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EXAMINING THE GENDER DIGITAL DIVIDE

A Case Study from Rural Bangladesh

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Women farmers in Bangladesh face several challenges when it comes to accessing technology and information, and this limits their ability to improve their agricultural productivity and enhance their livelihoods. The gendered digital divide is a significant contributor to inequities in agriculture and has important implications for women's empowerment. Lack of access to information affects their ability to make informed decisions, access markets, and secure their rights. This policy note summarizes research designed to identify the barriers female farmers in Bangladesh face in accessing technology and information so that future policies and initiatives can address these challenges and, in so doing, promote gender equality and the empowerment of rural women.

The Relationship between Household Cell-Phone Ownership and Agricultural Outcomes

Survey findings indicate a sharp increase in household-level cell-phone ownership in rural Bangladesh, from 75 percent in 2012 to 96 percent in 2019.

METHODOLOGY

The analysis reported in this policy note is based on data from three rounds of the Bangladesh Integrated Household Survey (BIHS), conducted by the International Food Policy Research Institute (IFPRI) in 2012, 2015, and 2019. The BIHS is a multipurpose, nationally representative panel survey of households in 325 randomly selected villages. The household sample was designed to be statistically representative of rural Bangladesh, and of the nation's seven administrative divisions. Note that the analysis reported focuses on individual cell-phone use and household-level cell-phone ownership as proxies for digital connectivity and use of information and communications technologies (ICT).

Nevertheless, only 50 percent of respondents reported using cell phones in 2019: 71 percent were male and 36 percent were female, confirming a significant gender gap (Figure 1). The gendered digital divide in Bangladesh impairs women's ability to access information and limits their access to formal financial services, among the many other constraints they face.

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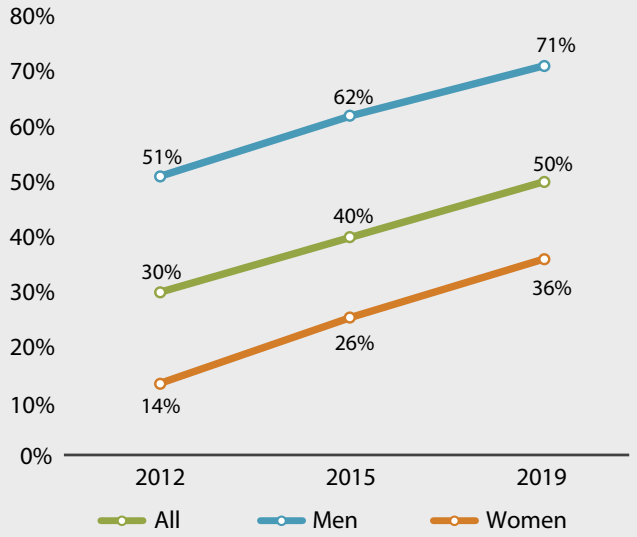
FIGURE 1. Incidence of cell-phone use in rural Bangladesh by gender, 2012, 2015, and 2019

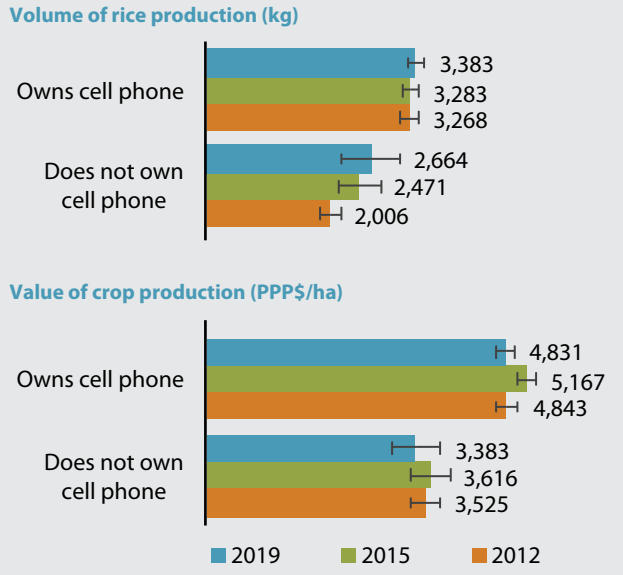


Source: Calculated by authors based on the Bangladesh Integrated Household Survey, 2012, 2015, and 2019.

