

The Effect of Technology on Gender Roles: A Case Study of Dzivarasekwa Extension Federation Homestead, Harare, Zimbabwe

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ABSTRACT

This study examines the multifaceted effects of technology adoption on gender roles within the Dzivarasekwa Extension Federation Homestead in Harare, Zimbabwe, a peri-urban settlement characterized by evolving socioeconomic dynamics. Drawing on data collected from 120 households through mixed-methods approaches including structured questionnaires, focus group discussions, and key informant interviews conducted between January and June 2024, this research investigates how mobile technology, information and communication technologies (ICT), and household appliances influence traditional gender divisions of labor, decision-making authority, and economic empowerment patterns. Findings reveal paradoxical outcomes: while technology access has expanded women's economic opportunities through mobile banking (72% of female respondents) and digital entrepreneurship (45%), persistent digital gender divides remain evident in ICT skills acquisition (31-point gap), device ownership disparities (58% male vs. 42% female), and technology-enabled domestic burden intensification. The study documents that 68% of households report technology has altered decision-making processes, with 54% indicating increased female participation in financial decisions facilitated by mobile money platforms. However, socio-cultural barriers including restrictive gender norms (reported by 76% of female participants), limited digital literacy, economic constraints, and unequal access to technological resources continue to impede transformative gender equality outcomes. This research contributes empirical evidence to technology-gender scholarship in African urban contexts and provides policy recommendations for leveraging technology as a tool for sustainable gender equality advancement in Zimbabwe.

Keywords: technology adoption, gender roles, digital divide, mobile technology, ICT, women's economic empowerment, Dzivarasekwa, Harare, Zimbabwe, gender equality

BACKGROUND

Dzivarasekwa Extension Federation Homestead, located in the western suburbs of Harare, Zimbabwe's capital city, exemplifies the complex socioeconomic environment where technology adoption interacts with entrenched gender norms. As a peri-urban settlement established in the late 1990s and formally recognized in 2016, the community comprises approximately 850 households characterized by diverse livelihood strategies including informal trading, formal employment, small-scale agriculture, and emerging digital entrepreneurship. The settlement's proximity to Harare's urban center while maintaining semi-rural characteristics creates unique conditions for examining technology's gendered impacts.

Technology adoption in Zimbabwe occurs within socio-cultural contexts characterized by patriarchal norms governing women's mobility, resource control, decision-making authority, and time allocation. Research demonstrates that women in Zimbabwe face cultural pressures and gender stereotypes discouraging digital technology skill development, with ICT careers persistently labeled as masculine domains (Mashapure et al., 2025). The gender division of domestic labor leaves women with limited time for technology experimentation, while male family members often control household technology access and usage, particularly in Northern regions where 55% of men reportedly do not want their wives using the internet (CITAD, 2022).

INTRODUCTION

The intersection of technology and gender roles represents a critical frontier in understanding contemporary social transformations in sub-Saharan Africa. Zimbabwe, like many African nations, has experienced rapid technological penetration over the past decade, with mobile phone subscriptions reaching 103% penetration rate and expanding digital infrastructure connecting previously isolated communities (Musungwini et al., 2014). This technological revolution coincides with ongoing negotiations of gender roles, household dynamics, and women's empowerment initiatives within contexts where traditional patriarchal structures persist alongside modernizing influences.

Global scholarship increasingly recognizes technology as a double-edged phenomenon regarding gender equality. On one hand, Information and Communication Technologies (ICT) offer potential pathways for women's economic empowerment, expanded information access, enhanced decision-making participation, and challenges to traditional gender hierarchies (Antonio & Tuffley, 2014). Mobile money platforms have enabled financial inclusion for previously unbanked women, digital platforms facilitate home-based entrepreneurship compatible with childcare responsibilities, and internet access provides educational resources transcending geographical barriers (World Bank, 2024).

However, optimistic technological determinism overlooks persistent structural inequalities shaping technology access, adoption, and utilization patterns. The gender digital divide—the gap between men and women in technology access and use—remains substantial across sub-Saharan Africa, with women 19% less likely than men to use mobile internet services, representing 190 million women without mobile internet access (GSMA, 2024). In Zimbabwe specifically, women constitute only 34–44% of students in science and technology universities, reflecting broader patterns of gendered educational tracking and occupational segregation (Zimbabwe National Statistics Agency, 2021).

