



Economic Inequality in Mobile Phone Ownership among Women in Bangladesh: evidence from BDHS 2022 data

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Abstract

This study explores the association between economic disparities and mobile phone ownership among Bangladeshi women utilizing data from Bangladesh Demographic and Health Survey (2022). Here the study employs a binary logistic regression model to evaluate the significance of economic predictor on the likelihood of mobile phone ownership. Findings suggest that, those economic and socioeconomic predictors have significant effect on the ownership likelihood, where more relevant facilities like higher household financial condition, better level of education increase the probability of ownership. Additionally, women from urban areas are more likely to have digital access. This investigation reveals a significance presence of digital divide in our society, as women with limited economic facilities have less access to digital devices like mobile phone. Addressing these findings can lead to more informed decision-making and potentially reduce the disparities in digital sector.

Keywords: Economic disparities, Mobile phone ownership, Bangladesh Demographic and Health Survey, Binary logistic regression, Digital access, Digital divide.

1. Introduction

Digital technology has revolutionized modern lifestyle by enabling instant global communication, providing open sources of knowledge, increasing efficiency. It becomes the backbone of modern society. The most prominent inclusion of modern technology in everyday life is mobile phone. A mobile phone is the easiest tool for accessing digital world. Mobile phones have changed the way we communicate, learn, and access information. Using a mobile phone becomes the most significant predictor of digital access nowadays. There are a large number of mobile phone users in Bangladesh. According to a report published by Bangladesh Bureau of Statistics (BBS) in December 2025, about 98.9% of households in Bangladesh used mobile phone in the first quarter of FY26, though inequality seems in the proportion of male and female users. The same report also shows that, personal mobile phone ownership is higher among men (63%) than women (53%). This

has revealed a gender gap in mobile phone ownership. Moreover, a report published by the Global System for Mobile Communications Association (GSMA) in 2024 showed that, Bangladesh has the highest gender gap in mobile internet use among Asian countries, with a gap of 40%. Therefore, understanding the factors behind this lower rate of mobile phone ownership among women is crucial for digital policy making and implementation.

Again, the constitution of Bangladesh guarantees women's empowerment. To ensure equal representation of women in every sector of national life, providing them the access of digital platform is essential. The key tool to ensure such digital access is mobile phone.

There are several factors that influence the ownership of mobile phone among women. Some of them are directly or indirectly with economy. The wealth status of the households may have influence on the ownership. Again, factors like residence and education level which are indirectly related with economic condition of the respondents may also have significant influence on the likelihood of ownership. So, it is essential to investigate the effects of the determinants for providing more effective and optimize policy planning.

2. Literature Review

Mobile phone ownership status among women has shaped by various determinants. Several relevant studies have conducted to investigate these underlying determinants from different aspects.

Kibria and Nayeem (2023) found that, in spite of rapid growth of mobile phone technology and price competitiveness, ownership of a mobile phone remains relatively low among women in many developing countries, including Bangladesh. This study has also shown that women with higher levels of education and belonging more wealthier families are more likely to own a mobile phone. Though the study was conducted on BDHS 2017-18 data, older one.

Additionally, recent research has explored the role of mobile phone use in women's empowerment in Bangladesh, which shows the significance of the study. Nandi and Duvander (2025) investigated that, use of mobile phone is associated with women's empowerment in Bangladesh, as women using a mobile phone were found to be more engaged in intra-household economic decision making compared to non-users.

In global context, global research also emphasizes the link between socioeconomic determinants and mobile phone access. Frias-Martinez and Virseda (2012) found that, socioeconomic characteristics significantly influence patterns of mobile phone ownership and usage, highlighting the role of broader structural inequalities beyond national boundaries. Though the study shows a general finding, not specified for women.

Tran et al. (2015) found that, in rural population (2008-2011), socioeconomic factors such as illiteracy, lack of electricity, and low wealth index significantly constrain mobile phone ownership representing a state of digital divide for the rural people. However, these barriers diminished over time as income increased and mobile technology became affordable.

Research also shows the potential of mobile phone use to empower women economically, which influences other women to have a mobile phone. Rahman et al. (2023) showed that, increasing proportion of owning mobile phone among rural women also increases women's empowerment across multiple dimensions, including economic participation. This suggests that, mobile phone ownership may not just present the economic disparities, but can also treat as a tool to reduce such disparities.

