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RURAL WOMEN'S SMARTPHONE ADOPTION: ASSET OR PATRIARCHAL SURVEILLANCE TOOL?

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ABSTRACT

The adoption of smart phones by rural women is hailed as a tool for empowerment, enabling access to education, health care services, financial services and social connections. Yet recent scholarship is beginning to empirically challenge the presumption of ICTs as serving as means for enhanced autonomy, and they contribute to patriarchal surveillance rather than shaping it. Through the lens of psychological, social and cultural perspectives about technology adoption, we examine how rural women are experiencing dual or mixed roles of smartphones in their life-ways. Applying a mixed-methods study design, the research combines survey data from 300 rural women and in-depth interviews of 40 participants together with their husbands and mothers-in-law from South Asia. Quantitative data indicated that using the mobile phone positively correlated with self-efficacy and social connectedness, whereas from qualitative accounts it became apparent that male kin (family members) often regulated or controlled their use of mobile phones. Results suggest a paradox of smartphones as tools for empowerment and instruments of patriarchal control. The study, therefore, recommends that digital inclusion projects should recognize and address the power relations on gendered technology use. Psychologically, the results emphasize conflicts between autonomy and monitoring informed by culturally responsive interventions.

Keywords: smartphone adoption, rural women, digital empowerment, patriarchal surveillance, gender and technology, autonomy, social psychology

INTRODUCTION

The rapid proliferation of smartphones has fundamentally changed how people communicate, commerce and get information from around the world. In industrial and Developing world alike, smart phones are becoming an integral part of modern life. This change has been especially strong in rural areas, particularly in South Asia and sub-Saharan Africa. Here, the smartphone has frequently been framed as a gateway to empowerment; it allows women—traditionally excluded from formal infrastructures—to access educational resources, digital financial services, health information and even entrepreneurship initiatives hitherto closed (GSMA, 2022). This story of digital inclusion takes center stage in international development discourses, where mobile technologies are reflected as solutions to social, geographic, and gender divides.

But, behind these stories of empowerment, there is a much more disturbing and complex truth. Yet smartphones, which offer autonomy and mobility, can simultaneously function as tools of

surveillance in patriarchal societies. In many rural homes, husbands, fathers and brothers are keeping a watch or controlling women's use of smartphones, checking their call records, limiting internet use or telling them what type of apps they should be using (Masiero & Das, 2019). In these settings, the smartphone could act not so much as an 'instrument' of empowerment than as a device that supports prevailing gender orders. This paradox begs the vital questions of whether digital being in rural could ever be equated with real empowerment or if it would only just perpetuate old forms of domination on new technical means.

Psychologically speaking, the double-edged nature of smartphones really has to do with basic issues of autonomy and freedom. Autonomy is a fundamental psychological need which when satisfied promotes motivation, self-efficacy and well-being (Ryan & Deci, 2017). On the whole, smartphones could empower women as they can provide discreet access to networks of information, communication and support. But when these are instruments of patriarchal control and surveillance, the possibility of empowerment is diminished. Rather than empowering, the smartphone can reproduce subordination and reduce women's decision-making power as well as exacerbate emotional strain. These limitations frequently lead to women surfing the web in a state of fear and uncertainty, triggering crippling anxiety and undermining their confidence in being able to make choices that reflect autonomy.

This conflict between liberation and scrutiny also has important psychological as well as clinical implications. It is well-established in the digital psychology literature that restricted digital autonomy is associated with adverse mental health effects, including higher stress, lower self-esteem and overall reduced well-being (Livingstone & Helsper, 2007). For a rural woman, who already experiences numerous structural constraints, including low education level, limited access to health services and dependence on income sources whether it be farming or livestock keeping the psychological effects of digital surveillance might exacerbate some vulnerabilities. At the far end of the spectrum, surveillance via smartphones can make it possible for women to be placed under coercive control, a type of gender-based violence that denies women's safety and their free exercise of choice.

