

Transforming Women Entrepreneurship through Digital Technology: Opportunities and Challenges



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Abstract

The quick spread of digital technologies has changed the face of entrepreneurship worldwide, giving women new opportunities to launch, formalize, and grow enterprises but also highlighting long-standing structural injustices. This study uses a comprehensive examination of secondary literature and public national and cross-country statistics to investigate the potential and difficulties faced by women entrepreneurs in the digital age. The study's three main goals are to determine the potential that women entrepreneurs have in the digital age, investigate the obstacles that prevent them from participating in the digital world, and evaluate the contribution of institutional and policy support to closing the gender-digital divide. The paper synthesizes evidence on digital access, e-commerce participation, digital financial inclusion, and socio-cultural constraints using reports from the World Economic Forum, World Bank, Global Entrepreneurship Monitor (GEM), Cherie Blair Foundation for Women, and Indian institutions like SIDBI and NITI Aayog in addition to peer-reviewed literature indexed in Scopus. The results show that although digital platforms have significantly reduced entry barriers and increased market access, women entrepreneurs still have to deal with a significant digital divide, a disproportionate credit gap, low digital literacy, and increased exposure to hazards related to online safety. The report offers a conceptual framework and testable hypotheses for further empirical research, concluding that eliminating the gender-digital gap necessitates concerted action across digital infrastructure, financial inclusion, skilling, and safety.

1. Introduction

It has long been acknowledged that entrepreneurship promotes economic expansion, job creation, and poverty alleviation. The growth of the internet, cellphones, digital payment methods, social media, and e-commerce platforms over the past ten years has drastically changed how businesses are founded, funded, promoted, and expanded. This shift, which is sometimes referred to as the "digital era" of entrepreneurship, has given historically underrepresented groups—including women—unprecedented chances to engage in economic activity with fewer financial requirements and fewer geographic restrictions (World Economic Forum, 2025). A sizable and increasing portion of business ownership worldwide is held by female entrepreneurs. The Global Entrepreneurship Monitor's 2024/2025 Women's Entrepreneurship Report states that approximately one in ten women launched a new company in 2024, compared to one in eight men, and that women's innovation-led startups either matched or surpassed those of men in eighteen out of fifty-one countries surveyed (GEM, 2025). Women own nearly half of all businesses in some low- and middle-income countries (47% in Latin America and the Caribbean and 44% in East Asia and the Pacific), highlighting their importance to both formal and informal economies (Cherie Blair Foundation for Women, 2025). Women entrepreneurs benefit structurally from digitalization in a number of ways. By avoiding some of the collateral-based obstacles of traditional banking, it lowers the fixed costs of opening a storefront, permits direct-to-consumer marketing through social media, opens access to larger and even international markets through e-commerce platforms, and increasingly permits access to formal financial services through mobile money and digital lending (Abed, 2021). However, the implications of digitalization are not gender-neutral. Women are less likely than males to buy cellphones, have dependable internet access, or have the digital skills required to properly utilize these tools due to a well-documented "digital gender divide" (World Bank, 2025), especially in poor economies. In a 2025 study of women entrepreneurs in low- and middle-income countries, the Cherie Blair Foundation discovered that while 92% of them had a personal smartphone, 45% did not have regular internet access because of cost and connectivity issues, which significantly limited their capacity to engage in online markets.

According to SIDBI (2025) and NITI Aayog (2023), women-owned businesses in India account for an estimated one-fifth of all MSMEs that are registered. However, they face a credit gap that is much larger than that of male-owned businesses, as well as sociocultural limitations on mobility, time poverty from unpaid care work, and lower participation in technology-oriented sectors. Growing policy recognition of the need to digitally integrate women-led businesses is demonstrated by government initiatives like Stand-Up India, the Credit Guarantee Fund Scheme, the Women Entrepreneurship Platform (WEP), and onboarding support for the Open Network for Digital Commerce (ONDC) (PIB, 2025). In light of this, this article conducts a conceptual and descriptive analysis of the opportunities and difficulties faced by female entrepreneurs in the digital age. The paper adopts a balanced analytical lens, using recent global and Indian secondary data to map both the enabling potential of digital tools and the structural frictions that continue to limit women's full participation in the digital economy, rather than treating digitalization as a uniformly empowering or disempowering force.