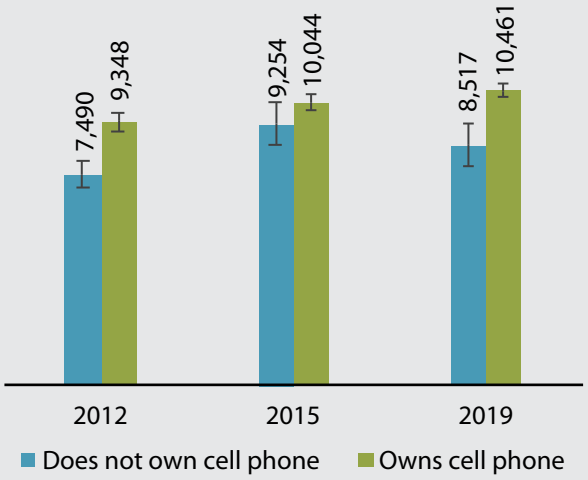
Households that reported owning cell phones attained higher values of crop production per hectare, achieved higher rice yields, and produced more rice overall compared with households that did not own cell phones (Figure 2). These results are indicative of the role digital technology plays in lowering transaction costs and facilitating better access to information and financial services. Furthermore, among the households that owned cell phones, on average, results show that plots managed solely by men generated higher crop production values per hectare and produced higher quantities of rice over time relative to plots managed either by women only or by men and women jointly (Figure 3a). Although rice yields from plots managed by women only or by men and women jointly were higher in 2012 compared with yields from plots managed solely by men, over time the difference shifted in favor of plots managed

FIGURE 2. Agricultural outcomes by household cell-phone ownership (2012, 2015, and 2019)

a. Quantity of rice produced and value of crop production per hectare



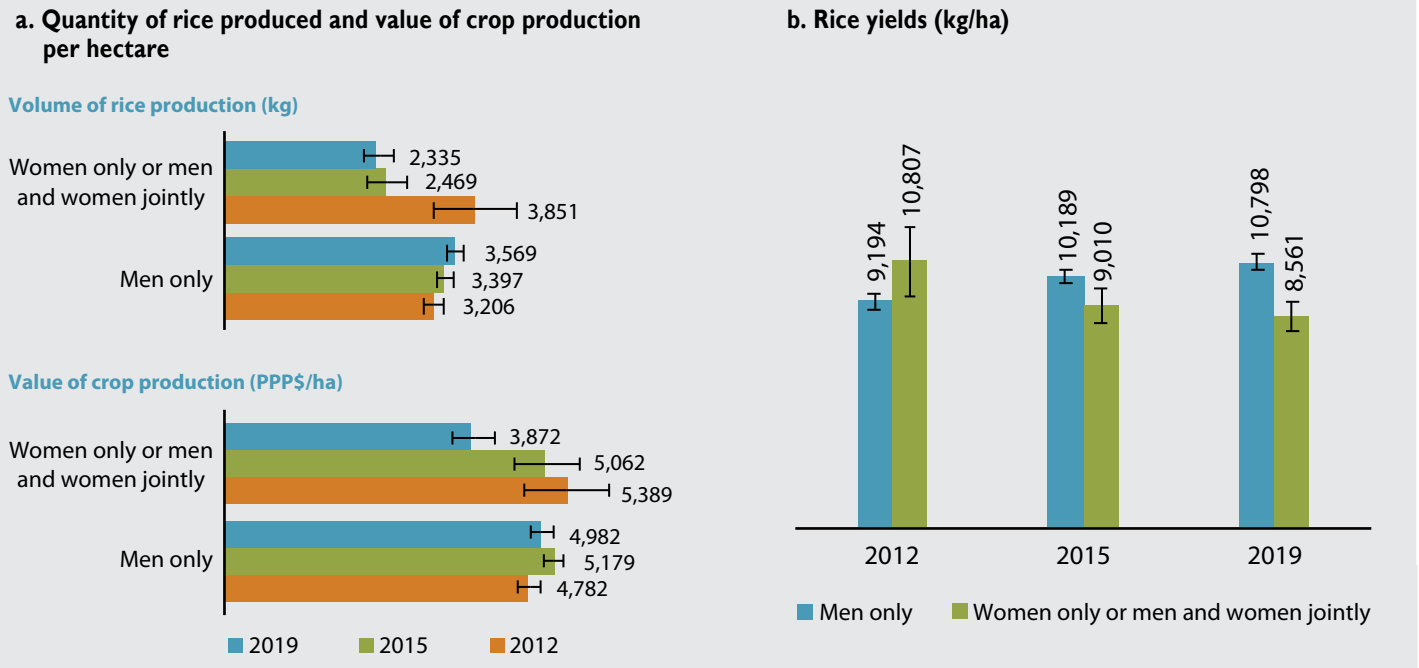
b. Rice yields (kg/ha)