Notwithstanding these complexities, a great deal of the literature still treats smartphone adoption as being unproblematically indicative of digital empowerment. Donor organizations and tech companies often tout statistics showing who owns or uses technology as a sign of progress, but these indicators mask the lived experiences of women whose relationship to digital technologies

is structured by the gendered power relations that circulate in their households and communities. Access to a smart phone, realistically speaking, is going to open possibilities for learning, commerce and healthcare but if access in and of itself means empowerment then we may lose site of the mixed experiences women have in negotiating patriarchal surveillance.

The present study is an attempt to fill this void in social science and psychology. Although dominant celebratory stories shape the debate, few studies critically examine the ambivalence within rural women's uptake of smartphones. By exploring the political build-up of smartphones as a mobile technology linking both liberal imaginaries and exclusion orders, this research posed the question whether these devices primarily act as agents of empowerment or whether they are surveillance instruments based on gender stratification. Most significantly, the essay reflects upon how this dual identity exerts an impact on women's mental health and autonomy, changing their status within family and community.

In this, the study adds to the emerging nuanced understanding of digital inclusion that goes beyond simplistic stories of empowerment and instead considers the potentially entangled relationship between technology and long-standing patriarchal arrangements. Indeed, it is not just a question of whether rural women have access to smartphones, but also when such access contributes to real empowerment rather than perpetuates further subordination.

LITERATURE REVIEW

Gender and technology in rural development Intersections between gender, technology and rural development have been an issue of much scholarly debate. Earlier research tended to see technology as one clear route to empowerment, with an emphasis on its ability to narrow gender inequalities and increase women's social and economic involvement. Donner (2008) for instance noted the enhancement of women's mobility, communication and decision making in low resource settings by mobile phones. These instances of studies were part of wider development dialogues which often promoted the idea that technology was neutral, or implicitly progressive. In such framing, increased access to mobiles was equated with empowerment under the assumption that they would bring women information-sharing networks and economic opportunities not previously open to them.

But in the long run this sequence has become less straightforward, as other less elementary viewpoints have obnubilated it. Understandably, the consensus among scholars now is that technology, including smartphones, cannot be separated from its cultural, social and political

entanglements. Cultural topoi such as 'technology-for-development' imply that digital tools have an inherent capacity to enhance human agency with resources and networks which could change people's lives (Qiu 2019). But feminist technology studies contest this optimism, emphasizing that the adoption of technology is never neutral. For example, Wajcman (2004) contends that technologies both mirror and extend social relations already in place, existing leading to replicate their adoption results sociotechnical biases rather than the remission thereof. This point of view forces researchers to question not only what has access to a technology, but how this is exercised, and experienced by distinct groups.

Prior research provides important lessons about the opportunities and challenges to mobile technology adoption among rural women. First, mobile phones and smart phones have been demonstrated to increase women's financial inclusion. In their seminal work on Kenya's M-Pesa system, Jack and Suri (2014) illustrated how mobile money services enabled an enhanced degree of financial independence and household resilience that led to a decrease in rates of absolute poverty amongst women. Similarly, Aker et al. (2016) observed that women were navigating digital spaces to get access to key information on reproductive health, which ultimately could facilitate maternal and child maternity. These findings indicate the liberatory role of mobile phones with which women experience relative freedom in using.

Conversely, a substantial literature demonstrates how masculinized power dynamics frame (and hinder) women's use of mobile technology. Masiero and Das 2019 demonstrate how it is not uncommon for men to regulate women's mobile phone use denying their freedom to make calls, download apps or even own a handset in their name. Rashid (2020) also notes that among villagers, the mobile phone use is filtered downward to women through male members of their family, while surveillance is justified as a moral imperative requiring protection and thus care for family honor. In these environments, instead of being empowerment devices, smart phones can become tools that allow gendered hierarchies to take on new shapes as they authorize distant forms of control and surveillance".