Considering health-related issues, Karmokar et al. (2026), using BDHS 2017-18 data, found that access to mobile phone or other IT related device was positively associated with elective caesarean delivery in Bangladesh. These findings highlight the relevance of socioeconomic factors in understanding inequalities among women, providing indirect context for examining wealth- and education-based disparities in mobile phone ownership.

All the existing papers give insights about general and sociodemographic determinants. Here limited attention has been given to economic inequality as a center focus among women in Bangladesh. Moreover, several

studies focus on household level ownership, not specified for women. Therefore, further study is needed to investigate the economic inequalities in mobile phone ownership among Bangladeshi women.

3. Methodology

Data Source

The data have obtained from Bangladesh Demographic and Health Survey (BDHS) conducted in 2022. This is a cross-sectional survey that utilized a two-stage stratified sampling method and encompassed all eight divisions in Bangladesh. The final size of the sample for study is 30,078.

Response Variable

The response variable Mobile Uses shows binary response coded as:

- 1 = respondent owns a mobile phone
- 0 = respondent doesn't own a mobile phone

Explanatory Variable

There are three explanatory variables are considered in this study. These are:

1. Wealth Status
 - 1 = Poorest
 - 2 = Poorer
 - 3 = Middle
 - 4 = Richer
 - 5 = Richest
2. Education Level
 - 0 = No education (Not having any formal education)
 - 1 = Primary
 - 2 = Secondary
 - 3 = Higher
3. Residence
 - 1 = Urban
 - 2 = Rural

Research Design and Method of Statistics

For the study, a binary logistic regression model or logit model is employed. As the response variable is dichotomous (whether a woman owns a mobile phone or not), binary logistic regression is more appropriate to estimate the mobile phone ownership likelihood. The model can be expressed as:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1(\text{Wealth}) + \beta_2(\text{Education}) + \beta_3(\text{Residence})$$

Where,

- p = probability that the respondent (woman) owns a mobile phone
- β_0 = intercept
- $\beta_1, \beta_2, \beta_3$ = regression coefficient
- Wealth, Education, Residence represents the explanatory variables included in the model

The analysis procedure has conducted on statistical software STATA.

Analysis and Results

Univariate Analyses

Table 1 Frequency and percent (%) distribution of variable

Variable	Category	Frequency	Percentage
Mobile Uses	Yes	20892	69.46
	No	9186	30.54
Wealth Status	Poorest	5559	18.48
	Poorer	5855	19.47
	Middle	5926	19.70
	Richer	6168	20.51
	Richest	6570	21.84
Education Level	No Education	4167	13.85
	Primary	7857	26.12
	Secondary	13613	45.26
	Higher	4441	14.76
Residence	Urban	10571	35.15
	Rural	19507	64.85

Table 1 represents the frequency distribution along with the percentages of each category for all covariates in the study. From the univariate analysis, 69.46% respondents were using a mobile phone who responded affirmative and the remaining 30.54% did not, which indicates a higher representation of users compared to non-users. Considering household wealth, 18.48% belonged to the poorest quintile, 19.47% to the poorer quintile, 19.70% to the middle, 20.51% to richer quintile and lastly 21.84% to the richest group. In terms of highest level of education, 45.26% had secondary level of education, 26.12% had primary education, 14.76% had higher education, and only 13.85% had no formal education. The majority of the respondents resided in rural areas with a percentage of 64.85%, while 35.15% were from urban sides.

Bivariate Analyses

Table 2 Bivariate Analysis with corresponding p-value

Variable	Category	Mobile Uses (%)		p-Value
		Yes	No	
Wealth Status	Poorest	50.17	49.83	<0.001
	Poorer	61.33	38.67	
	Middle	67.28	32.72	
	Richer	76.65	23.35	
	Richest	88.23	11.77	
	No Education	45.09	54.91	<0.001

Education Level	Primary	61.60	38.40	
	Secondary	73.72	26.28	
	Higher	93.15	6.85	
Residence	Urban	78.02	21.98	<0.001
	Rural	64.82	35.18	

Table 2 represents the outcomes of bivariate analysis. The results show that the covariates are statistically significant which suggest a strong association with the using status of mobile phone. Household wealth is associated with mobile phone use with the highest rate for the richest quintile (88.23%), then the second highest one is for the richer quintile (76.65%), followed by the middle (67.28%), and the poorer 61.33%. The lowest positive response was from the poorest quintile with 50.17%, which ensures household wealth has a significant influence on mobile phone using status. Women education also influences using status. 93.15% of the respondents with higher level of education were using a mobile phone, while the using percentages for secondarily educated women, primarily educated and women with no formal education were 73.72%, 61.60%, and 45.09% respectively. Here, the highly educated women show more than double percentage value compared to women with no formal education. Urban residents showed higher user prevalence (78.02%) compared to rural residents (64.82%).

