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Internet and Women: Does the Internet Influence Women's Empowerment?

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Abstract

This study aims to explore how the internet influences women's empowerment. An extensive literature review was conducted to identify the factors behind women empowerment, which include economic, health, education, social and self-esteem factors. Women mainly use the internet for economic, health, educational, social and self-esteem purposes. These internet use purposes are considered as independent variables in this study, and women's empowerment is the dependent variable. Each variable contains three to four individual items. This study was conducted on 356 women who have access to the internet. A structured questionnaire was used to collect primary data. Descriptive statistics, bivariate correlation, and multiple regression analysis were conducted in this study. The correlation analysis shows that the factors are positively correlated to a very high degree. On the other hand, the findings of multiple regression analysis show that all the factors are very influential as independent variables in determining the degree of women empowerment as a dependent variable. The r-square value is 0.754, which means that 75.4% of the variation in the level of women's empowerment is explained by the independent factors.
Keywords: Women's empowerment, Economic, Health, Education, Social and self-esteem

Introduction

Now it is exoteric for getting information through the internet and it may be used for getting necessary information about education, economic, health, social and self-esteem purposes. To make smart Bangladesh it is necessary to ensure that online service systems are available to each sector and that's why internet access is prerequisite for all. Bangladesh govt. already has taken thousands of initiatives to leverage Information and Communication Technology (ICT) around the country (2016).Internet access is one of the fundamental elements of Information and Communication Technology (ICT) and the other components are hardware, software, data, transactions, cloud computing (Silverstone, 2016).

According to the World Bank to achieve the vision of the country to be upper middle-income status by 2030 Bangladesh needs to create jobs opportunity and safe work environment especially women. As internet uses are increasing dramatically, safe cyber spaces are pre-requisite for women. Without ensuring proper internet uses women

empowerment is not possible. Information and communication technology can play a vital role in job creation for women empowerment. ICT industry has generated approximately $1.4 billion annual revenue in 2022 (dhakatribune, 2023). The potential is huge in this sector, but the country is not yet fully leveraging ICT for development. Non-Government Organizations (NGOs) can help create jobs for women by integrating ICT in their development work (Raihan, 2015). To achieve the future goals of Bangladesh like Smart Bangladesh, Sustainable Development Goals, and Vision 2030, internet can play a great role. The vision 2030 mainly focuses on creating a knowledge-based society by using information technology (Palak, 2019).

The Smart Bangladesh Vision 2041 goes beyond a futuristic vision with advanced technology like 5G internet, 100% smartphone penetration, high-speed internet penetration, and a cashless economy. Its true essence lies in inclusivity, focusing on the people and citizens of Bangladesh. Smart Bangladesh rests on four pillars: Smart Citizens, Smart Government, Smart Economy, and Smart Society, which aim to bridge the digital divide by creating sustainable digital solutions. The objective is to provide equal opportunities to all citizens and businesses, irrespective of their socio-economic status, and to foster innovation and growth (a2i, 2023).

To create a Smart Bangladesh, it is essential to automate all official activities, transactions, and commerce. Without proper access to the internet, achieving these goals becomes very difficult. To achieve SDGs, Vision 2030, vision 2041 some goals are related like to make country economically solvent, ensure gender equality, and empower all women and girls, sustainable economic growth, and productive employment and decent work for all. Proper utilization may help to achieve the above goals of this country.

Today the internet has changed the communication paradigm, making it no longer difficult to reach many people at the same time; and that enables them to respond, interact as well as obtain a copy of the information at a low cost. The use of the internet helps to bridge the gap between people's opportunities for self-employment in the informal economy and the high growth sectors of the world economy. In an informal sector, workers can gain easy access to the Internet through tele-centers and obtain information about markets or administrative procedures, and to publicize their services to a wider clientele (VSPS, 2005).Woman of rural area is empowered through the help of Internet. It has changed their position from the past. NGOs working in the field, multinational agencies and other private agencies have also extended their help to promote IT among the women. The development of IT has enabled the women section to participate in the daily affairs of the state, which range from the household work to local governance (Rathore, 2008).

Now a days earning through internet is not a new concept, day by day it's become popular in developing county especially in Bangladesh (Aitc, 2014). If someone has basic computing skills and free time, then he/she can earn some money on the Internet from the comfort of his/her own home. Many the Bangladeshi youths are now working both part time and full time in these newly created earning sectors. Since around two lakh new graduates enter the job market every year and sufficient jobs are not available in the market, that's why the popularity of freelancing is increasing. There are many types of freelancing works available in the freelancing work sites like computer programming, content development, website design, lead generation, tax file preparation, mobile apps development, data entry, logo design or music video production, Search engine optimization etc. People from different backgrounds are now earning though the internet. Current number of Bangladeshi freelancers is 5.5 lakhs. Upwork (formerly Elance-oDesk), the largest online working platform where Bangladeshi freelancers are working (theindependent, 2015).

The Bangladesh government dreams of a "Smart Bangladesh" by 2041 and reaching the status of a upper middle-income country by 2030. In addition to these goals, Bangladesh is also part of the Sustainable Development Goals project. Of the 17 SDGs, the 5th and 8th goals, "achieve gender equality and empower all women" and "sustainable economic growth, full and productive employment and decent work for all," are directly supported by internet and technology. To achieve these goals, Bangladesh must ensure equal access to the internet and its effective use (Rahman, 2015).