It is this very ambivalence– of enabling and disabling in the same technical medium – that I have viewed as characteristic of current debates. If a smartphone is an unquestioned lifeline, it's also a new source of exposure. For instance, women trying to use smartphones for communicating with someone independently or financial purposes may risk being distrusted, stigmatized, and possibly be socially reprimanded by male family members. "These phenomena restrict not only

concrete benefits of smartphone use, but also the psychological experiences that women have. The never-off scrutiny of life under the digital gaze may be associated with increased anxiety and lower self-efficacy as well as a reduced sense of autonomy, parallel to broader research on surveillance and mental health more generally (Livingstone & Helsper, 2007).

However, several important research gaps persist. Most research so far has concentrated on measurable things like financial inclusion, health service uptake and simply just access to digital devices. There are far fewer studies of the social impacts of patriarchal surveillance, especially in rural areas where community norms may reinforce women's reliance on male kin. Second, although the contradiction of smart phone adoption is recognized in the available literature it has only superficially explored this ambivalence. The ambivalent nature of smartphones as possible sources of empowerment and instruments of patriarchal surveillance has yet to be fully examined in relation to women's psychological welfare, autonomy, and ultimate social mobility.

This gap underscores the need to develop research agendas that extend beyond binary framings of female empowerment versus exclusion as far as girls and women in rural setting are concerned with the use of smartphones, to complex and often contradictory practices, logics and experiences. In particular, such research ought to explore how women negotiate autonomy where patriarchal surveillance is present, how these negotiations affect women s psychological welfare and the kinds of agency that may emerge even when deeply circumscribed. Doing so will help future scholarship to develop a more nuanced and comprehensive account of digital technologies' relationship with rural development that refuses to ignore entirely the potential emancipatory role of these technologies even as it recognizes their complicity in maintaining gendered forms of control.

RESEARCH OBJECTIVES

To explore psychological effects of use of smartphone on autonomy and well being among rural women.

To examine the ways in which patriarchal structures moderate and limit the use of smartphones among women.

To investigate the contradictory position of smartphones as artefacts of empowerment and forms of surveillance in rural situations.

RESEARCH QUESTIONS

What is the influence of the use of Smartphone on psychological well-being and Self efficacy

among women in rural area?

How are women's smart phone uses shaped and constrained by patriarchal power dynamics?

Is it possible for smartphones to be both instruments of empowerment and tools for patriarchal surveillance?

SIGNIFICANCE

This research is important as it disrupts normative (logic) mostly happy ending narratives of digital empowerment by foregrounding the ambivalent experiences of rural women. Through its emphasis on the dialectic of empowerment and surveillance, it bridges to literature on gender and technology, as well as to psychology research on autonomy, agency, and mental health. The findings can be used by policymakers, NGOs and digital inclusion programs to inform interventions that both seek to expand access and safeguard women's autonomy over technology use.

PROBLEM STATEMENT AND MOTIVATION

Despite the rapidly growing adoption of smartphones in the rural regions of the Global South, digital empowerment cannot be considered guaranteed. Even though ownership and access play a crucial role, they do not always imply that women have complete control over their use. Empirical studies consistently indicate that rural women do not have the ability to influence the what, when, and how of smartphone use. Their male relatives – whether husbands, fathers, or brothers – scrutinize call logs, limit data consumption, and establish which apps are appropriate . This instrumentalizes the purportedly liberating power of technology, debunking the noble vision of digital empowerment associated with its use. From a psychological standpoint, such developments are significant since autonomy is a principal determinant of well-being and agency. Bandura notes that self-efficacy is predicated on peoples' perceptions that they can control their actions and outcomes. Consequently, when women have their use of a smartphone restricted or surveilled, their autonomy to make choices is compromised. It is most likely that these will, over time, increase women's anxieties, stress, and decrease confidence in their abilities, leading to an overall decrease in well-being instead of its increase. The modern paradigm is buttressed on measuring smartphone or digital media ownership and access, for example, the number of people within a county or village that has access to such tech. Once more, while it is relevant to take into account this information, it should ideally be complemented with data on how it can and is being used. Otherwise, it may become a mere participation trophy, diverting attention from the

actual problem.

