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Women-led enterprises on social media platforms in West Bengal: Digital literacy and formalization intentions

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Abstract
Women-led enterprises operating through social media platforms have increasingly become an important pathway for economic participation and livelihood generation in West Bengal. Beyond income generation, these platforms provide opportunities for women to establish independent identities, expand social networks, and engage more actively in entrepreneurial spaces. Despite these opportunities, women entrepreneurs continue to encounter several structural and institutional barriers that influence business growth and their willingness toward formalization. Drawing on primary data collected from 299 women entrepreneurs based on interim findings from an ongoing ICSSR-supported research project, this paper examines the major constraints experienced in digital entrepreneurship and identifies the factors shaping formalization intentions. Exploratory Factor Analysis and Binary Logistic Regression were employed to explore underlying patterns and determinants. The findings reveal three broad dimensions of barriers, namely Personal, Infrastructural and Market Challenges, Confidence and Knowledge Gap, and Financial Constraints. While socio-demographic factors show limited influence, digital literacy emerges as the strongest determinant of willingness toward formalization. The findings emphasize the need for strengthening digital skills and supportive mechanisms to foster women-led entrepreneurship and promote more inclusive digital development in West Bengal.

Keywords: Women entrepreneurship, digital entrepreneurship, social media platforms formalization, digital literacy

Introduction

In West Bengal, starting a business on social media is about much more than just making money; it is a way for women to find their own identity and gain true independence. Using tools like Facebook and WhatsApp, they can build a professional reputation and feel a sense of pride while still looking after things at home. However, this path isn't always easy, as it often turns into a difficult balancing act. These entrepreneurs have to manage the "double burden" of chores and family life while staying online at all hours to keep up with the constant demands of their digital shops (Adhikary and Koley, 2025). Chatterjee and Banerjee (2026) have taken an initiative to analyse the evolving entrepreneurial landscape for women in West Bengal, specifically exploring the interplay between digitalization, socio-economic factors, and personal well-being. Social media has emerged as a fundamental vehicle for economic empowerment and business sustainability for women in both urban and semi-urban contexts. The study also found that maximum shares of women entrepreneurs are often utilizing "cloud marketing" to bypass high overhead costs and physical retail barriers. Collectively, these businesses contribute significantly to regional economic development through job creation, typically employing between five and ten individuals.

This paper aims to identify the structural barriers and assess the entrepreneurial potential of women-led enterprises operating through social media platforms in West Bengal, with particular reference to the challenges and enabling factors that shape their contribution to digitally mediated economic development. By looking into these trends, this research highlights how being tech-savvy and knowing how to handle information are the real keys to staying in business for the long run. It also takes a closer look at the uniquerisks women run into online. The goal is to give policymakers clear ideas on how to help women move from just being in the margin to making through the market. These kinds of steps are essential to make sure the digital shift in West Bengal actually empowers people and keeps the local economy steady.

To facilitate a deeper understanding of digital entrepreneurship in West Bengal, this quantitative study was designed around primary data collected from 299 women operating businesses via social media. A multi-stage purposive random sampling strategy was employed to ensure representation across diverse sectors on platforms such as Facebook, Instagram, and WhatsApp. To account for the varying educational backgrounds of the participants, the questionnaire was administered in both English and Bengali, ensuring the data collection process remained inclusive and accessible.

The analysis was conducted in two distinct stages. First, Exploratory Factor Analysis with a Principal Component Matrix was utilized to identify the underlying structural barriers and enabling factors encountered by these entrepreneurs. Subsequently, Binary Logistic Regression was applied to determine how demographic characteristics and digital literacy levels influence the willingness to formalize, with the intent to formalize treated as a binary outcome.

Structural Barriers to Women's Entrepreneurship through Social Media

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.628**
Bartlett's Test of Sphericity	Approx. Chi-Square	187.438
	df	15
	Sig.	.000

The data suitability for factor analysis has been first confirmed with a KMO value of 0.628 (Table 1), reflecting moderate adequacy. Principal component analysis with Varimax rotation produced three factors consistent with the Kaiser Retention rule.

The rotated component matrix (Table 2) reveals the underlying dimensions shaping the barriers experienced by women-led digital entrepreneurs. Using factor rotation, the variables are grouped into three major components that represent interconnected structural, technological, and financial challenges influencing entrepreneurial activities.

The first component can be interpreted as ‘Personal, Infrastructural and Market Challenges’, as several variables demonstrate strong loading within this factor. The statement ‘Domestic and caregiving responsibilities limit my business expansion’ records a high loading (.801), indicating that household and care obligations substantially constrain entrepreneurial growth. Similarly, ‘Competition from similar sellers affects my sales’ also loads strongly (.759), suggesting that market saturation and competitive pressures are significant concerns. Additionally, ‘Poor internet connectivity or infrastructure affects my work’ displays a moderate loading (.524) on this component. The clustering of these variables suggests that women entrepreneurs operate within overlapping domestic and market environments where personal responsibilities, infrastructural limitations, and business competition collectively influence enterprise performance. This reflects broader gendered realities in which entrepreneurial work is often integrated with unpaid domestic labour, limiting the ability to devote time and resources toward business expansion.