Different research works have been done on internet uses and contribution of internet on women empowerment in India, Iran, USA, Saudi Arabia, South Korea. But there is not much done regarding this issue in Bangladesh. Some researchers worked on gender inequalities on internet access to some extent, but very few assessed the impact of internet on the empowerment of women.

Currently, there is a lack of research on the ways in which the internet can help women empower themselves. This study aims to address this gap by exploring the impact of the internet on women's empowerment under the topic of 'Internet and Women: Does the Internet Influence Women's Empowerment? The primary objective of this study is to investigate the impact of the internet on women's empowerment. Specifically, the study aims to identify the purposes for which women access the internet and establish the correlation matrix among these purposes. Additionally, the study seeks to examine the degree of dependence of independent variables on the dependent variable, women's empowerment.

To achieve the research objective, various research papers, articles, and website information have been gathered and analyzed to examine the impact of the internet on women's empowerment. A self-administered questionnaire was used to conduct a survey in Bangladesh as a sample to obtain feedback from female internet users. Therefore, this study provides a comprehensive understanding of how different internet usage purposes affect women's empowerment.

Literature Review

Bangladesh Telecommunication Regulatory Commission (BTRC) indicates that the total number of internet subscribers reached 128.78 million by September 2021, and among these subscribers, female users account for 39.54%. This indicates a clear overall inequality in internet usage (2021). The internet is considered a boon in the development of the global economy and has contributed to the improvement of social status in developing nations such as Bangladesh (Saroj, 2015). In Bangladesh, the internet has opened many opportunities for economic and social development. It has a wide range of applications in fields such as education, health, industry, and the overall development of the country, with the potential to benefit all sections of society (Rabayah, 2010).

Women are the half of the total population, have tremendous potential to contribute to the development of the country. Hence Internet can be used to empower women in various ways like health-related information access purpose, education purpose, economic purpose, and most importantly financial purpose so that they can also be a part of the development of the country (Saxena Shabam, 2008). And these attempted of the women can help the country to achieve its national goals.

The Internet is an essential resource for the socio-economic development of any community as it is needed and utilized by society for its growth and prosperity. However, in rural areas of Bangladesh, there is still a lack of full access to internet services, particularly broadband services. Different community information centers are meeting the demands for internet services in these areas. Unfortunately, rural and uneducated women are lagging behind in terms of effective use of the internet (Md. Anwarul Islam, 2010).

The use of the internet has been increasingly promoted as a key solution for comprehensive development, poverty eradication, and the empowerment of historically disadvantaged groups, such as women and minorities in the Global South (Sylvia Maier, 2008). Internet-based business initiatives, particularly e-commerce projects, have been considered a way to empower women. This study is motivated by the potentially powerful role that the internet can play in the empowerment of women in developing countries like Bangladesh (CA Anupama Sharma, 2006).

According to the International Telecommunication Union (ITU), the internet is considered a development enabler, and the World Bank currently supports over 1000 projects related to internet applications (2017). The United Nations World Summit held in Tunisia on November 16, 2005, indicated that the internet allows women increased participation in political, social, and economic arenas and supports empowerment for themselves, their families, and their communities. However, it also mentioned that failing to recognize and remedy women's severe under-representation in the development of internet technology policy, including both access and leadership, limits our ability to advance our global society (2005).

In recent years, therefore, development agencies, such as the World Bank, USAID and the Canadian International Development Research Centre (IDRC) have substantially increased funding for internet-based projects that aim to empower women like freelancing, entrepreneurship, and networking projects. Women have increasingly proven to be active and enthusiastic participants in a large variety of Internet based projects such as ICT training, data entry activities, call centers, electronic business, ICT-enabled projects, computer training, billing, computer repair work, and e-enabled businesses (Hafkin, 2000).

UNESCO has launched its project NABANNA: Networking Rural Women and Knowledge, in India with the objective of empowering women and is providing and encouraging women to use intranet portals, web-based application and other database through internet. Such program has developed amongst women, a sense of being more responsible and useful for the society. It has also brought out hidden creative and leadership qualities in women. Information and communication technology has been considered by women as a source enhancing their earning capabilities and positively impacting their social, economic, and political empowerment (Huyer, 2002).

Clare Madge and Henrietta (2009) said in their "parenting gone wired: empowered of new mothers on the internet" paper that the expansion of internet and ICT is purported to provide huge opportunity for women, with the potential for empowerment and feminist activism. During the time of transition of motherhood, the internet can play a central role in providing virtual social support and alternative sources of information which increase these women's real sense of empowerment.

Farid Shirazi (2010) indicates in his "Information and communication technology and women empowerment in Iran" paper that Iranian women have used internet not only as a means of accessing and disseminating information but also as the means of voicing their concerns about discriminatory laws and to participate in public discourse. Internet helps to express voice especially young people and educated women. In Iran blogging has helped repressed and unprivileged groups reach out including women. Women are taking part in blogging to express their right and concern themselves knowing laws. Mr. Shirazi also indicated that by applying the theory of social action and mobilization, women's digital activities prove to be an effective means of participating in communication discourse and mobilizing the female population of Iran in their struggle for a just and fair society and established themselves as empowered women (Shirazi, 2010).