Statement Of The Problem

Despite Zimbabwe's commitment to gender equality enshrined in the 2013 Constitution (Sections 17 and 56) and adherence to international frameworks including the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Southern African Development Community (SADC) Protocol on Gender and Development, women continue experiencing systematic disadvantages across economic, political, and social domains. Women constitute 52% of Zimbabwe's population yet hold only 31% of parliamentary seats, 12% of local authority positions, and receive merely 2% of available entrepreneurial funding (UN Women, 2023; Bill & Melinda Gates Foundation, 2024).

Technology adoption presents both opportunities and risks within this context. While mobile money usage in Zimbabwe reached 95% of the adult population by 2023, gender-disaggregated data reveals persistent disparities in usage patterns, transaction values, and control over technology-enabled financial resources. Similarly, while household technology penetration has increased—with 89% of Zimbabwean households owning at least one mobile phone—questions remain regarding who within households owns devices, who possesses digital literacy skills, and who benefits from technology-mediated economic opportunities.

Limited empirical research examines technology's specific impacts on gender roles within Zimbabwean peri-urban communities, where traditional and modern influences intersect uniquely. Existing scholarship tends toward either macro-level national assessments or rural agricultural contexts, leaving peri-urban settlements like Dzivarasekwa Extension understudied despite their growing demographic significance and distinctive socioeconomic characteristics. This research gap hinders evidence-based policymaking and programmatic interventions seeking to leverage technology for gender equality advancement.

Research Objectives

This study pursues the following specific objectives:

- To assess the patterns and extent of technology adoption across different household members disaggregated by gender in Dzivarasekwa Extension Federation Homestead.

- To examine how technology access and usage influences traditional gender divisions of domestic labor, childcare responsibilities, and household management tasks.
- To investigate technology's effects on women's economic participation, entrepreneurship, and income-generating activities within the community.
- To analyze changes in household decision-making processes, financial control, and resource allocation authority associated with technology adoption.
- To identify socio-cultural barriers limiting women's technology access, digital literacy acquisition, and equitable technology benefits.
- To provide evidence-based recommendations for policymakers, development practitioners, and community stakeholders seeking to promote gender-equitable technology adoption and utilization.

Research Questions

The research addresses the following key questions:

- i. What are the current patterns of technology ownership, access, and usage among men and women in Dzivarasekwa Extension Federation Homestead?
- ii. How has technology adoption affected the distribution of domestic labor and caregiving responsibilities between household members?
- iii. In what ways has technology enabled or constrained women's economic empowerment and participation in income-generating activities?
- iv. How do technology-mediated communications and information access influence household decision-making dynamics and women's agency?
- v. What socio-cultural, economic, and institutional factors facilitate or impede women's equitable technology access and digital literacy development?
- vi. What are community members' perceptions of technology's role in transforming or reinforcing traditional gender norms and roles?

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Technology And Gender: Theoretical Perspectives

Scholarly discourse on technology and gender draws from multiple theoretical traditions, each offering distinct lenses for understanding their complex interactions. Liberal feminist perspectives emphasize technology as a potential equalizer, arguing that equal access to technological resources can reduce gender disparities in education, employment, and economic opportunity (Antonio & Tuffley, 2014). This optimistic framework underscores technology's capacity to transcend geographical barriers, provide flexible work arrangements compatible with caregiving responsibilities, and enable women's participation in previously male-dominated domains.

Conversely, social constructionist approaches recognize technology as neither inherently liberating nor oppressive but rather shaped by existing power relations and social structures. Wajcman (2010) argues that technology embodies gendered assumptions in its design, development, and deployment, reflecting and reinforcing patriarchal norms. This perspective explains why ostensibly neutral technologies produce gendered outcomes, as their creation occurs within male-dominated technical fields and their utilization unfolds in contexts of pre-existing gender inequality.

The Technology Acceptance Model (TAM), adapted for gendered analysis, suggests that technology adoption depends on perceived usefulness, ease of use, and social influence, with these perceptions shaped by gender socialization, role expectations, and structural constraints (Venkatesh & Morris, 2000). Research demonstrates that women and men often perceive and utilize identical technologies differently based on gendered interests, needs, and constraints. For instance, mobile phones serve primarily communication functions for some women but become business tools for men, reflecting broader patterns of gendered labor division.

Intersectionality theory, developed by Crenshaw (1989) and applied to technology studies, emphasizes that gender interacts with race, class, geography, and other social categories to produce distinct technological experiences. African women's technology engagement cannot be understood through gender alone but requires

attention to how colonialism, global capitalism, urbanization, and local cultural systems jointly shape technological opportunities and constraints. This framework proves particularly relevant for analyzing peri-urban Zimbabwean contexts where multiple identity dimensions intersect.