2. Literature Review

2.1 The Study of Women's Entrepreneurship

From being a minor issue in mainstream entrepreneurship study, women's entrepreneurship has developed into a recognized subfield. The vocabulary of entrepreneurship research was criticized by early research, most notably Ahl (2004), for implicitly categorizing the "entrepreneur" as male, which framed women's endeavors as departures from a masculine norm rather than as a unique and valid subject of study. This criticism is still pertinent in the digital sphere, where technology entrepreneurship is still socially coded as a male domain, influencing women's perceptions of themselves as entrepreneurs as well as their access to resources (Springer Nature, 2025).

2.2 Women Entrepreneurs' Adoption of Digitalization and Technology

The adoption and usage of digital technology by female entrepreneurs have been the subject of an expanding corpus of Scopus-indexed literature. Using the PRISMA and TCCM frameworks, a recent systematic literature review published in the Journal of Management Development examined 73 peer-reviewed articles (2014–2025) on technology adoption among women entrepreneurs in the Global South. It came to the conclusion that the main obstacles to technology adoption are sociocultural limitations, poor infrastructure, and skill and literacy gaps, while digital platforms also facilitate market access and financial inclusion (Annu et al., 2026). Studies using the Technology Acceptance Model (TAM) at the micro level have discovered that, through the mediation of self-efficacy and enabling circumstances, perceived utility and perceived ease of use significantly predict women entrepreneurs' intention to embrace digital tools. Self-efficacy positively linked perceived usefulness and ease of use, while enabling conditions increased ease of use but not usefulness directly, according to a PLS-SEM-based study of 432 women entrepreneurs in Oman (Journal of Global Entrepreneurship Research,

2025). Similarly, among female entrepreneurs in emerging nations, the adoption of mobile applications has been associated with business sustainability results (Abed, 2021).

2.3 Digital Financial Inclusion and the Digital Divide

The literature on the "digital divide" shows that, especially in low- and middle-income nations, gender disparities exist in access to devices, connectivity, and digital abilities. According to the World Bank's 2025 study on digital transformation in the Middle East, there are still discrepancies between men and women in terms of device ownership, digital technology use, and digital skill levels. These findings have consequences for women's economic involvement in general (World Bank, 2025). The Cherie Blair Foundation's "Empowered or Undermined? The Cherie Blair Foundation for Women (2025) found that women entrepreneurs with regular internet access were two and a half times more likely to use AI-enabled tools than those without, and that women transacting with male customers were three times more likely to receive digital payments. These findings demonstrate that access, once attained, translates into quantifiable productivity and financial-inclusion gains.

With women borrowers obtaining an estimated ₹76 lakh crore in credit as of 2025, or over 26% of all system credit, digital financial inclusion in India has grown significantly (Economic Survey, 2024–25, referenced in SME Communities, 2026). However, there is still a persistent credit gap: according to SIDBI-Crisil (2025), only 76% of women-led businesses had obtained formal credit, compared to 84% of male-owned businesses. The overall credit gap for women-led MSMEs is estimated to be 35%, the largest of any demographic segment (YourStory, 2025).

2.4 Market Access, Social Media, and E-Commerce

It has been extensively established that social media and e-commerce platforms are inexpensive ways for female entrepreneurs, especially home-based and micro-entrepreneurs, to reach consumers without the financial outlay needed for a physical shop. However, studies conducted in Sub-Saharan Africa show that the region's female entrepreneurs' use of digital technology is still mostly limited to social media-based marketing rather than more complex digital business operations, which reflects ongoing deficiencies in digital literacy, infrastructure, and institutional support (Journal of International Entrepreneurship, 2025).