Author studied a lot of related research papers rigorously to understand the factors that mainly influence women empowerment. The following table is used to identify some important factors regarding internet uses and how these factors are impacting on women empowerment. The different authors represent different types of factors that have impact on women empowerment. Based on following frameworks, the author has been developed a framework that represent a theoretical model of this study that epitomize how internet influence on women empowerment.

Table 1: Frameworks of Women Empowerment

Paper and Journal Name	Author	Framework Name	Factors of Women Empowerment
Dimensions of Women Empowerment: A case study of Pakistan, *Journal of Economics and Sustainable Development*	Dr. Nooreen Mujahid Dr. Muhammad Ali Muhammad Noman Azeema Begum	Different Dimension of Empowerment	Social Dimension, Economic Dimension, Political Dimension.
The Role of ICT in women's empowerment in rural Bangladesh	CARE	Care's women empowerment farmwork	Agency Structures Relations
Measurement of women's empowerment in Rural Bangladesh	Simeen Mahmud, Nirali M. Shah, PhD, and Stan Becker, PhD	Women's Empowerment model	Self esteem Control of resources Decision making Mobility
Women's Empowerment: The Role of Independent versus Couples' Decision-Making, from a Lower Middle Income Country Perspective, *Public library of science*	Waithanji	Conceptual framework for women empowerment	Economic decision making Household decision making Physical mobility
UK-based organization that works to help people who are extremely poor and suffering.	OXFAM	Key Dimensions of women's empowerment	Ability to make decisions. Personal freedom Control over resources Social network support
The Women's Empowerment in Agriculture Index, *The journal of Development Studies*	Alkire et al; 2013	Six Domain Framework	Production, Resources, Income, Leadership, Time, Health
Council on Foreign Relations, www.cfr.org	Gayle Tzemach Lemmon; 2016	Factors That Affect Women's Economic Empowerment	Education Decent paid work. Access to property, assets, and financial services. Collective action and leadership. Social protection
Level of Women Empowerment and Its Determinates in Selected South Asian Countries, *Journal of Humanities and Social Science*	Brajesh, Dr. Chander Shekhar; 2015	Conceptual farm work of women empowerment	Education Social Health Economic

There is a clear difference between these studies and previous ones, although few studies have been conducted in Bangladesh on this issue. In prior research, academics mostly focused on gender inequality in internet access, and the advantages and disadvantages of using the internet to some extent. However, they did not identify how the internet can empower women. This paper emphasizes how internet access can specifically empower women.

Theoretical Framework of the study
A theoretical framework has been developed based on evidence and qualitative analysis from literature reviews and past research activities in this field. This framework forms the backbone of this study, with constructs or factors and observed variables used to measure the impact of the internet on the empowerment of women. This study has been conducted based on this theoretical framework to determine the main purposes of internet use and the impact of internet access on women's empowerment.
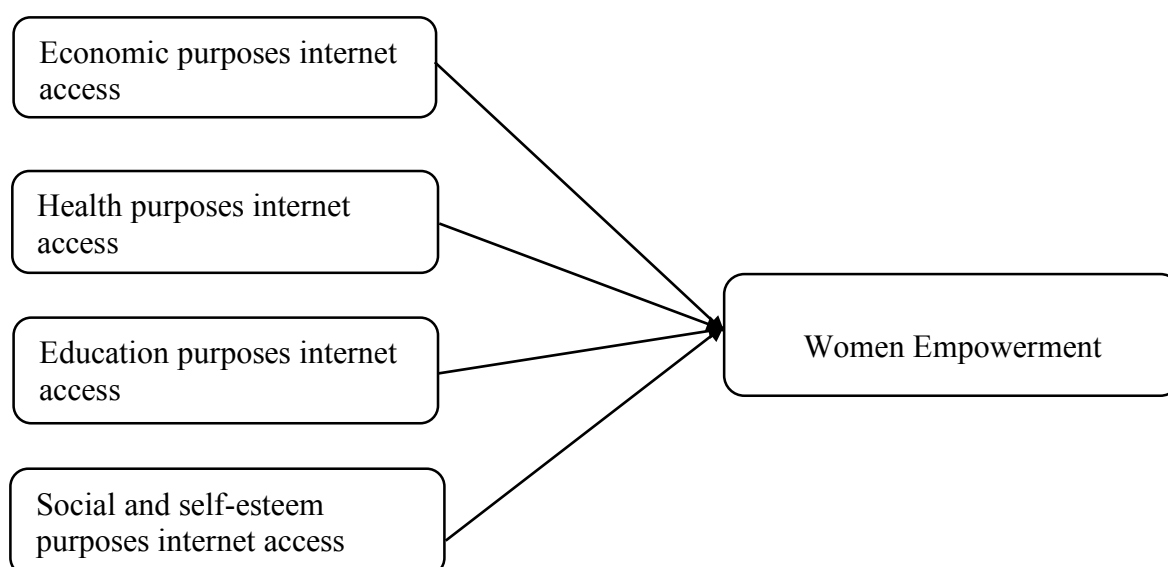

Figure 1: Theoretical framework

The theoretical framework (see Figure 01) consists of five major elements: economic, health, education, social and self-esteem, and women's empowerment. Nowadays, women are accessing the internet extensively, with their main objectives being to empower themselves and gain information for basic needs. This study aims to demonstrate that if women use the internet for economic, health, education, social, and self-esteem purposes, it is possible to see a positive impact on women's empowerment. These factors determine the impact of the internet on the empowerment of women.