The Gender Digital Divide In African Contexts

The gender digital divide differential access to and use of digital technologies between men and women persists as a defining characteristic of African technological landscapes. International Telecommunication Union (2021) data reveals that Africa exhibits among the widest gender internet usage gaps globally, with the gender parity score (women internet users divided by men internet users) increasing only marginally from 0.58 to 0.67 between 2018 and 2020. Sub-Saharan Africa specifically demonstrates a 32% mobile internet gender gap, with 190 million women not using mobile internet services compared to men (GSMA, 2024).

Multiple interconnected factors produce and sustain the gender digital divide in African contexts. Economic barriers prove fundamental, as women's lower income levels, limited asset ownership, and reduced access to credit constrain their ability to purchase devices and afford data costs. Research across 46 African countries found significant productivity differentials between male and female entrepreneurs, partly explained by women facing greater negative effects from institutional barriers and market inefficiencies including corruption and limited financial access (Faccio et al., 2016). These economic disadvantages translate directly into reduced technological access and utilization capacity.

Educational disparities compound economic barriers. Women's lower literacy rates in Kenya, 68% female literacy compared to 77.2% male literacy and reduced enrollment in science, technology, engineering, and mathematics (STEM) fields limit digital literacy acquisition (Antonio & Tuffley, 2014). Zimbabwe mirrors this pattern, with women constituting only 34-44% of students in technology-focused universities (Zimbabwe National Statistics Agency, 2021). This educational segregation reflects and reinforces perceptions of technology as inherently masculine, discouraging girls and women from pursuing technological competencies.

Socio-cultural barriers prove equally significant. Patriarchal norms governing women's mobility, autonomy, and resource control directly limit technology access. Studies document that male family members frequently control household technology resources, determining who uses devices, when, and for what purposes. In Northern Nigeria, 55% of men report not wanting their wives to use the internet, while 61% of fathers discourage daughters' internet usage (CITAD, 2022). While Zimbabwe exhibits different specific patterns, broader normative frameworks positioning women as subordinate to male authority similarly constrain technological autonomy.

Time poverty represents another critical barrier. Women's disproportionate responsibility for unpaid domestic work and caregiving leaves limited time for technology exploration and skill development. The gender division of household labor means women work longer total hours than men when combining paid employment and domestic responsibilities, with particularly heavy burdens in contexts of limited infrastructure and household technology (Mashapure et al., 2025). This temporal constraint becomes self-reinforcing: women lack time to develop digital skills due to domestic burdens, while limited digital skills prevent accessing technologies that might reduce domestic labor.

Technology And Women's Economic Empowerment

Research increasingly demonstrates technology's potential for advancing women's economic empowerment through multiple pathways. Mobile money platforms have dramatically expanded financial inclusion, enabling previously unbanked women to save, transfer funds, and conduct business transactions without physical bank infrastructure. In sub-Saharan Africa, mobile money adoption has proven particularly transformative, with platforms like M-Pesa in Kenya demonstrating substantial poverty-reducing effects, especially for female-headed households (Suri & Jack, 2016).

Digital platforms facilitate entrepreneurship compatible with household responsibilities. E-commerce, social media marketing, and digital service provision enable women to generate income from home, avoiding mobility restrictions and caregiving conflicts inherent in formal employment. Research from Mashonaland West, Zimbabwe, documents women entrepreneurs utilizing digital technologies for business operations

despite facing challenges including cybersecurity concerns, infrastructure limitations, and regulatory volatility (Mashapure et al., 2025).

However, optimistic assessments require tempering with recognition of persistent barriers. Women entrepreneurs receive only 2% of available funding in Africa, limiting capacity to invest in technology infrastructure, digital marketing, and technical skills development (Bill & Melinda Gates Foundation, 2024). Digital platforms also introduce new forms of exploitation, with women facing online harassment, gender-based violence in digital spaces, and platform policies insufficiently protecting women's rights. The informal digital economy offers flexibility but often lacks labor protections, social security, and stable income.

Furthermore, technology-enabled economic opportunities risk reinforcing rather than challenging gender stereotypes. Women's digital entrepreneurship concentrates in traditionally feminine domains beauty, fashion, food preparation, childcare while men dominate higher-value technology sectors including software development, digital marketing, and technical services. This occupational segregation in digital spaces mirrors and potentially intensifies offline patterns, limiting women's economic advancement potential despite increased technological access.

Technology And Household Decision Making Dynamics

Technology influences household decision-making through information access, communication capabilities, and altered power dynamics. Mobile phones enable women to access price information, agricultural extension services, health information, and civic participation opportunities previously mediated by male family members or requiring geographical mobility (Buskens & Webb, 2009). This informational autonomy potentially enhances bargaining positions within households, enabling more informed participation in decisions regarding expenditure, children's education, and livelihood strategies.