So it is important to tackle this issue for policy and practice. Digital literacy and access programs also need to incorporate measures that prioritize women's autonomy. This might take the form of community-based sensitization against patriarchy, all-women digital safe spaces and building psychological support systems to make people resilient towards prompted stress. At a research level, more attention should be devoted to the psychological impacts of curtailed digital autonomy which are less well-studied than its economic and social peers.

"Simply giving women devices is a completely inadequate form of digital empowerment in the current way things are." It means that we have to enable them to use these devices freely, securely and independently. Without that, smartphones will continue to be double-edged instruments—power-inspiring on the one side and surveillance- and control-perpetuating on the other.

METHODOLOGY

For the present study, a mixed-methods approach was adopted in order to gain breadth from surveys and depth from semi-structured interviews. The methodological choice was made in response to the requirement of capturing not just statistical trends but also the situated, lived experiences of rural women as they negotiate between empowerment and surveillance through smartphone use. For these authors, mixing or triangulating quantitative with qualitative data contributes to validation while adding complexity to social realities. By combining both methods, the research was empowered to balance aggregate patterns across a broader population with respecting personal experiences that form those patterns.

The study involved 300 rural women from three districts in South Asia. Participants were obtained using stratified sampling to increase diversity in age, marriage status and social economic status. The survey tool targeted three main aspects: use of the smartphone, degree of perceived autonomy in decision-making and psychological well-being. Challenges sought insight into how often and in what ways cellphones were used and whether women felt they could exert freedom of choice over their devices, according to the collab. Salient psychological constructs were measured using standardized questionnaires, such as the well-validated General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995), which gauges people's beliefs that they can handle and act upon life's challenges.

To enhance these quantitative findings, 40 semi-structured interviews were done with women

who completed the survey or that offered to contribute more detailed narratives of their own experiences. The interview guide was aimed at autonomy, family structure, and the influence of the smartphone on daily life. Questions not only inquired about the positive possibilities of mobile connectivity (education and financial services, for instance), but also on limitations posed by surveillance, restrictions, or familial disapproval. The qualitative approach provided a good supplement to geopoll data by allowing space for crosscutting perspectives that would not readily emerge in questionnaires, adding to the analysis with locally specific stories.

A series of statistical analyses based on correlations and regression models were employed to examine the possible associations between smartphone access, autonomy disparity, and mental health symptoms. These techniques enabled the research to conduct tests whether higher level of perceived autonomy might correspond to greater sense of self-efficacy and lower stress or anxiety levels. The qualitative interviews were analyzed thematically, capturing the 'up and down' or paradoxical associations around smartphones; instances of empowerment as a result of using a smartphone (affordances), while also experiencing disempowering waves. Taken together, these two lines of evidence allowed a strong interpretation of the results in terms of how self-agency intersects with structural constraints.

For all the sensitive nature of the research, it was subject to ethical constraints. All participants provided written informed consent and instructions that the study was voluntary were made explicit. Anonymity and confidentiality were assured and maintained when cases were transcripted and reported using pseudonyms. To reduce the possibility of retaliation or a fear of social stigma, interviews were carried out in safe, private locations where women could express themselves without the paranoia that they might be overheard. The research team was sensitive to community gender norms and took precautions that participation did not result in added attention or harm towards women. By incorporating these protections into the protocol, the survey upheld ethical standards and provided a means for research participants to express themselves in a respectful and empowering manner.