Internet
TCP/IP protocol is used to connect computers worldwide through a global system known as the internet. The internet is a network of public, private, academic, business, and government networks that are connected through various electronic, wireless, and optical networking technologies (Abbate, 1999). The internet provides an enormous amount of information resources and services, including hypertext documents, World Wide Web (WWW) applications, email, and file sharing. The internet was first introduced by the Advanced

Research Projects Agency in the USA during the 1960s for the purpose of military research collaboration among business and government bodies. Later, universities and other US institutions were linked to it, and it acquired the name "internet" (Freire, 2008).

Women empowerment
Empowerment refers to the ability of people to control their own destinies in relation to other people in society (Mason, 2005). There is no universal definition of women's empowerment, as factors such as socio-cultural, geographical, environmental, political, and economic, as well as many other aspects of countries and regions influence it. Kabeer (1994) offers a definition of empowerment as "The expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them." According to the World Bank (2008), "Empowerment is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes." Waqas Hameed Ali, Muhammad Ishaque Sheikh, & Bilal Iqbal have identified three major dimensions of women's empowerment in their journal named "Women's Empowerment and Development: The Role of Male versus Female Decision-Making, from a Lower Middle Income Country Perspective". These dimensions are economic decision-making, household decision-making, and women's physical mobility (Waqas Hameed, 2014). Therefore, one definition of women's empowerment could be a process that gives them control of power and resources and changes women's lives over time through their active participation in that process.

Internet Access
Internet access refers to the ability of individuals or organizations to connect to the internet through computer, mobile or other devices and to access services like email and the World Wide Web. (Hunt, 2016).

Economic purpose internet access
Today's internet access is rapidly changing the world economy. From individuals' income to international trade the internet plays a vital role. Nowadays individual people using internet to check the price of products and thousands of people are involved freelancing profession (Rafi Mohamme, 2004) that only possible for the availability of internet access. Besides, now job-related information is available through the internet. So, we can say that internet is changing the way we work, socialize, create, and share information and manage the flow of people, ideas, and things around the world (Vieira, 2015). A mounting body of evidence indicates that internet technologies have the potential to enhance the productivity of workers. As internet infrastructure expands in developing regions, there is often a corresponding increase in the likelihood of workers gaining higher wages or finding employment. Several studies have also revealed interesting distributional effects of internet access, particularly in Vietnam, Brazil, and Nigeria, where female workers' labor market outcomes seem to improve when firms utilize more ICT.

Additionally, a few studies have shown particularly advantageous impacts in rural areas. However, the productivity gains from internet usage appear to differ significantly across different contexts (Hiort, et al., 2022). The Internet has the potential to produce various advantages for users, not just in their roles as consumers and citizens, which are difficult to quantify but still tangible. These benefits may include timesaving, increased convenience, and customized products and services. As modern consumers become increasingly conscious of the value of time, these advantages may be more apparent and

valued by many, compared to the quantitative measurements that economists usually rely on (Rivlin, et al., 2011).

Health purpose internet access
Health purpose internet access means when someone access internet for the purpose of gathering information related to health. Nowadays health purpose internet access is increasing dramatically. A newly concepts is heard that is tele-medicine and most of the tele-medicine services are based on internet (Glassman, et al., 2016). Both hospitals and conscious individuals are using internet to facilitate the health care systems (Jampani, 2011). As per a National Center for Health Statistics data brief, a greater number of women across almost all age groups utilize the Internet for researching health-related topics than men. The variation in usage is most prominent among individuals aged 25 to 34, where 65.8% of women surveyed reported health-related Internet research in the 12 months leading up to the study, compared to 44.4% of men in the same age group, as outlined by Robin Cohen, PhD, and Patricia Adams (Fiore, 2011).

Education purpose internet access
We can't think of today's education systems without internet, from primary school students to PhD students' internet is treated as imperative tool. For researchers, the internet is a great way to do research, through internet someone is more experts in linguistic and may involve in distance learning and able to complete online course work. It's also helpful to accomplish essay writing, doing assignments etc. (D.Randy Garris, 2009). Teachers use the internet to prepare their lessons, doing research and it's a great way to maintain communication and network (Boren, 2004). Undoubtedly, the Internet possesses vast potential for enhancing the standard of education, which is a crucial component of sustainable development. While it is vital to acknowledge that the Internet may not be the solution to every obstacle encountered in education, it can facilitate the realization of human capabilities that can enhance the processes of learning and teaching (Dogniez, 2019).

The appropriate utilization of online learning can enhance the quality of educational materials, enabling educators to plan lessons, and granting students the opportunity to broaden their scope of learning. It empowers educators to analyze the specific needs of individual students and customize lessons to align with their requirements. The utilization of the internet for education confers a significant advantage by making lessons available even in remote areas and rural settlements where girls often face educational disparities. Furthermore, the use of the internet for students enabled them to continue their educational pursuits during the COVID-19 pandemic, which caused the world to come to a halt. The year 2020 witnessed numerous reforms and changes in the conventional way of life. As the COVID-19 pandemic emerged, several societal functions ground to a halt, and the populace was left with no choice but to transition to digital platforms to continue their daily activities (Raju, 2021).