Mobile money platforms specifically affect household financial management. Research demonstrates that mobile money access correlates with increased female participation in financial decisions and greater control over income allocation (Asongu & Odhiambo, 2020). By enabling independent savings and transactions without male oversight, mobile money can strengthen women's economic agency and reduce financial dependence. However, this technological potential encounters resistance from partners perceiving women's financial autonomy as threatening to male authority.

Conversely, technology can intensify existing power imbalances. Male partners may monitor women's mobile communications, restrict device usage, or control passwords and accounts, transforming technology into surveillance and control mechanisms. Research on technology-facilitated gender-based violence documents how digital platforms enable harassment, stalking, and coercive control, with particular vulnerabilities for women in contexts of intimate partner violence (UN Women, 2025).

The Zimbabwean Context

Zimbabwe presents a unique context for examining technology-gender intersections. The nation's Constitution (2013) provides robust gender equality guarantees, and the National Gender Policy (2013-2017) recognizes technology's importance for women's advancement, specifically calling for equal ICT access and applications (Government of Zimbabwe, 2013). Zimbabwe participates in regional frameworks including the SADC Protocol on Gender and Development, which mandates gender-sensitive ICT policies ensuring women's and girls' information access (SADC, 2008).

Despite progressive policy frameworks, implementation faces substantial challenges. Women hold only 31% of parliamentary seats and 12% of local government positions, indicating persistent political underrepresentation (UN Women, 2023). Economic indicators reveal similar disparities: women are less likely than men to hold paid employment, concentrate in informal sectors, and experience significant wage gaps even in formal employment. The economic inequality index of 0.93/1 reflects ongoing efforts but incomplete gender equality achievement (Ministry of Women Affairs, 2019).

Technologically, Zimbabwe exhibits contradictory patterns. Mobile phone penetration exceeds 100%, suggesting widespread access, yet gender-disaggregated analysis reveals disparities in ownership, usage

patterns, and digital literacy (Musungwini et al., 2014). Women's representation in technology-focused university programs remains below 45%, perpetuating gendered technical knowledge disparities (Zimbabwe National Statistics Agency, 2021). Recent scholarship on Mashonaland West women entrepreneurs documents persistent challenges including digital technology gaps, cultural stereotypes positioning ICT as masculine, and gender divisions of domestic labor limiting technology engagement time (Mashapure et al., 2025).

RESEARCH METHODOLOGY

Research Design And Approach

This research employed a convergent parallel mixed-methods design, integrating quantitative and qualitative data collection and analysis to provide comprehensive understanding of technology's effects on gender roles. Mixed-methods approaches prove particularly appropriate for gender research, enabling statistical analysis of patterns while capturing nuanced experiences, contextual factors, and subjective meanings that quantitative methods alone cannot address (Creswell & Plano Clark, 2017). The convergent design allowed simultaneous data collection through multiple instruments, with subsequent integration during analysis and interpretation phases.

The research adopted a pragmatic philosophical stance, recognizing that understanding complex social phenomena requires methodological pluralism and flexibility. This pragmatism acknowledges that both objective patterns and subjective meanings contribute to comprehensive understanding, avoiding epistemological rigidity in favor of methods appropriate to specific research questions (Morgan, 2007).

Study Area And Population

Dzivarasekwa Extension Federation Homestead comprises approximately 850 households in a peri-urban settlement west of Harare's central business district. Established informally in the late 1990s and receiving formal recognition in 2016, the community exhibits characteristics intermediary between urban and rural contexts. Residents pursue diverse livelihoods including formal employment, informal trading, small-scale agriculture, and increasingly, technology-enabled entrepreneurship. The settlement's demographic profile reflects national patterns with 52% female residents, average household size of 4.8 persons, and predominance of young to middle aged adult populations.

Infrastructure includes electricity access (78% of households), piped water (45% of households), and mobile network coverage (99% signal availability). The settlement's proximity to urban amenities while maintaining semi-rural characteristics creates conditions for examining technology adoption in transitional communities neither fully urban nor rural.

Sampling Procedure And Sample Size

The study utilized stratified random sampling to select 120 households from the 850 total households, representing 14% of the community. Stratification criteria included household income quartiles, household composition (male-headed, female-headed, multigenerational), and residential zone within the settlement to ensure demographic representativeness. Within selected households, both adult male and female members participated where applicable, yielding 189 individual respondents (98 female, 91 male).

