparison of the mean scores indicates that there is no major difference in ICTs effect on political and legal empowerment among U.G, P.G, and Ph.D. students. The obtained f-ratio of 0.902 (df-2,177) is significant at the 0.05 level. However, the calculated p-value of 0.408 is less than 0.05, indicating no statistical evidence to reject the null hypothesis. Therefore, it can be concluded that there is no statistically significant difference in the ICTs effect on political and legal empowerment of female university students based on their U.G, P.G, and Ph.D. levels of education.

Table 4: ICTs effect on the female university student's psychological, economical, political and legal empowerment based on their levels of education

Empowerment Dimensions	Levels of Education	N	Mean	SD	f-value (df)	Sign. (2-tailed)
Psychological	UG	60	48.52	1.751	0.788 (2,177)	0.456
	PG	60	48.75	1.762		
	Ph.D.	60	48.88	1.303		
Economical	UG	60	77.55	1.780	1.742 (2,177)	0.178
	PG	60	77.25	2.152		
	Ph.D.	60	76.90	2.215		
Political and Legal	UG	60	60.80	1.459	0.902 (2,177)	0.408
	PG	60	60.57	1.681		
	Ph.D.	60	61.10	1.559		

H_5: There exists no statistically significant difference in the level of ICTs effect on the psychological, economical, political and legal, empowerment of female university students based on their stream of study (arts vs. science).

As inferred from Table 5, the mean score for the effect of ICTs on the psychological empowerment of arts female university students is 48.86 with a standard deviation of 1.660, while for science students it is 48.58 with a standard deviation of 1.572. The negligible differences in mean and standard deviation scores indicate no significant difference in the effect of ICTs between arts and science female university students on psychological empowerment. The obtained t-value of 1.153, with a degree of freedom of 178 and a significance level of 0.617 (> 0.05), supports the acceptance of the null hypothesis. Therefore, it can be concluded that there exists no statistically significant difference in the psychological empowerment of female university students through ICT between arts and science students.

Similarly the mean score for the effect of ICTs on the economical empowerment of arts female university students is 77.41with a standard deviation of 2.224, while for science students it is 76.02 with a standard deviation of 1.878. The differences in mean and standard deviation scores indicate the significant differences in the effect of ICTs between arts and science female university students on economical empowerment. The obtained t-value of 1.376, with a degree of freedom of 178 and a significance level of 0.048 (< 0.05), supports the rejection of null hypothesis. Therefore, it can be concluded that there exists a statistically significant difference in the economical empowerment of female university students using ICTs between arts and science students.

Regarding the mean score for the effect of ICTs on the political and legal empowerment of female university students in arts streams, it is 60.79 with a standard deviation of 1.632. For female

students in science streams, the mean score is 60.80 with a standard deviation of 1.526.

The negligible differences in the mean and standard deviation scores indicate that there is no significant difference in the effect of ICTs on the political and legal empowerment of female university students in arts and science streams.The obtained t-value of 0.283, with a degree of freedom of 178 and a significance level of 0.996 (> 0.05), supports the acceptance of the null hypothesis. Therefore, it can be concluded that there is no statistically significant difference in the political and legal empowerment of female university students in arts and science streams using ICTs.

Table 5: ICTs effect on the female university student's psychological, economical, political and legal empowerment based on their stream of study

Empowerment Dimensions	Stream of study	N	Mean	SD	t-value (df)	Sign. (2-tailed)
Psychological	Arts	90	48.86	1.660	1.153 (178)	0.617
	Science	90	48.58	1.572		
Economical	Arts	90	77.44	2.224	1.376 (178)	0.048
	Science	90	75.02	1.878		
Political and Legal	Arts	90	60.79	1.632	0.283 (178)	0.996
	Science	90	60.86	1.526		

Major Findings and Discussion of the Present study

- The study examines the impact of ICT on different aspects of empowerment, including psychological, economical, political, and legal empowerment.

- Analysis of the study suggests that the use of ICTs has a significant positive average effect on the psychological, economical, political and legal empowerment of female university students.

- The analysis conducted suggests that there is no statistically significant difference in the effect of ICTs on the psychological, economical, political, and legal empowerment of female university students based on their urban or rural backgrounds. This finding coincided with the findings of Patil, Dhere and Pawar (2009); Beena (2015); Hosseini and Manjunath (2016) and Mishra (2020).