Social and self-esteem purpose internet access
People are now using the internet to become more aware of social issues. It serves as a great source for accessing information on rules and regulations, as well as government policies. Additionally, individuals use social media to express their opinions and understand the perspectives of others on social issues. Although this can sometimes create social conflicts, most of the time it helps raises awareness about important issues (Slevin, 2001).

Based on the above literature and theoretical framework the following hypotheses are developed.

> H1: Economic purposes internet access has positive impact on women empowerment.
> H2: Health purposes internet access has positive impact on women empowerment.
> H3: Education purposes internet access has positive impact on women empowerment.
> H4: Social and self-esteem purposes internet access have positive impact on women empowerment.

Research Methodology

This is a quantitative study that aims to explore the degree of dependence of women's empowerment on various purposes of internet use. In this regard, hypotheses have been developed to examine the perceptions of women who have access to the internet.

Sampling and Data Collection

The primary data have been collected from female students, teachers, service holders, housewives, and entrepreneurs who have access to the internet. Secondary data were collected and used to write the literature review and develop the theoretical framework. The main sources of secondary data were research papers, articles, journals, websites, and books (Wagh, 2023).

To collect primary data, a survey was carried out from September 2022 to February 2023. A total of 400 questionnaires were distributed to female internet users, and 381 responses were collected. Of these, 356 were considered for further analysis. A Google Form questionnaire was used and shared through social media and email using simple random sampling.

The target population of this study is women who have access to the internet and are Bangladeshi citizens. The first part of the questionnaire includes basic demographic information about the respondents, such as age, education, profession, marital status, and monthly income. The second part of the questionnaire includes several five-point Likert scale questions (Mischel, 2022) under the variable labeled as economic purposes of internet access, health purposes of internet access, education purposes of internet access, social and self-esteem purposes of internet access, and women's empowerment.

Questionnaire variable design and measurement scaling

The questionnaire is divided into two sections. The first section includes demographic information about the respondents, while the second section includes five-point Likert scale questions about economic, health, education, social and self-esteem, and empowerment variables. The Likert scale has five points: 1 for strongly disagree, 2 for disagree, 3 for neither agree nor disagree, 4 for agree, and 5 for strongly agree with associated statements made on the questionnaire for the respondents. For the economic, health, education, and social and self-esteem variables, there are three to five items each. For the women's empowerment variable, there are five points on the Likert scale: 1 for Not at all Empowered, 2 for Slightly Empowered, 3 for Somewhat Empowered, 4 for Moderately Empowered, and 5 for Extremely Empowered. The measurement scales are ordinal, interval, and ratio, and the variables are of continuous, categorical, and Likert scale types.

First Section of the variables

Table 2: Demographic variables

SL No	Response Items	Data type	Measurement Scale	Response Pattern
1	Age	Continuous	Ratio	Quantitative
2	Education	Categorical	Ordinal	Secondary/Higher Secondary/Graduation/Post-graduation/PhD
3	Profession	Categorical	Ordinal	Student/Teacher/Service Holders/Homemaker/Entrepreneur
4	Marital Status	Categorical	Ordinal	Married/Never Married/Others
5	Monthly Income	Continuous	Ratio	Quantitative

Second section of the variables

Table 3: Likert scale variables

SL No	Items of the Questionnaire	Associated Measured Variables	Data Type	Measurement Scale
6	Nowadays internet can help women to earn money by staying at home thorough outsourcing.	Economic	Likert Scale	Interval
7	Internet helps women in getting job related information.	Economic	Likert Scale	Interval
8	Internet helps women to easily accomplish necessary financial transactions.	Economic	Likert Scale	Interval
9	Internet facilitates women to become an entrepreneur.	Economic	Likert Scale	Interval
10	Internet helps pregnant women in getting pregnancy-related information.	Health	Likert Scale	Interval
11	Women uses internet for getting health tips through internet.	Health	Likert Scale	Interval
12	Women access internet for getting nutrition and diet related information.	Health	Likert Scale	Interval
13	Internet helps women in their education.	Education	Likert Scale	Interval
14	Distance and internet-based education programs help women to become educated.	Education	Likert Scale	Interval
15	Internet helps women in getting digital literacy training.	Education	Likert Scale	Interval
16	Through internet women can easily express their opinion on social issues.	Social & Self-esteem	Likert Scale	Interval
17	Internet helps women to increase their self-esteem.	Social & Self-esteem	Likert Scale	Interval
18	Internet helps women to become aware of their rights and women safety laws.	Social & Self-esteem	Likert Scale	Interval
19	From economic decision-making point of view in which stage you are staying.	Empowerment	Likert Scale	Interval
20	From family-matter decision making point of view in which stage you are staying	Empowerment	Likert Scale	Interval
21	From freedom to travel necessary places without being escorted point of view in which stage you are staying.	Empowerment	Likert Scale	Interval

In this study, there are four independent items such as economic purpose internet access, health purpose internet access, education purpose internet access, social and self-esteem purpose internet access. The economic purpose internet access variable has four individual items, and rest of the variables have three individual items. The Cronbach's alpha value (Taber, 2017) have been found to judge the internal consistency among economic, health, education, social and self-esteem variables which are 0.714,0.719,0.733, and 0.718

consecutively which are higher than the threshold alpha (α) value of 0.7 (Frost, 2022). The dependent variable women empowerment includes total three items. And these items have been used to measure the women empowerment and Cronbach alpha value is 0.721 greater that threshold alpha (α) value of 0.7.