RESULTS AND EVALUATION

The research findings from the study present a conflicted and ambiguous landscape of rural women's smartphone usage whereby the technology offers potential for empowerment, while also remaining embedded within patriarchal systems surveillance. On a quantitative level, the data indicated that there was a robust positive relationship between smartphone use and self-

efficacy ($r = 0.42$, $p < 0.01$), meaning that women who interacted with their device more were stronger in their perceived capability to cope with adversity and achieve tasks. This is consistent with previous studies locating digital connectivity at the path to personal agency and better decision-making (Bandura, 1997; Aker et al., 2016). Women who reported having control over their phones — for instance, being able to decide when and where to use them, what apps they could download or how much money was spent on data — also scored significantly higher on indices of psychological well-being than those whose access was strictly policed by family members. These findings highlight the importance of mobile phones as important resources that provide access to information, financial tools, and social networks, which support mental resilience and self-determination.

But the numbers also revealed disturbing patterns of control. Surprisingly, 62% of the participants said they have their gadgets monitored by male relatives — ranging from checking call logs or app use to even controlling how much money is spent on data packages. This surveillance also runs against the story of absolute empowerment that is often associated with digital technologies. Rather, it evidences the longevity of patriarchal structures that shape-shift in order to fit new tools but ultimately extend their control into digital realms. These results are consistent with Masiero and Das (2019) who claim that the liberatory potential of technology in rural settings is frequently undermined by gendered power dynamics that shape use.

The qualitative data added depth to these understandings by indicating how women interpret their own experiences with the smartphone. Narratives around empowerment often focused on better access to health-related information, including materials on reproductive and maternal health that were not easily available in the villages. Some of the women said they used phones to reach out to community health workers or to sign up for digital networks that enabled them to discuss more personal matters. Economic empowerment also became a salient theme within the data, where participants discussed how mobile money services or small online businesses were enabling them to have more financial autonomy. Smartphones were represented in these stories as channels of opportunity to horizons that hitherto had been closed down — opening up ways for women to think and, for some their own cases, to be anew outside the haul of domestic labour.

Meanwhile, surveillance narratives highlighted the seamy side of smartphone assimilation. Some women told us about instances where husbands or brothers limited their usage of certain apps, especially social media services, on the pretext that they were indecent or a violation of family

honor. In some instances, the devices had been taken away as disciplinary measures for days or weeks, establishing a hierarchy in the household. Others talked about the emotional cost of surveillance, the constant anxiety over being exposed for visiting specific websites or talking with friends that constrained their freedom. The mental strain of being watched could often take the form of anxiety, guilt or low self-esteem which would offset any potential gains from connectedness.

The most resonant expression of this duality might be participants who also described their phones as “both wings and chains.” It is a metaphor that encapsulates the double-edged role of smartphones in the lives of rural women: While they can lead to mobility, knowledge and opportunity that open out horizons, they can also bind women ever more tightly to patriarchal surveillance, rendering objects of potential liberation into instruments of control. The expression demonstrates that while empowerment and control form two sides of the same coin, technology mediates them. Indeed, lived experiences of gender and smartphones complicate rather than simplify accounts of difference, racialisation and power, which illustrate that along the continuum between enabling and constraining, empowering and controlling, women are living.

In sum, the results emphasize the potential and the perils of digital uptake in gendered settings. The quantitative evidence underscores just how deeply autonomy to use these devices relates to enhanced self-efficacy and well-being, and the qualitative stories demonstrates how tenuous and provisional that autonomy really is in the shadow of patriarchal surveillance. Such findings challenge the need for a re-evaluation of policies and programs situated in an assumption that technology adoption inherently empowers. Without discussing ingrained social hierarchies that condition women’s digital lives, they risk perpetuating same inequalities they would else seek to subvert.

DISCUSSION

Results from this study contribute to the growing evidence base that use of smartphones can create substantial opportunity for women, especially in settings where access to resources, information, and mobility are limited. As Jack and Suri (2014) showed in their seminal work on mobile money in Kenya, digital solutions can also boost women’s financial inclusion, giving them new avenues for autonomy and decision-making freedom. The current findings further support this perspective by demonstrating that rurally based women who have increased autonomy with regard to their smartphones hold stronger beliefs in their capabilities (i.e. self-

efficacy) and are likely experiencing positive psychological health. This indicates that within circumscribed spaces, despite limited control over technology, women have the ability to use it as a significant resource in their struggle for empowerment.