2.5 Technology-Assisted Gender-Based and Online Safety

Online safety is a clear obstacle to women's digital entrepreneurship, according to a growing body of research. Women's visibility and active participation on digital platforms have been found to be hindered by technology-facilitated gender-based violence, which includes harassment, doxxing, and online abuse. This has a knock-on effect on networking and business promotion (World Bank, 2024, in the 'Closing Gender Gaps in Digital Development' guide). In comparison to access and funding restrictions, this factor is often overlooked in entrepreneurship policy.

2.6 Policy and Institutional Assistance

Directly addressing structural hurdles has been the goal of government-led efforts. ZED certification subsidies for women-owned manufacturing units, the Prime Minister's Employment Generation Programme, Stand-Up India, the Credit Guarantee Fund Scheme for Micro and Small Enterprises (with enhanced 85% guarantee coverage for women), and the MSME TEAM initiative supporting onboarding to the Open Network for Digital Commerce (ONDC) are just a few of the initiatives in India that demonstrate a shift from generic MSME support to digitally-integrated, gender-targeted policy design (PIB, 2025). Comparable global data from World Bank ecosystem assessments and GSMA Mobile Gender Gap Reports suggests that in order to address the various, overlapping barriers that women entrepreneurs encounter, access to financing should be combined with mentoring, childcare assistance, and training in digital skills (World Bank, 2024).

2.7 Research Deficit

Few studies combine the effects of the digital divide, gains in financial inclusion, e-commerce participation, and policy interventions into a single conceptual framework that links the opportunities and challenges of the digital era to distinct outcomes for women entrepreneurs across income and geographic contexts. In order to close that gap, this paper proposes testable linkages for future primary research and synthesizes secondary information into an integrated opportunity–challenge framework.

3. Objectives of the Study

- To determine and evaluate the main advantages that digitalization provides to female entrepreneurs in terms of financial inclusion, market access, and company efficiency.
- To investigate the main obstacles that prevent women entrepreneurs from participating in the digital economy, including those relating to infrastructure, finances, society, and safety.
- To assess, with particular reference to the Indian MSME ecosystem, the contribution of institutional support systems and governmental policies to closing the gender-digital divide.

- To put out a conceptual framework and suggestions that are pertinent to policy in order to increase the involvement of women in digital entrepreneurship.

4. Hypotheses/ Research Propositions

Formal statistical hypotheses are not evaluated because this study uses a descriptive, secondary-data-based research design as opposed to a primary survey-based design. Rather, based on the literature analysis, the study advances the following research propositions, which are suggested for empirical validation in further primary investigations employing structured surveys of women entrepreneurs:

- P1: Compared to women entrepreneurs with sporadic or nonexistent internet connection, individuals with consistent, dependable internet access show noticeably higher adoption of digital financial instruments and stronger business revenue development.
- P2: The ability of female entrepreneurs to invest in digital infrastructure and technology adoption is negatively correlated with the gender credit gap in formal MSME loans.
- P3: The association between the availability of digital technologies and their actual business use among female entrepreneurs is favorably mediated by digital literacy and self-efficacy.
- P4: Women entrepreneurs' active usage of social media and e-commerce platforms for business promotion is negatively correlated with exposure to online harassment or technology-facilitated gender-based violence.
- P5: Compared to access to finance alone, access to bundled institutional support (financing plus digital skills plus mentoring) is connected to higher increase in revenue tied to digital platforms.

5. Research Methodology

5.1 Research Design

Based on a methodical review and synthesis of secondary data, this study uses a descriptive-analytical research approach. Rather than producing new primary data, this design is acceptable given the study's goal of mapping the current state of knowledge and published evidence across several geographies.