Data Processing
The Statistical Package for Social Science (SPSS) tool was used to analyze the data. Cronbach's Alpha was used to calculate the data quality metrics, which resulted in a coefficient of (α=.721) indicating standard internal consistency. Descriptive statistics were used to screen the data and summarize the mean and standard deviation in a significant form (Hayes, 2023). To examine the relationships among economic, health, education, social and self-esteem, empowerment variables Pearson correlation analysis was performed. Finally, a multiple regression analysis was conducted to evaluate the degree of dependency between the dependent and independent variables in the quantitative data.

Data Analysis and Findings

Table 4: Demographic characteristics of respondents

Demographic Categories		Frequency	Cumulative Frequency	Valid Percentage	Cumulative Percentage
Age	18-24	112	112	31.46%	31.46%
	25-34	134	246	37.64%	69.10%
	35-44	91	337	25.56%	94.66%
	45-54	13	350	3.65%	98.31%
	55-64	5	355	1.41%	99.72%
	65+	1	356	0.28%	100%
Education	Secondary	17	17	4.78%	4.78%
	Higher Secondary	53	70	14.89%	19.67%
	Graduation	159	229	44.66%	64.33%
	Post-Graduation	124	353	34.83%	99.16%
	PhD	3	356	0.84%	100%
Profession	Student	63	63	17.70%	17.70%
	Teacher	45	108	12.64%	30.34%
	Service Holders	171	279	48.03%	78.37%
	Homemaker	59	338	16.57%	97.94%
	Entrepreneur	11	249	3.090%	97.03%
	Others	7	356	1.97%	100%
Marital Status	Married	216	216	60.68%	60.68%
	Never Married	113	329	31.74%	9.42%
	Others	27	356	7.58%	100%
Monthly Income	Less than BDT 20,000	83	83	23.32%	23.32%
	BDT 20,001 – 40,000	145	228	40.73%	64.05%
	BDT 40,001 – 60,000	82	310	23.04%	87.09%
	BDT 60,001 – 80,000	27	337	7.58%	94.67%
	BDT 80,001 – 100,000	13	350	3.65%	98.32%
	BDT 10,0000+	6	356	1.68%	100%

Source: Survey Data (2023)

Table 4 shows the demographic characteristics of the female internet users who participated in this survey, which was conducted in Bangladesh. All respondents were female. Of the

total respondents, 31.46% were in the 18-24 age groups, while 37.64% were in the 25-34 age groups. As the survey was conducted through social media and email, it was more convenient to reach younger respondents through this channel. The majority of respondents had a graduate or postgraduate level of education, with 44.66% and 34.83%, respectively. In terms of marital status, 60.68% of respondents were married, 31.74% were never married, and 7.58% were classified as "other." In the monthly income category, the largest proportion of respondents (40.73%) reported a monthly income between BDT 20,001 – 40,000, followed by 23.32% who reported a monthly income less than BDT 20,000, and 23.04% who reported a monthly income between BDT 40,001 – 60,000. It is worth noting that only 1.68% of respondents reported a monthly salary exceeding BDT 100,000.

Descriptive Statistics and Correlation Matrix

Table 5: Descriptive statistics and Correlation matrix

Variables	Mean	Standard Deviation	1	2	3	4	5
Economic	4.0512	0.6129	1				
Health	4.1141	0.4202	.515* .019	1			
Education	4.1525	0.5942	.663** .003	.666* .039	1		
Social and Self-esteem	3.6932	0.4758	.182* .031	.381* .037	.389* .015	1	
Women Empowerment	3.8925	0.3816	.187** .009	.667* .017	.763* .011	.133** .004	1

Source: Survey Data (2023)   ** p <.05. ** p<.01. *** p<.001.*

Table 5 shows the descriptive statistics of means and standard deviation as well as correlation matrix among the variables, it is found that most of the result have been found statistically significant at $\alpha = 0.05$ level. The mean range of descriptive statistics from 3.6932 to 4.1525 and correlation matrix range 0.763 to 0.133. The correlation matrix results indicate that the independent variables have significant relationship with women empowerment. The most significant result can be found in between education purpose uses of internet and women empowerment with r = 0.763 and p value is less than the critical value p < α (0.011< 0.05). It's also indicated that 58.21% (0.763²) of the variation in education purpose internet access may positively influence the empowerment of women. Likewise, economic, health and social and self-esteem purpose internet access have significant relation with empowerment of women with r = 0.187, p < α (0.009< 0.01), r = 0.667, p < α (0.017< 0.05), r = 0.133, p < α (0.004< 0.01) consecutively.

Multiple Regression

Table 6: Model Summary of Multiple Regression

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.802[a]	.754	.716	.76449
a. Predictors: (Constant), Economic purpose internet access, Health purpose internet access, Education purpose internet access, Social and self-esteem purpose internet access.				