Meanwhile, the study foregrounds the relatively neglected yet just as important aspect of digital surveillance, affirming Rashid's (2020) warning that patriarchal power co-opts technological transformation rather than challenges it. Data that, itself, reports over half of respondents being monitored by male kin shows how far-reaching gendered hierarchies penetrate into a digital realm. The paradox of smartphones as emancipatory and constrictive also resonates with feminist critiques of technology that argue, following Wajcman (2004), that technologies are never neutral and uniform objects but are always relational, bound into broader social and cultural power structures. This insight underscores the importance of asking which conditions women get access to technology and what implications this access has.

The practical implications of these findings are substantial for policy makers and practitioners. Today, many digital inclusion programs prioritize increasing access through building infrastructure or making it affordable. Though these are important actions, they will not be enough unless we also start to value women's autonomy and agency with regard to digital device use. Handing a smartphone to a woman alone doesn't lead to mobilization; the social context and power dynamics around her shape the degree of activism she's able to do with it. This makes gender-aware frameworks crucial in crafting connectivity promoting interventions that also guard against surveillance and control. From a psychological standpoint, interventions also need to work on developing digital literacy and resilience. Moreover, training which provides women with the skills to navigate privacy setting and manage online interactions and negotiate digital autonomy within family structures could go a long way in saving them from stress and anxiety related with surveillance. Additionally, such efforts may also result in long-term depictions of women's self-efficacy by giving them the means to compromise empowerment with patriarchal surveillance.

However, there are some limitations in our study. There were geographical limitations to the study with study being conducted in only three districts of South Asia, hence the findings may not be universally applicable. The contexts I selected were" cases", indicative of wider rural realities, and cross-cultural comparisons between regions could provide a more complete lens to view the ways in which patriarchy mixes with technology within vastly different sociocultural

environments. In addition, the use of self-reported measures may have led to biases as respondents might tend to under- or over-report any experience regarding surveillance and empowerment, because of social desirability and fear of recrimination. Future research could also integrate specific indirect or observation-based methods, and relay accounts of women to triangulate them with those from other sources (communal mediators) for a better contextual understanding.

In the future, as directions for future work, several points should be considered. Longitudinal research might monitor how changes in gender norms affect women's digital autonomy over time, especially as younger cohorts of girls reach adulthood with more exposure to technology. Such work would have the potential to show, for instance, whether patriarchal power wanes or morphs across generations and whether the smartphone ultimately becomes a more consistently empowering resource. Additionally, there may be practical lessons from the research on digital literacy interventions. More testing of the potential of targeted training programs to promote digital confidence among women, reduce stress induced by surveillance practices and build resilience would enable policy makers and activists not just to ensure 'digital empowerment', but 'real digital empowerment'. Comparative work across areas with varying cultural norms, infrastructure conditions and policy environments would be useful as well to provide more general insights on what is needed in order to promote equitable, positive psychological digital inclusion.

In short, this analysis highlights the double-edged nature of smartphones in rural women's lives: they are both pathways to empowerment and conduits of patriarchal surveillance. The question is how to make digital inclusion work in a way that transcends the simplistic stories of access and instead looks the complexities of power, agency, and wellbeing in the eye. Technology can only then play a significant role in promoting gender equitable rights in rural areas if such complexities are maneuvered.

CONCLUSION

We conclude by showing how smartphones play an ambivalent role in the lives of rural women, as sites through which to seek empowerment but also spaces where patriarchal relations are enacted. On the one hand, the results confirm that smartphones, when combined with real autonomy, increase women's self-efficacy and well-being and their capabilities to work and take part in society. At the other extreme, male monitoring and restrictions highlights the potential of

technology to be hijacked in the service of shore up existing forms of gendered hierarchy rather disrupt or end them. Through empirical evidence of both empowerment and surveillance, the study seeks to question the optimistic view that digital uptake automatically leads to emancipation.