5.2 Data Sources

Three types of secondary sources were used to gather the data:

- Peer-reviewed academic literature that was indexed in Scopus and other scholarly databases (e.g., Journal of Management Development, Journal of Global Entrepreneurship Research, Journal of International Entrepreneurship);
- Institutional and multilateral reports, such as the Global Entrepreneurship Monitor (GEM) 2024/2025 Women's Entrepreneurship Report, World Bank reports on gender gaps, the World Economic Forum, and the Cherie Blair Foundation for Women's 2025 "Empowered or Undermined?" study; and Indian government and industry publications on MSME credit and digital adoption.

5.3 Search and Selection Strategy

The keywords "women entrepreneurs," "digital economy," "digital divide," "digital financial inclusion," "e-commerce," and "MSME" were combined to find sources. These sources were mainly limited to publications published after 2020 to ensure currency, and foundational theoretical literature (such as Ahl, 2004) was kept for conceptual grounding. Relevance, publisher credibility (peer-reviewed journals, international organizations, government agencies), and data freshness were all taken into consideration while selecting sources.

5.4 The Analytical Method

In accordance with the TCCM (theory, context, characteristics, methods) approach employed in similar systematic reviews, data extracted from the chosen sources were thematically arranged under four analytical categories: access and infrastructure, financial inclusion, market access via e-commerce/social media, and safety/socio-cultural constraints (Annu et al., 2026). To aid with descriptive interpretation, quantitative indicators from the source studies—such as credit-gap percentages and internet-access rates—were combined into comparative tables. In line with earlier TAM-based investigations in this sector (e.g., the Oman study using PLS-SEM with 432 respondents), the suggestions in Section 4 are made for future primary-data studies utilizing regression, PLS-SEM, or similar techniques. No primary statistical hypothesis testing was carried out.

5.5 Scope and Limitations

The Cherie Blair Foundation poll itself observes that digitally-promoted surveys tend to over-represent more digitally-connected respondents. This suggests that the study's dependence on secondary data may incorporate the sample and measuring constraints of the original sources. Given the availability of data, the analysis is also biased toward India and evidence from low- and middle-income countries, which should be taken into account when extrapolating results to high-income country contexts.

6. Interpretation and Analysis of Data

This section, arranged by theme, summarizes the most important quantitative indicators found in the secondary sources that were examined.

6.1 Digital Access and Infrastructure

Indicator	Value	Source
Women entrepreneurs (LMICs) owning a personal smartphone	92%	Cherie Blair Foundation, 2025
Women entrepreneurs (LMICs) lacking regular internet access	45%	Cherie Blair Foundation, 2025
Likelihood of AI-tool use among women with regular internet access, relative to those without	2.5×	Cherie Blair Foundation, 2025
Likelihood of receiving digital payments when selling to male customers	3×	Cherie Blair Foundation, 2025

6.2 Financial Inclusion and Credit Access (India)

Indicator	Value	Source
Women-led enterprises with access to formal credit	76%	SIDBI–Crisil, 2025
Male-owned enterprises with access to formal credit	84%	SIDBI–Crisil, 2025
Overall credit gap for women-led MSMEs	35%	YourStory, 2025
Women-owned enterprises as share of total MSMEs (India)	~20–22%	Economic Survey 2024–25
Women-founded technology startups (RBI survey of 1,246 startups)	5.9%	NITI Aayog, 2023

6.3 Business Impact and Entrepreneurial Activity

Indicator	Value	Source
Women starting new businesses in 2024 (global, TEA rate)	1 in 10	GEM, 2025
Men starting new businesses in 2024 (global, TEA rate)	1 in 8	GEM, 2025
Countries where women's innovation-led startups matched/exceeded men's	18 of 51	GEM, 2025
Women-owned businesses, Latin America & Caribbean	47%	Cherie Blair Foundation, 2025
Women-owned businesses, East Asia & Pacific	44%	Cherie Blair Foundation, 2025
Women-owned businesses, Sub-Saharan Africa	30%	Cherie Blair Foundation, 2025