Source: Survey Data (2023)

In the research methodology section, the author explains that the regression model used in this study represents how internet use for different purposes, such as economic, health, education, social, and self-esteem purposes, can lead to women's empowerment. R indicates the correlation between the predicted and observed values of women's empowerment. In this study, R=.802 indicating a very high correlation and precise prediction of women's empowerment. R square is a simple calculation of the square of R, indicating the proportion of variance of the dependent variable (women's empowerment) explained by the independent variables (economic, health, education, social, and self-esteem). In this study, the value of R square is .754, meaning that 75.4% of women's empowerment can be explained by the independent variables in the model. This is an overall measure of the strength of association and does not reflect the extent to which any independent variable is associated with the dependent variable. Regression maximizes R square for our sample, but sometimes the R square is smaller for the whole population, which is known as shrinkage. Adjusted R square estimates the population R square for our regression model and gives a more realistic value. The Std. Error of the Estimate is also known as the root mean squared error.

Table 7: ANOVA Table of Multiple Regression

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.264	4	4.819	8.819	.022[b]
	Residual	191.685	351	.584		
	Total	210.948	355			
a. Dependent Variable: Women Empowerment						
b. Predictors: (Constant), Economic purpose internet access, Health purpose internet access, Education purpose internet access, Social and self-esteem purpose internet access.						

Source: Survey Data (2023)

This table indicates the regression model. It predicts whether dependent variable is significantly well or not. In regression row, it indicates that the significance value is .022, that means it is statistically significant at 5% level of significance. This indicates the statistical significance of the regression model that was run. Here, p value 0.022, which is less than 0.05, and indicates that the regression model significantly predicts the outcome variable.

Table 8: Coefficient Table of Multiple Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.985	.197		2.732	.038
	Economic	.643	.219	.113	1.987	.012
	Health	.503	.145	.126	3.865	.027
	Education	.609	.173	.476	3.324	.011
	Social and self-esteem	.365	.175	.058	2.482	.039
a. Dependent Variable: Women Empowerment						

Coefficients

Source: Survey Data (2023)

The Coefficients table provides us with the necessary information to predict the women empowerment from independent variable (economic purpose internet access, health purpose internet access, education purpose internet access, social and self-steam purpose internet access) as well as determine whether independent variables contribute significantly to the model or not (by looking at the "Sig." column). Furthermore, we can use the values in the B column under the "Unstandardized Coefficients" column. The "B" coefficients tell us the extent of women empowerment increment for a single unit increase in each predictor. Based on the previous coefficient table the following estimated regression equation can be derived:
Y= a + B1X1 + B2X2 + B3X3 + B4X4 +e
Whereas Xi = Independent Variables
Bi = Regression Coefficients
a = Intercept (Constant)
Y = Dependent Variable
Y (Women Empowerment) = a (.985) + B1 (.643) * X1 (Economic purpose internet uses) + B2 (.503) * X2 (Health purpose internet uses) + B3 (.609) *X3 (Education purpose internet uses) + B4 (.365) * X4 (Social and self-steam purpose internet uses) + e
So, the estimated regression equation is.
Women Empowerment = .985 + (.643) * (Economic) + .503 * (Health) + (.609) * (Education) + (.365) * (Social and self-esteem) + e

Result of Hypothesis Testing
The beta coefficient of economic purposes internet access is .643 that means one unit increase of economic purpose internet access corresponds to 0.643 unit increase of women empowerment, holding all other variables constant. It is statistically significant (p = .012 < α = .05, t < 1.987), that means we can accept the hypothesis H1. T test value should be higher than 1.96 and P-value less than .05 at 5% level of significance (Nigam, 2022). The beta coefficient of health purposes internet access is .503 that means one unit increase of health purpose internet access corresponds to 0.503 unit increase of women empowerment, holding all other variables constant. It is statistically significant (p = .027 < α = .05, t < 3.865), that means we can accept the hypothesis H2. The beta coefficient of education purposes internet access is .609 that means one unit increase of education purpose internet access corresponds to 0.609 unit increase of women empowerment, holding all other variables constant. It is statistically significant (p = .011 < α = .05, t < 3.324), that means we can accept the hypothesis H3. The beta coefficient of social and self-esteem purposes internet access is .365 that means one unit increase of social and self-esteem purpose internet access corresponds to 0.365 unit increase of women empowerment, holding all other variables constant. It is statistically significant (p = .039 < α = .05, t < 2.482), that means we can accept the hypothesis H4.

Discussion

The internet has completely revolutionized our existence, leading to a fundamental transformation in the way we communicate. It has become our primary means of everyday interaction, permeating virtually every aspect of our lives. Given the unavoidable nature of the internet in our daily lives, and the fact that more than half of its users are women, the author of this study recognizes the importance of the internet and its potential impact on women's empowerment. The primary objective of this study is to assess the impact of the internet on women's empowerment. The author has identified four independent variables and measures the degree of women's empowerment's dependence on each of them. Under each variable, data on internet access for economic, health, educational, social, and self-esteem purposes, as well as women's empowerment, were collected using three to four items.