In addition, purposive sampling was employed to select participants for qualitative component of the study. This technique was used to deliberately identify individuals with relevant knowledge and experience regarding technology use and gender dynamics, such as community leaders, technology vendors, local government officials and representatives of women's organisations. Purposive sampling ensured that information rich cases were included to enhance the depth and contextual understanding of the research findings.

Qualitative components included six focus group discussions (FGDs) disaggregated by gender and age (young women 18-35 years, older women 36+ years, young men, older men, mixed youth, community leaders), with 8-12 participants per group totaling 58 FGD participants. Additionally, 12 key informant interviews engaged community leaders, technology vendors, local government officials, and women's organization representatives to provide institutional and expert perspectives.

Data Collection Methods And Instruments

Quantitative data collection employed structured questionnaires administered through face-to-face interviews conducted in Shona and English according to respondent preference. The questionnaire included closed ended items measuring technology ownership and access, usage patterns, digital literacy levels, household labor distribution, decision-making participation, income sources, and demographic characteristics. Questions utilized Likert scales, multiple-choice options, and numerical responses to enable statistical analysis. Pretesting with 15 households enabled instrument refinement before full deployment.

Qualitative data emerged from semi-structured focus group discussions and key informant interviews guided by topic guides addressing technology experiences, perceived changes in gender roles, cultural norms regarding technology use, barriers to access, and aspirations for technological futures. Discussions were audio-recorded with participant consent and transcribed verbatim, with Shona-language discussions translated to English by bilingual research assistants.

Data collection occurred between January and June 2024, following ethical approval from the appropriate research ethics committee. Informed consent procedures emphasized voluntary participation, confidentiality protections, right to withdraw, and absence of direct benefits or penalties related to participation.

Data Analysis

Quantitative data analysis utilized SPSS software (version 26) for descriptive statistics (frequencies, percentages, means, standard deviations) characterizing technology adoption patterns and inferential statistics (chi-square tests, t-tests, regression analysis) examining relationships between gender and technology-related variables. Statistical significance was determined at $p < 0.05$ level.

Qualitative data underwent thematic analysis following Braun and Clarke's (2006) framework. Analysis proceeded through familiarization with transcripts, initial coding, theme identification, theme review and refinement, and final theme definition and naming. NVivo software facilitated data management and coding organization. Analysis attended to both semantic content and latent meanings, identifying patterns, contradictions, and contextual nuances. Gender-disaggregated analysis enabled comparison of male and female perspectives, while integration with quantitative findings provided comprehensive interpretation.

FINDINGS AND DISCUSSION

Technology Ownership And Access Patterns

Household-Level Technology Ownership

Technology Type	Percentage
Mobile phones (any type)	96%
Desktop/Laptop computers	34%
Tablets	28%
Labor-saving appliances*	89%

*Electric stove, washing machine, or refrigerator

Findings reveal substantial but gender-differentiated technology penetration within Dzivarasekwa Extension. Household level technology ownership stands at 96% for mobile phones (basic and smartphones combined), 34% for desktop/laptop computers, 28% for tablets, and 89% for at least one labor-saving household appliance (electric stove, washing machine, or refrigerator). However, individual ownership patterns demonstrate significant gender disparities.

Individual Personal Ownership by Gender

Technology Type	Men	Women	Gap
Mobile phones (any type)	91%	73%	18 pts
Smartphones	67%	42%	25 pts
Personal computers/laptops	23%	8%	15 pts

Statistical Significance:

- Mobile phones (any type): $\chi^2=12.47, p<0.001$
- Smartphones: $\chi^2=15.92, p<0.001$
- Personal computers/laptops: $\chi^2=9.87, p=0.002$

Among individual respondents, 91% of men versus 73% of women personally own mobile phones ($\chi^2=12.47, p<0.001$), indicating an 18-percentage point gender gap. Smartphone ownership specifically reveals larger disparities: 67% of men versus 42% of women own smartphones ($\chi^2=15.92, p<0.001$), representing a 25-point gap. Computer ownership exhibits even more pronounced gender differences, with 23% of men versus 8% of women owning personal computers/laptops ($\chi^2=9.87, p=0.002$).

Qualitative data contextualizes these statistics. Female FGD participants explained that household phones often belong nominally to male household heads even when multiple family members use them, creating ambiguity around ownership. One participant noted: "The phone is his, but I use it when he's at work. When he needs it, I must give it back immediately." This pattern reflects broader household resource control dynamics where men maintain authority over valuable assets.

Device Sharing Patterns

Sharing Behavior	Men	Women
Share phone with household members	31%	82%

Statistical Significance: $\chi^2=28.47, p<0.001$

Device sharing practices further disadvantage women. Among respondents sharing phones, 82% of women versus 31% of men reported sharing with household members ($\chi^2=28.47, p<0.001$). Women sharing devices face restrictions on usage duration, purposes, and privacy, with male partners or parents monitoring communications and applications. This surveillance limits women's technological autonomy and reinforces patriarchal control mechanisms.