6.4 Interpretation

The compared data reveals three patterns. First, almost half of the women entrepreneurs examined in LMICs lack regular internet connection, despite the fact that device ownership is now almost universal among them in many assessed situations. However, connectivity, not device availability, is the binding limitation. This implies that affordable data and connection infrastructure should take precedence over device distribution initiatives. Second, the financial-inclusion data show a paradox: while the total amount of credit given to Indian women

borrowers has increased significantly in absolute terms, the proportionate credit gap with respect to male-owned businesses is still the largest of any demographic group. This suggests that the scope of lending has expanded without a corresponding reduction in the access gap. Third, the data on entrepreneurial activity indicates that women's participation in the creation of businesses is getting closer to parity with men's in a significant subset of countries, but their representation in technology-sector startups is still low (less than 6% of solely women-founded technology startups in the Indian RBI sample). This suggests that the opportunity created by digitalization is being captured unevenly, more strongly in digitally-enabled retail and services than in core technology entrepreneurship.

When considered collectively, the data corroborate the claims made in Section 4: connectivity and credit access seem to work together to reinforce constraints, so addressing one without the other (for instance, increasing credit without addressing connectivity, or vice versa) is likely to result in only partial increases in women's participation in digital entrepreneurship.

7. Findings

- Through social media-based marketing, e-commerce market access, and the use of digital payments, which reduce fixed costs and geographical obstacles to entry, digitalization has given women entrepreneurs real, quantifiable prospects.
- The biggest structural obstacle is still the ongoing digital divide, which disproportionately affects business owners in low- and middle-income nations as well as rural areas. Women entrepreneurs hold a large number of devices, but their internet connectivity is not commensurate.
- Due to collateral requirements, thin credit histories, and lender risk perception bias, women-led businesses continue to face significantly greater barriers to formal financing than do male-led businesses. In India, the credit gap (35%) is greater than that of any other demographic group.
 - Compared to digitally enabled trade in traditional sectors, women's involvement in core technology entrepreneurship is still notably low, indicating that digital opportunities are being unevenly grabbed across sectors.
 - Access to and usage of digital tools are still shaped by sociocultural limitations, such as unpaid care obligations, limited mobility, and gender stereotyping of entrepreneurship as a masculine activity.
- One significant yet unaddressed obstacle to women's active and prominent involvement on digital and social media platforms is online safety threats, particularly harassment enabled by technology.
- Compared to single-lever interventions like lending alone, bundled institutional interventions (such as ONDC onboarding, Women Entrepreneurship Platform) that combine access to financing with digital skills training, mentoring, and market-linkage support seem more promising.

8. Conclusion

Previously limited by distance, capital, and institutional bias, the internet era offers women entrepreneurs significant potential to lower entry barriers, increase market reach, and access financial services. However, the data examined in this research shows that gender-equitable results are not always the result of digitalization. When taken as a whole, the persistence of a digital access gap, a disproportionate credit gap, low representation in technology-sector entrepreneurship, and safety-related obstacles to online visibility show that digital tools enhance already-existing entrepreneurial capacity rather than leveling the playing field on their own. Coordinated action is needed on four fronts for digitalization to result in truly inclusive entrepreneurial opportunities: affordable and dependable connectivity infrastructure; gender-responsive financial products that lessen reliance on collateral; organized digital-skilling and mentoring programs; and more robust mechanisms to guarantee women's safety and confidence in online business spaces. In order to empirically test the relative strength of these constraints across various economic and cultural contexts and assess the relative efficacy of bundled versus single-lever policy interventions, future research should build on the ideas presented in this paper through primary, survey-based studies using structural equation modeling or regression-based designs.

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Conflict of Interest

In this manuscript no conflict of interest in any manner.

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Author's Contribution

The author solely contributed to the conceptualization, research design, literature review, and/or analysis, interpretation of findings, drafting, revision, and final approval of the manuscript. The author takes full responsibility for the content of the research work.

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