Source: Calculated by authors based on the Bangladesh Integrated Household Survey, 2012, 2015, and 2019.

Notes: The length of the error bars represents the range of values within which the true value is likely to fall; kg = kilogram; ha = hectare; PPP = purchasing power parity conversion factors, which take the purchasing power of the local currency into account in reference to the U.S. dollar.

FIGURE 3. Agricultural outcomes of cell-phone owning households by plot decisionmaker, 2012, 2015, and 2019



Source: Calculated by authors based on the Bangladesh Integrated Household Survey, 2012, 2015, and 2019.
Notes: The length of the error bars represents the range of values within which the true value is likely to fall; kg = kilogram; ha = hectare; PPP = purchasing power parity conversion factors, which take the purchasing power of the local currency into account in reference to the U.S. dollar.

by men only (Figure 3b). Such differences are likely to be associated with the gendered differences in access to such resources as education, capital, land, and information, with men having disproportionately higher access on all counts.

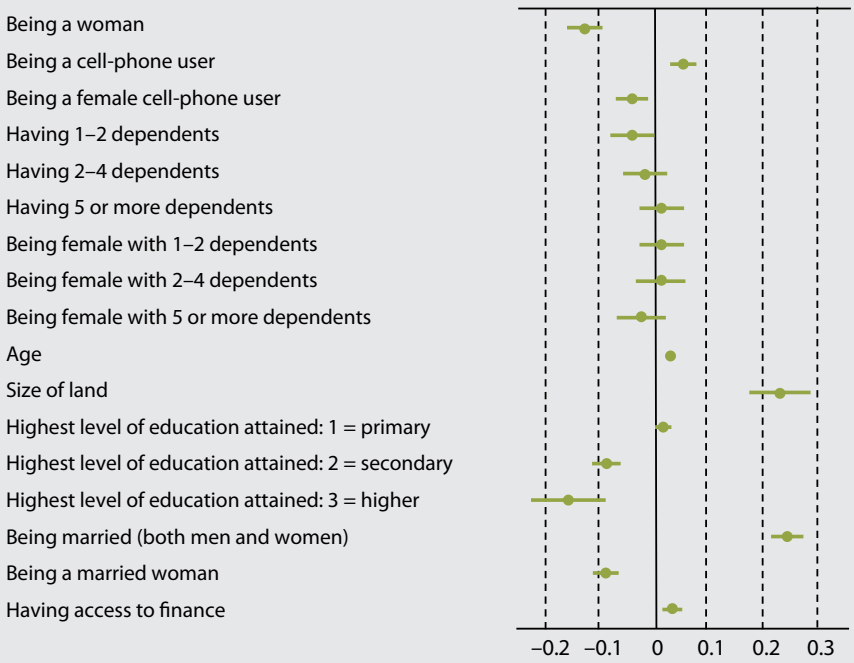
The Relationship between Cell-Phone Ownership and the Decision to Engage in Agriculture

The study also examined the key determinants of farmers' decisions to engage in agriculture (whether on their own or another's farm) and at what level of intensity under two different thresholds of labor participation: (1) for at least one hour in the week prior to the interview, which is the international standard definition of employment, and (2) for at least 20 hours per week, which excludes under-employment (defined as working at least one hour but fewer than 20 hours per week).