Regression Analyses

Table 3 Results of Binary Logistic Regression model depicting odds ratio (OR)

Variables	Estimate	S.E.	p-Value	OR
Intercept	-0.442	0.047	<0.001***	0.643
Wealth Status				
Poorest(ref)	-	-	-	-
Poorer	0.315	0.039	<0.001***	1.370
Middle	0.469	0.040	<0.001***	1.598
Richer	0.826	0.043	<0.001***	2.284
Richest	1.342	0.052	<0.001***	3.827
Education Level				
No Education(ref)	-	-	-	-
Primary	0.611	0.039	<0.001***	1.842
Secondary	0.991	0.038	<0.001***	2.694
Higher	2.249	0.069	<0.001***	9.478
Residence				
Urban(ref)	-	-	-	-
Rural	-0.184	0.032	<0.001***	0.832

The results obtained from regression analysis is represented in Table 3 which determine the adjusted association between the dependent binary variable Mobile Uses and the considered covariates. Those covariates are considered as potential determinants for Mobile Uses such as: Wealth Status, Education Level,

and Residence. The model explains 10.95% of the variation in the likelihood of women owning a mobile phone in Bangladesh (Pseudo $R^2 = 0.1095$). Considering household wealth status, the four categories excluding poorest have higher likelihood for occurring event (owning a mobile phone) compared to the poorest category. The odds of owning a mobile phone among women who belonged to a poorer family is 37.0% higher compared to women from poorest household. Other categories are also showing significantly greater odds that is 59.8% higher for middle-classed families, 128.4% for richer families, and 282.7% higher for the richest families compared to the reference category poorest. Education level indicates a positive association with the likelihood of owning a mobile phone. Those women who are primarily educated have 84.2% greater odds of event occurring compared to the women with no formal education. Women with secondary level of education also have 169.4% greater odds, while the odds of owning a mobile phone is 847.8% higher for highly educated women which indicates the likelihood of owning a mobile phone has been increasing significantly as the level of education increases. Finally, it is found that the odds of owning a mobile phone among the women who resided in rural areas is 16.8% lower compared to the women from urban sides. All the findings interpreted above with an assumption that the covariates other than the corresponding one are kept at a fixed level.

4. Conclusion

This study provides a statistical analysis of the likelihood of mobile phone uses among Bangladeshi women utilizing data from the Bangladesh Demographic Health Survey (2022) to evaluate the influence of economic and socioeconomic variates like as household wealth, highest level of education, and place of residence. This uncovers a meaningful impact of the considered factors on the using status of a mobile phone. Here, as wealth status upgrades, the likelihood of owning a mobile phone also increases significantly ($p\text{-value} < 0.001$), which indicates more access to the digital technology.

Prominently, level of education emerges as a significant predictor as women with higher level of education more likely to have a mobile phone. There are more non-user respondents (54.91%) than user (45.09%) for the category women with no formal education. From there, the user proportion gradually increases with the education level. That reflects, educational advancement also ensures technological advancement. Again, owning a mobile phone is more likely for the women who resided urban areas compared to the women from rural sides. All the findings are statistically highly significant.

The findings highlight that using status of mobile phone among Bangladeshi women, more generally to say digital access, is highly influenced by different economic or economy related factors. Regional and educational disparities are influenced directly by economic status which also have impact on digital access among Bangladeshi women. Those economic disparities also fuel digital divide where a large portion of the population remains kept outside from the proper digital access. However, there might be more factors that could influence the likelihood of ownership which are not considered in the study.

Finally, policy makers should focus on enhancing sustainable economic growth both for rural and urban areas, boosting educational access, and reducing income disparities. Policy development and implementation are essential for ensuring digital access to all.

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