By studying previous works, the author has attempted to identify the various factors responsible for women's empowerment. Previous studies have identified the importance of the internet, its problems and prospects, and how women can use it as a tool to empower themselves. In comparison with previous works, this study is distinct in the sense that the author demonstrates the degree of dependence using a regression model, which sets it apart. According to the correlation matrix results, the independent variables show a significant relationship with women's empowerment. The most noteworthy correlation was found between the use of the internet for educational purposes and women's empowerment, with an r-value of 0.763 and a p-value lower than the critical value, $p < \alpha$ (0.011 < 0.05). This indicates that 58.21% (0.763^2) of the variation in internet access for educational purposes may have a positive impact on women's empowerment. Additionally, the use of the internet for economic, health, social, and self-esteem purposes also showed a significant relationship with women's empowerment. The R-squared value in this study is 0.754, indicating that 75.4% of the variance in women's empowerment can be accounted for by the independent variables included in the model. It is important to note that this is a general measure of the strength of the relationship and does not indicate the extent to which each independent variable is associated with the dependent variable.

Coefficients table indicates the extent to which women's empowerment depends on the independent variables. All four of the independent variables were found to have a significant influence on women's empowerment, as evidenced by their B coefficients. Specifically, economic purpose internet access has a B coefficient of .643, health purpose internet access has a B coefficient of .503, education purpose internet access has a B coefficient of .609, and social and self-esteem purpose internet access has a B coefficient of .365. These coefficients demonstrate that an increase in internet usage for these specific purposes can have a positive impact on women's empowerment.

The Bangladesh government has taken several initiatives to empower women, including providing IT training through various projects such as ICT, hi-tech parks, and incubation centers. The proper use of the internet can assist in achieving SDG 5 on gender equality by endorsing research that focuses on effective strategies for empowering women and girls socially, politically, and economically. This initiative strives to enhance women's access to the internet and proficiency in using digital and networking technologies to achieve the targets outlined in SDG 5. Additionally, the internet can leverage research to promote policies and regulations that foster gender equity both online and offline. The results of this study contribute to the understanding of how appropriate internet utilization can influence women's empowerment, benefiting individual women, government policymakers, and non-governmental organizations in their pursuit of women's empowerment goals.

Implications of the Study

By ensuring equal opportunities, a healthy environment, and gender equality, a greater number of girls and women can assume leadership positions. Gender equality is not only a fundamental human right but also a critical component for establishing a harmonious, prosperous, and sustainable community (Tribune, 2023). And in this study author shows that internet is one of the best tools in 21st century to ensuring gender equality and women empowerment. The Ministry of Women and Children Affairs envisions a society where gender equality and child protection are prevalent. To realize this vision, the Ministry is committed to its mission of promoting the rights of women and children and empowering women through their integration into development efforts (mowca, 2023). The findings of this study can serve as a valuable resource for decision-makers within the Ministry of Women and Children Affairs to effectively harness the power of the internet to empower women. In addition to government bodies, a significant number of NGOs are actively engaged in promoting women's empowerment in Bangladesh (Nawaz, 2020).Such organizations can leverage the findings of this study to design and implement a range of initiatives aimed at empowering women, particularly in rural areas. Through training programs on the utilization of the internet for economic, health, and educational purposes, these NGOs can facilitate the acquisition of crucial skills among rural women, thereby enabling them to lead more empowered lives.

As it is more convenient for women to work from home, they can leverage the power of the internet to do so. Currently, there are a small but growing number of female IT freelancers who are using the internet to work from home, comprising only 9% of the total 6 million registered IT freelancers (Raysa, 2021).This study clearly demonstrates how increased internet usage can contribute to women's empowerment, not only in terms of work but also in accessing health-related information and education. The findings of this study underscore the significance of the internet in promoting women's empowerment and encourage relevant authorities to take proactive measures towards this goal. By recognizing the importance of the internet as a tool for women's empowerment, policymakers and other decision-makers can use the findings of this research and take concrete steps to accelerate the pace of progress towards gender equality.

Conclusion

The 21st century is witnessing rapid advancements in technology, and the internet has become a fundamental tool for this journey. Therefore, proper use of the internet is imperative. Currently, the female population in Bangladesh outnumbers the male population, with 83.34 million females and 81.71 million males (Tribune, 2022). However, women are still lagging in the booming technology sector (NEWAGE, 2023). It would be beneficial for the country to overcome this issue as early as possible. Women's empowerment can be achieved through proper use of the internet for economic, health, education, social, and self-esteem purposes. This study has demonstrated this in an extensive manner. The effective utilization of the internet by women for the purposes stated above would make it more feasible to enroll Bangladesh into the upper-middle-income country bracket by 2030 and actualize the vision of a Smart Bangladesh and Sustainable Development Goals (SDGs) (Hossain, 2021). Thus, it is imperative to ensure the appropriate usage of the internet to realize these goals.

Research Limitation and Future Direction

This study focuses on the impact of the internet on women's empowerment, particularly among female internet users in Bangladesh. The internet serves a diverse array of purposes for women, with the author pinpointing four key independent variables: economic purpose internet access, health-related information access, education purpose internet access, and social and self-esteem purposes internet access. While the author has limited the economic purpose internet access variable to four items and the other variables to three items, it is recommended that future studies incorporate additional independent variables and items to provide a more comprehensive analysis. Data collection employed the random sampling technique; however, given the size and diversity of Bangladesh, it may be inadequate in fully representing the country's geographic area. Moreover, the study relied on a sample size of only 356 valid responses for analysis. Hence, future research should prioritize increasing the sample size to yield more robust and generalizable findings. In this study, cyber security, online harassment, and cyber bullying are not considered. These issues are major concerns for women when using the internet. Therefore, in future research, the study should include the security and threat issues related to using the internet.

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