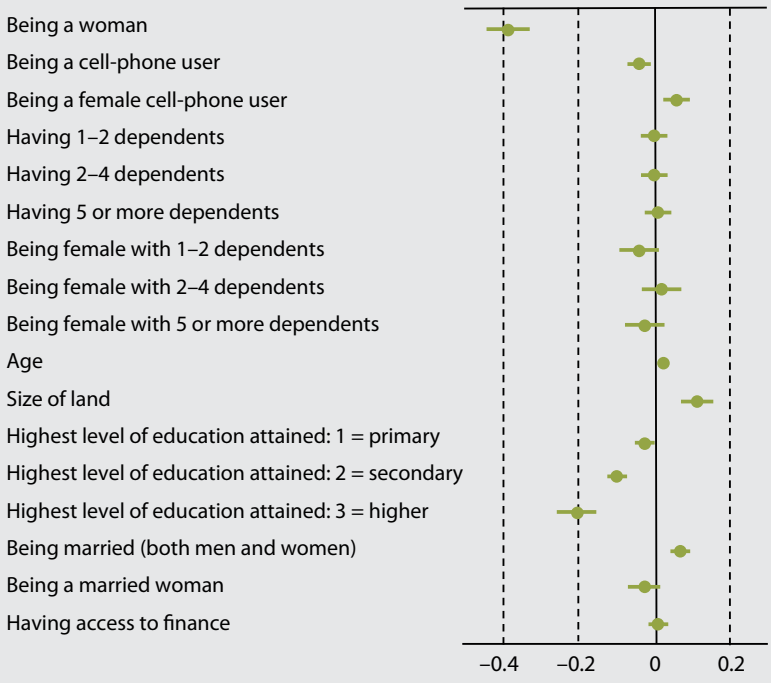
Results suggest that rural women in Bangladesh were less likely to be engaged in agriculture than were the country's rural men (Figure 4). The lower participation by women was strongly correlated with the number of household dependents, affirming that cultural norms determine gender roles in rural societies, with women being more likely to focus on caregiving at home, and men being more likely to focus on generating income. Similarly, at both levels of intensity, although married individuals (that is, both men and women) were more likely to be engaged in agriculture compared with single individuals, married women were less likely to be engaged in agriculture than were married men. Among other variables, respondents' education levels were inversely correlated with the likelihood of their entering the

FIGURE 4. Key determinants of engagement in agriculture

a. Minimum of one hour's work per week



b. Minimum of 20 hours' work per week



Source: Calculated by authors based on the Bangladesh Integrated Household Survey, 2012, 2015, and 2019.

Note: Engagement in agriculture includes farmers working on their own or others' farms. Results presented in this figure are based on a double-hurdle model to identify the key variables contributing, first, to the decision to work in agriculture, and second, to the amount of the time invested in that work.

agricultural labor market, whereas higher household access to finance was positively correlated with the likelihood of individuals entering the agricultural labor market.

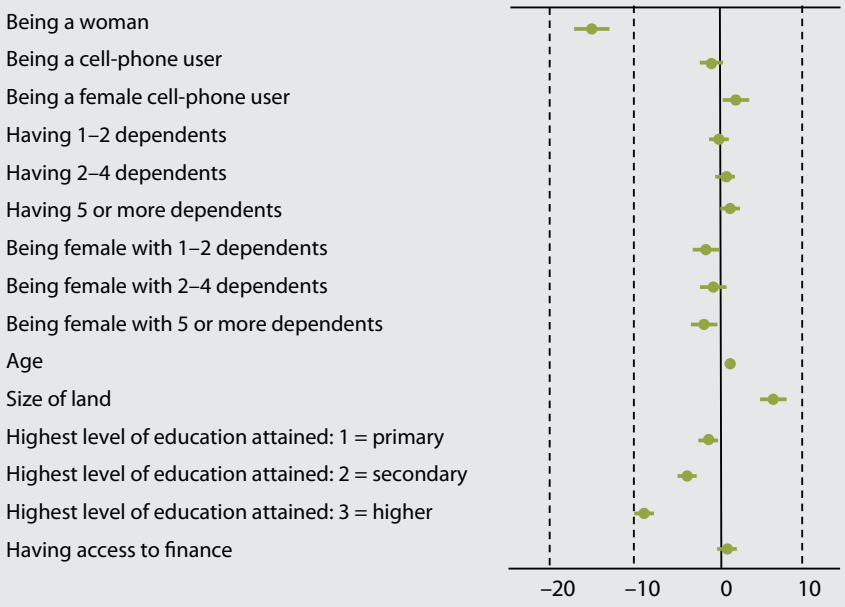
Cell-phone use was also associated with an increased likelihood of agricultural workers being employed at least one hour per week, but a decreased likelihood of their being employed for at least 20 hours per week (Figure 4). Results were reversed among female agricultural workers who used cell phones: cell-phone use reduced the probability of their being employed in agriculture (Figure 4a), but, when engaged, it increased the probability of working at least 20 hours per week (Figure 4b). Among female agricultural workers, moreover, cell-phone use was associated with working longer hours regardless of the number of hours worked (Figures 5a and 5b).