The originality of this article is that it combines parts of the psychological, social and cultural paradigms for using technology and corroborates the idea that digital tools are not separate entities from structures of power where they-for sure-are placed. Autonomy and surveillance exist as parallel realities, elucidating not just how women use smartphones but how they experience agency, stress and resilience. This duality emphasizes the need to move beyond considerations of access and toward a more nuanced examination of control, autonomy, and well-being in discourses governing digital inclusion.

To this end, research should proactively invest in interventions that prioritize women's agency – and specifically investigate how digital literacy, privacy protections, and community engagement can work together to foster safer and more empowering technological landscapes. Wajcman (2004) reminds us that technology never is neutral. Making smartphones an asset, not a leash, demands deliberate design and policy investments that challenge rather than reinforce patriarchal norms.

REFERENCES

Aker, J. C., Boumnijel, R., McClelland, A., & Tierney, N. (2016). Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment in Niger. *Economic Development and Cultural Change, 65*(1), 1–37. https://doi.org/10.1086/687578

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Chhavi, G. (2021). Is mobile phone use invading multiple boundaries? A study of rural illiterate women in India. *Journal of Human Values*. https://doi.org/10.1177/0971521520974845

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.

Donner, J. (2008). Research approaches to mobile use in the developing world: A review of the literature. *The Information Society, 24*(3), 140–159. https://doi.org/10.1080/01972240802020007

Gender differentials in readiness and use of mHealth services in a rural area of Bangladesh. (2017). *BMC Health Services Research, 17*, Article 422. https://doi.org/10.1186/s12913-017-2523-6

GSMA. (2022). *The mobile gender gap report 2022.* GSMA Association. https://www.gsma.com

Impact of mobile phone usage on empowerment of rural women entrepreneurs: Evidence from rural Bangladesh. (2023). *Journal/Study via PubMed*. https://pubmed.ncbi.nlm.nih.gov/ (exact citation needed)

Jack, W., & Suri, T. (2011). Mobile money: The economics of M-PESA. *NBER Working Paper No. 16721*. National Bureau of Economic Research.

Jack, W., & Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. *American Economic Review, 104*(1), 183–223. https://doi.org/10.1257/aer.104.1.183

Livingstone, S., & Helsper, E. J. (2007). Gradations in digital inclusion: Children, young people, and the digital divide. *New Media & Society, 9*(4), 671–696. https://doi.org/10.1177/1461444807080335

Masiero, S., & Das, S. (2019). Digital governance and surveillance in the global South: A critical perspective. *Information Technology for Development, 25*(3), 452–467. https://doi.org/10.1080/02681102.2018.1477030

Parthiban, R., Jaikumar, S., Basak, J., & Bandyopadhyay, S. (2022). Digital access through smartphones and well-being of BoP women: Insights from a field study in India. *Information Technology & People, 35*(1), 1–26. https://doi.org/10.1108/ITP-10-2019-0552

Qiu, J. L. (2019). *Goodbye iSlave: A manifesto for digital abolition*. University of Illinois Press.

Rahim, M., et al. (2020). Access and use of mobile phone in daily life activities by rural women of Gilgit-Baltistan, Pakistan. *Mobile Information Systems,* Article 8835877. https://doi.org/10.1155/2020/8835877

Rashid, A. T. (2020). Gender, mobile phones, and digital development: A capability approach perspective. *Information Technology for Development, 26*(2), 292–310. https://doi.org/10.1080/02681102.2019.1701960

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* Guilford Press.

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). NFER-NELSON.

Wajcman, J. (2004). *TechnoFeminism.* Polity Press.

Wajcman, J. (2007). From women and technology to gendered technoscience. *Information, Communication & Society, 10*(3), 287–298.