Digital Literacy And Skills

Digital literacy assessment employed self-reported competency ratings across seven skill domains: basic phone operation, messaging and calling, internet browsing, social media use, mobile money transactions, email communication, and document creation/editing. Results reveal consistent gender gaps across all domains, with particularly pronounced disparities in advanced skills.

Digital Skills Competence by Gender

Skill Type	Men	Women	Gap	Significance
Basic phone operation (calls,	94%	89%	5 pts	p=0.144

SMS)				
Internet browsing	76%	45%	31 pts	p<0.001***
Mobile money usage	87%	72%	15 pts	p=0.009**
Document creation	38%	12%	26 pts	p<0.001***

Statistical Significance Levels: * p<0.05, ** p<0.01, *** p<0.001

For basic phone operation (making calls, sending SMS), gender differences were minimal: 94% of men and 89% of women reported competence ($\chi^2=2.14$, $p=0.144$, not significant). However, internet browsing competence diverged substantially: 76% of men versus 45% of women ($\chi^2=19.63$, $p<0.001$), representing a 31-percentage point gap. Mobile money usage skills, despite mobile money's prevalence, showed 87% male versus 72% female competence ($\chi^2=6.91$, $p=0.009$). Most starkly, document creation skills reached only 12% of women versus 38% of men ($\chi^2=18.29$, $p<0.001$).

These skill disparities reflect educational differences, with 47% of male versus 31% of female respondents completing secondary education, and gendered exposure to technology training. Focus groups revealed that technology training opportunities, when available, prioritize men based on assumptions about technical aptitude and economic provider roles. As one young woman explained: "My brother was sent for computer training, but I was told to help mother with the house. They said computers are for boys who will work in offices."

Technology And Household Labor Division

Technology's impact on household labor division presents complex and contradictory patterns. Labor-saving household appliances (electric stoves, washing machines, refrigerators) theoretically reduce domestic work burdens, potentially allowing women more time for income generation, education, or leisure. However, findings suggest technology has produced minimal transformation in fundamental gender divisions of domestic responsibility.

Moreover, technology has introduced new domestic responsibilities disproportionately assigned to women. Sixty-eight percent of households reported that women assume primary responsibility for mobile money management of household expenses, airtime purchases, and utility payments tasks previously requiring physical visits to payment centers but now manageable via phones. While convenient, this technological shift has transformed these activities into routine female responsibilities rather than shared or male duties, adding to women's mental load and time demands without corresponding reduction elsewhere.

Economic Empowerment And Income Generation

Technology has demonstrably expanded women's economic participation avenues, though within constraints. Mobile money platforms prove particularly transformative: 72% of female respondents reported using mobile money services (EcoCash, OneMoney) compared to 84% of males ($\chi^2=4.29$, $p=0.038$). Among mobile money users, 68% of women versus 54% of men use the service for savings ($\chi^2=3.87$, $p=0.049$), suggesting women prioritize financial security functions.

Digital entrepreneurship engagement reached 45% of women respondents, encompassing social media marketing (33%), mobile-based retail (18%), and digital service provision including mobile money agencies (12%). These activities generated supplementary household income averaging USD 85 per month, compared to USD 142 monthly from male digital enterprises ($t=4.23$, $p<0.001$). The income differential reflects men's concentration in higher-value technology services (phone repairs, software-related work) versus women's focus on traditional gendered products (beauty, clothing, food) marketed digitally.

Focus groups revealed technology enabling economic activity compatible with domestic responsibilities. As one participant explained: "I can sell on WhatsApp while cooking. When baby sleeps, I post pictures on Facebook. I don't need to leave home or pay for market stand." This flexibility proves valuable but

simultaneously reinforces women's confinement to domestic spaces and expectation of managing simultaneous productive and reproductive labor. Men's digital entrepreneurship, conversely, typically occurs in dedicated time and space separate from domestic duties.

Barriers limiting women's full economic technology utilization include capital constraints (reported by 78% of women entrepreneurs), limited technical skills (65%), unreliable internet connectivity (54%), and cybersecurity concerns (43%). One participant noted: "I fear mobile money fraud. I heard stories of people losing money. So I keep cash hidden at home instead of saving on phone." Such security apprehensions, grounded in actual experiences and inadequate consumer protection mechanisms, limit women's engagement with digital financial services despite their potential benefits.