Concluding Remarks

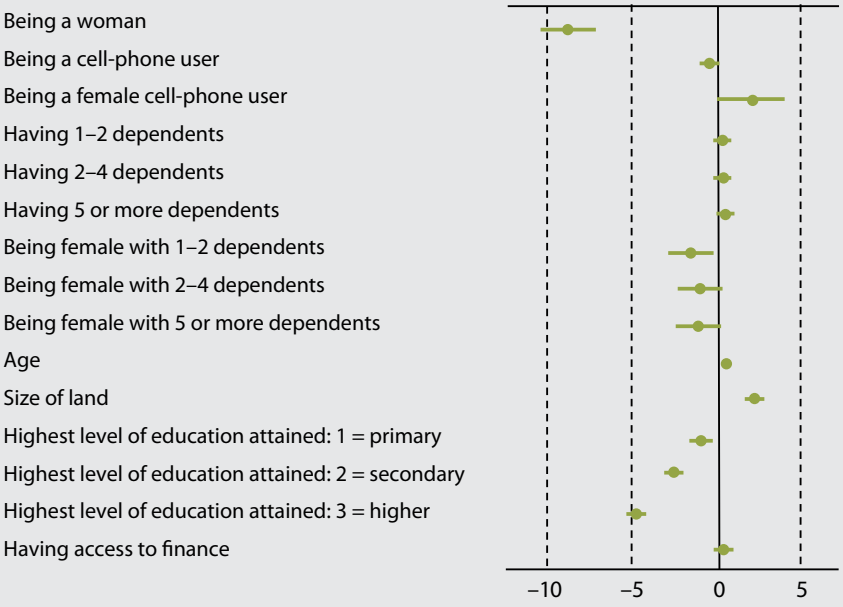
Women's engagement in agriculture can enhance household wealth, health, food security, and nutrition. This study's findings provide empirical evidence of the crucial role digital technology plays in advancing agricultural practices and outcomes. In particular, the study found positive associations (1) between cell-phone ownership and improved agricultural outcomes, and (2) between cell-phone use and the number of hours worked by women in agriculture—regardless

FIGURE 5. Key determinants of the intensity of engagement in agriculture

a. Minimum of one hour's work per week



b. Minimum of 20 hours' work per week



Source: Calculated by authors based on the Bangladesh Integrated Household Survey, 2012, 2015, and 2019.

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of whether or not they were underemployed. The lag in women's digital connectivity in rural Bangladesh limits their employment opportunities, financing options, and knowledge on best practices. This, in turn, widens the existing gender divide within the agricultural sector and across the economy as a whole. It is therefore imperative to increase female farmers' access to digital technology in rural Bangladesh, which remains disproportionately lower relative to rural men's access. Evidence suggests that women and men interact with and experience digital technologies differently based on physical, economic, cultural, and societal factors. As a result, policymakers need to be mindful to design agricultural programs that explicitly address the digital gender gap in order to increase women's participation in and contribution to the rural economy. For example, since women generally have lower access to cell phones compared with men, traditional extension should be used to complement digital advisory services in order to minimize the negative implications of unequal digital connectivity, which could potentially amplify the gender gap in agricultural productivity and performance. In addition, gender-specific digital training and education should be encouraged and planned as a means of overcoming the gendered digital divide.

Further Reading

Miyajima, K. 2020. Mobile Phone Ownership and Welfare: Evidence from South Africa's Household Survey. *IMF Working Paper* 222. Washington, DC: International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2020/10/30/Mobile-Phone-Ownership-and-Welfare-Evidence-from-South-Africas-Household-Survey-49814 (accessed July 17, 2023).

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