- However, there is a statistically significant difference in the effect of ICTs on different aspects of empowerment among three age groups of female university students. Results revealed that female university student's age ranged 23-25 shows a higher level of ICTs effect on psychological empowerment than their counterparts; students aged 20-22 showed a higher level of ICTs' effect on economic empowerment than their counterparts; students aged 26-28 showed a higher level of ICTs' effect on political and legal empowerment than their counterparts. The findings of this study in line with Yamuna (2013) that there is a significant difference coincided with the findings of in the psychological economical, political and legal empowerment of women through ICTs based on age of the students

- There is no statistically significant difference in the effect of ICTs on different aspects of empowerment among female university students based on their level of education (UG, PG, and Ph.D.). This finding coincided with the findings of Patil, Dhere and Pawar (2009); Yamuna (2013) who revealed that there is a difference in the personal empowerment of women through ICTs based on age and educational level of the students.

- There is no statistically significant difference in the psychological and political and legal empowerment of female university students through ICT between arts and science stream students. However, a significant difference is found between the two streams in the economical empowerment using ICTs, with arts stream students showing more empowerment than science stream students. In this study also it was found that there is a significant difference in the economical empowerment of women through ICTs based on students' stream of study which coincided with the findings of Yamuna (2013).

Educational Implications and Recommendations for the Further Studies

The study results indicate that there is no significant difference in psychological, economical, political and legal empowerment among female students based on their place of residence and level of education. While age does seem to have an influence on psychological, economical, political and legal empowerment, stream does seem to influence the economical empowerment, future efforts should focus more on empowering the psychological, economical, political and legal aspect of women.

ICTs play a crucial role in enhancing female students' knowledge and keeping them informed of new technology. Various media such as radio/television programs, magazines, blogs, social networking sites, and websites related to female student's empowerment can create a sense of self-development and provide motivation, inspiration, enthusiasm, and interest in acquiring new skills and knowledge.

ICTs can be instrumental in making female students aware of their economic rights, including knowledge of various services and schemes provided by banks. With online banking, female students can carry out banking activities from home or any location, gain knowledge about national and international markets, and make online bill payments, enabling them to be self-reliant and support their families financially. Through ICTs, female students can stay informed of government policies and laws made for them, gaining insight into the prevailing political scenario, and becoming aware of political issues and the functioning of government.

While the present study sheds light on several aspects of women's empowerment, it is not comprehensive in nature and there is a need for further research in this area. To this end, the following recommendations are proposed for future studies, which could explore the effects of ICTs on other dimensions of women's empowerment beyond those examined in this study. One such area for investigation is the longitudinal impact of ICTs on women's empowerment, which could provide valuable insights into how these effects may change over time.. Further research is needed to explore the barriers and challenges that prevent women from accessing and using ICTs for their empowerment, particularly in rural areas.

A comparative study could be conducted to assess the effectiveness of different strategies and interventions aimed at promoting women's ICT literacy and empowerment. Future research could examine the role of gender stereotypes and biases in shaping women's access and use of ICTs, and how to address them through policy and practice. A qualitative study could be conducted to explore women's subjective experiences and perceptions of using ICTs for their empowerment, and how they navigate the opportunities and challenges they face. Further research is needed to examine the intersectional ties of women's empowerment, and how factors such as class, race, ethnicity, and sexuality affect their access to and use of ICTs. A policy analysis could be conducted to evaluate the effectiveness of existing policies and programs aimed at promoting women's ICT literacy and empowerment, and to identify gaps and opportunities for improvement.

5. Conclusion

In conclusion, the present study has examined the impact of Information Communication Technologies (ICTs) on the psychological, economical, political, and legal empowerment of female university students. The findings of the study suggest that the use of ICTs has a significant positive effect on the empowerment of female university students in all the examined aspects. However, there exists no statistically significant difference in the effect of ICTs on the psychological, economical, political, and legal empowerment of urban and rural female university students, or based on their levels of education or stream of study. The study has also highlighted the importance of age as a factor that influences the impact of ICTs on different aspects of empowerment, which suggests the need for further consideration of age-related factors in future studies.

Findings of this study could inform policies and interventions aimed at promoting gender equality and women's empowerment in higher education, including the use of ICTs as a tool for empowerment. Overall, assessing the effect of ICTs on female university students' empowerment is an important step towards creating a more equitable and inclusive educational environment for all. Furthermore, the study recommends the establishment of free computer centers, the execution of strong ICT infrastructure, and the provision of technical education on the use of ICT tools to promote women's empowerment.

Overall, this study contributes to the existing literature on the impact of ICTs on women's empowerment and provides insights into the potential benefits of ICTs for female university students' psychological, economical, political, and legal empowerment. These findings could be useful for policymakers, NGOs, and other organizations working towards women's empowerment by emphasizing the importance of integrating ICTs into women-centric initiatives and providing computer education and technical training to women in both urban and rural areas.

5. References

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