Decision Making And Agency

Technology's influence on household decision-making manifests through information access and financial autonomy channels. Sixty-eight percent of households reported technology affecting decision-making processes, with 54% indicating increased female participation in financial decisions. Mobile money specifically enables autonomous savings and expenditures without requiring male approval or visibility, potentially strengthening women's economic agency.

However, decision-making changes remain partial and contested. Major expenditure decisions (land purchase, children's education, agricultural investments) remain predominantly male-controlled (73% of households), with women's enhanced decision-making concentrated in routine household consumption (food, clothing, utilities). As one male FGD participant stated: "She can decide about groceries using EcoCash, but important money decisions need my approval. I am the household head."

Information access through internet and social media has created knowledge asymmetries generating household tensions. Women accessing health information, parenting advice, or gender equality content sometimes challenge traditional practices, creating conflicts with partners or mothers-in-law preferring conventional approaches. While this represents nascent women's empowerment, it also provokes backlash including technology restrictions. One woman reported: "My husband took my phone for three weeks because I joined women's rights WhatsApp group. He said I was learning bad habits."

Socio-Cultural Barriers And Enabling Factors

Seventy-six percent of female respondents identified cultural norms and gender stereotypes as significant technology access barriers. These manifest through multiple mechanisms: family prioritization of male technology ownership and training, restrictions on women's technology usage to prevent "inappropriate" behavior, surveillance of women's digital communications, and assumptions that technology is inherently masculine or unnecessary for women's traditional roles.

Generational differences proved significant. Younger women (18-35 years) reported greater technology access and autonomy than older women (36+ years), suggesting gradual norm shifts. Among women aged 18-25, 82% owned personal phones compared to 61% of women 45+ ($\chi^2=8.94$, $p=0.003$). Education also mediated outcomes: women with secondary education reported significantly fewer cultural barriers (53%) compared to those with only primary education (87%) ($\chi^2=15.23$, $p<0.001$).

Enabling factors promoting gender-equitable technology access included supportive partners (identified by 34% of women), women's solidarity networks facilitating knowledge sharing (47%), exposure to gender equality messaging through media (29%), and economic necessity compelling family acceptance of women's technology-enabled income generation (52%). Several women noted that demonstrating economic contributions through digital entrepreneurship gradually reduced family resistance to their technology use.

Implications And Recommendations

Policy And Programmatic Recommendations

Evidence from this research suggests multiple intervention points for promoting gender-equitable technology access and utilization. Government and development agencies should prioritize targeted digital literacy training programs specifically designed for women, accounting for time constraints through flexible scheduling

(evening and weekend sessions), mobile/community-based delivery, and childcare provision. Training content should address women's expressed needs and interests rather than assuming male defined technical priorities, incorporating financial literacy, digital entrepreneurship skills, and safety/security training.

Financial inclusion initiatives should recognize and address gender-specific barriers to digital financial service adoption. This includes consumer protection strengthening to address cybersecurity concerns disproportionately deterring women, simplified interfaces accommodating lower literacy levels, and targeted outreach demonstrating benefits to skeptical family members who may control women's technology access. Subsidized devices and data bundles for women entrepreneurs, modeled on successful programs in Kenya and Rwanda, could reduce economic barriers to meaningful digital participation.

Gender transformative approaches addressing underlying patriarchal norms prove essential. Community dialogues engaging men and boys in discussions of technology, gender equality, and household power dynamics can challenge restrictive beliefs limiting women's technological autonomy. Programs should highlight economic benefits to entire households from women's technology enabled income generation, leveraging pragmatic incentives for norm change while pursuing longer term cultural transformation.

Community Level Actions

Community based organizations and women's groups should establish technology learning circles enabling peer support and knowledge sharing. Research demonstrates women's preference for learning from other women in safe, non-judgmental environments. These circles could address both technical skills and social/emotional support for navigating family resistance to women's technology use.

Male champions and supportive partners should be engaged as gender equality advocates, sharing experiences and modeling equitable technology access within households. Focus groups revealed that men supporting women's technology use often face criticism from other men; creating supportive networks for progressive men could strengthen their resolve and gradually shift masculine norms.

Further Research Needs

This research indicates several directions for future investigation. Longitudinal studies tracking technology's long-term effects on gender roles, intergenerational transmission of changed norms, and sustained economic impacts would provide valuable evidence currently lacking. Comparative research across different Zimbabwean contexts (rural, urban, peri-urban) and other Southern African nations could illuminate contextual factors mediating technology-gender interactions. Intervention research evaluating specific programs designed to promote gender-equitable technology access would build the evidence base for effective approaches. Additionally, research examining men's perspectives on technology and gender role changes, currently underrepresented in scholarship, could inform strategies engaging men as change agents.

Limitations Of The Study

This research acknowledges several limitations. The cross-sectional design captures technology-gender dynamics at a single point, limiting causal inference about technology's effects versus correlation with other changing variables. While mixed methods provide rich data, the study cannot definitively establish whether technology drives gender role changes or merely correlates with broader socioeconomic transformations.

Self-reported data on sensitive topics including household decision-making, income, and gender dynamics may reflect social desirability bias, with respondents providing answers perceived as acceptable rather than fully accurate descriptions. The researchers mitigated this through triangulation across methods and confidentiality assurances, but some bias likely remains.

The focus on a single peri-urban community limits generalizability to Zimbabwe broadly or other African contexts. Dzivarasekwa Extension's specific characteristics including proximity to Harare, relatively high infrastructure access, and formal settlement recognition may produce patterns differing from rural or informal urban settlements. Caution is warranted in extending findings beyond similar peri-urban contexts.

Finally, the researcher's positionality as an external investigator, despite employing local research assistants, may have affected data collection dynamics. Power differentials, gender of interviewers, and community

perceptions of research purposes could influence participant responses. Reflexive attention to these dynamics informed data collection and interpretation, but complete elimination proves impossible.

CONCLUSION

This research demonstrates that technology's effects on gender roles in Dzivarasekwa Extension Federation Homestead, and likely similar peri-urban Zimbabwean contexts, manifest as complex, contradictory, and contested processes rather than straightforward transformation or simple reinforcement of existing patterns. Technology has undeniably expanded certain opportunities for women, particularly in economic participation through mobile money platforms and digital entrepreneurship, and has modestly enhanced women's information access and participation in household financial decision-making. These changes represent meaningful improvements in women's material conditions and agency, deserving recognition and support.

However, optimistic technological determinism obscures persistent and emerging inequalities. The gender digital divide remains substantial across device ownership, digital literacy, usage autonomy, and economic benefits accrued from technology engagement. Women's technology access and utilization occur within and are constrained by patriarchal household structures, socio-cultural norms positioning technology as masculine, time poverty resulting from unequal domestic labor divisions, economic disadvantages limiting purchasing power, and systematic educational disparities in technical knowledge and skills. These structural barriers ensure that even universal technology availability—which Zimbabwe has not yet achieved—would produce gendered outcomes absent deliberate interventions addressing root inequalities.

Moreover, technology has introduced new forms of gender inequality alongside reducing others. Women assume primary responsibility for technology-mediated household management tasks, face increased surveillance and control through digital monitoring, experience technology-facilitated gender-based violence including online harassment and coercive control, and encounter digital entrepreneurship concentrated in traditionally feminine, lower-value sectors perpetuating occupational gender segregation. The finding that labor-saving household appliances have not substantially reduced women's total domestic labor time exemplifies technology's complex relationship to gender equality—providing specific task efficiencies while leaving fundamental divisions of responsibility unchanged.

These contradictions suggest that technology functions as an amplifier of existing social relations rather than an independent transformative force. In contexts of relative gender equality, economic resources, and supportive norms, technology can accelerate women's empowerment. Conversely, where patriarchal structures, poverty, and restrictive gender ideologies prevail, technology adoption may reinforce and even intensify existing inequalities through mechanisms including widening digital divides, surveillance capabilities, and shifting rather than eliminating gendered labor burdens.

Achieving technology's gender equality potential requires comprehensive approaches addressing not merely technology access but the broader socioeconomic and cultural contexts shaping technology adoption and utilization. Effective strategies must combine: (1) targeted interventions ensuring women's technology access, digital literacy, and economic resources; (2) gender-transformative programs engaging men and boys in challenging restrictive gender norms; (3) policy frameworks mandating gender considerations in technology infrastructure, content, and regulation; (4) institutional mechanisms protecting women from technology-facilitated violence and discrimination; and (5) sustained commitment to broader gender equality goals including educational equity, economic opportunity, political participation, and freedom from violence.

The Zimbabwe context presents both challenges and opportunities. Progressive constitutional and policy frameworks provide normative foundations for gender equality, while active civil society and international development partnerships offer implementation capacity. However, economic constraints, political uncertainties, and deeply entrenched patriarchal cultural systems create formidable obstacles. Technology represents one tool among many required for gender equality advancement valuable but insufficient alone, amplifying rather than substituting for fundamental social transformation. As Dzivarasekwa Extension and similar communities navigate rapid technological change, the challenge lies in consciously steering technology adoption toward gender justice rather than passively accepting gendered outcomes as technological inevitability.

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