The second component emerges as ‘Confidence and Knowledge Gap’. The variable “I lack confidence in advanced digital tools” exhibits a strong loading (.815), indicating that technological self-efficacy remains a critical issue. Likewise, “I find government procedures and registration complicated” demonstrates a substantial loading (.778). These variables collectively point toward barriers related to skills, procedural understanding, and institutional navigation. The factor suggests that beyond access to technology, women entrepreneurs may face challenges in utilizing digital systems effectively and engaging with formal administrative structures. Limited confidence in advanced digital platforms can restrict opportunities for online expansion, while difficulties understanding registration and government procedures may discourage business formalization and access to institutional support mechanisms.

Table 2: Rotated Component Matrix

Roots	Variables	Component		
		1	2	3
Personal Infrastructural and Market Challenges	Domestic and caregiving responsibilities limit my business expansion	.801	.224	-.135
Confidence and Knowledge Gap	I lack confidence in advanced digital tools.	.141	.815	-.063
	I find government procedures and registration complicated.	.061	.778	.319
Financial Constraints	I face difficulty arranging adequate finance or credit.	.047	.213	.868
Personal Infrastructural and Market Challenges	Competition from similar sellers affects my sales.	.759	.109	.206
	Poor internet connectivity or infrastructure affects my work	.524	-.230	.455
Computed by the Authors, 2026				

The third component can be interpreted as ‘Financial Constraints’, represented primarily by the variable “I face difficulty arranging adequate finance or credi, which records a very strong loading (.868). The high loading indicates that access to financial resources forms an independent and dominant dimension of entrepreneurial challenges. Financial limitations remain a recurring issue in women-led enterprises, affecting investment capacity, scaling potential, inventory management, and technological adoption. The emergence of finance as a separate component suggests that financial barriers are experienced distinctly from infrastructural or knowledge-related issues and therefore require targeted interventions.

Some degree of cross-loading is also evident within the matrix. For instance, “Poor internet connectivity or infrastructure affects my work” shows moderate loading on both Fisrt component (.524) and Third Component (.455), suggesting that infrastructural deficiencies may simultaneously intersect with broader personal challenges and financial capacities. Similarly, “I find government procedures and registration complicated” shows a secondary loading (.319) on the financial dimension, indicating that bureaucratic complexity may also create indirect financial burdens through costs associated with compliance and formalization.

In brief, the rotated matrix indicates that women-led digital entrepreneurship has been shaped by a multidimensional structure of constraints where domestic obligations, market competition, technological confidence, procedural understanding, and financial access interact in complex ways.

Potential of Women Entrepreneurs

The logistic regression analysis (Table 3) was carried out to understand whether factors such as age group, marital status, educational attainment, year of business establishment, and digital literacy influence respondents’ willingness towards formalisation. The results reveal that among the selected predictors, digital literacy stands out as the most influential factor, while the remaining variables do not show a statistically significant relationship with formalisation intentions. The findings of logistic regression analysis suggest that age does not play a meaningful role in shaping willingness towards formalisation. The coefficient for age group is almost negligible (B = -0.003). The odds ratio also remains close to one (Exp(B) = 0.997), indicating that belonging to a particular age category does not noticeably increase or decrease

Table 3: Binary Logistic Regression

	B	Sig.	Exp(B)	95% C.I.for EXP(B)	
Age group (>35 years)				Lower	Upper
Marital status (Ever Married)	.271	.457	1.312	.642	2.681
Highest education level (School Level)		.717			
Highest education level (Graduation)	-.174	.803	.840	.213	3.309
Highest education level (Post Graduation)	-.414	.573	.661	.156	2.793
Year your business started (Before 2018)		.815			
Year your business started (Before 2023)	-.467	.574	.627	.123	3.188
Year your business started (After 2023)	-.346	.690	.707	.129	3.878
Your level of digital literacy (Basic)		.000			
Your level of digital literacy (Intermediate)	1.044	.001	2.841	1.546	5.219
Your level of digital literacy (Advanced)	1.834	.002	6.261	1.983	19.770
Constant	.955	.388	2.599		

Source: Computed by the Authors, 2026

the likelihood of respondents being willing to formalise their businesses. This suggests that willingness towards formalisation remains relatively similar across different age groups.

A similar pattern can be observed in the case of marital status. Although the positive coefficient and odds ratio (Exp(B) = 1.312) indicate a slightly higher likelihood of willingness towards formalisation among respondents in this category compared to the reference group, the relationship is not statistically significant ($p = 0.457$). Therefore, marital status does not appear to have a substantial influence on respondents' attitudes toward business formalisation.

Educational level also does not emerge as an important predictor in the model. The overall effect of educational attainment remains statistically insignificant, and none of the education categories show a meaningful association with willingness towards formalisation. Although some categories display lower odds compared to the reference group, these differences are not strong enough to establish a statistically significant relationship. This indicates that respondents' educational background does not necessarily shape their intention to formalise their businesses. Likewise, the year in which respondents started their business does not significantly affect willingness towards formalisation. Although the coefficients suggest slightly lower odds for certain categories compared with the reference group, the results remain statistically insignificant. This implies that whether a business is relatively new or has been operating for a longer period does not substantially influence respondents' inclination toward formalisation. In contrast, digital literacy demonstrates a strong and statistically significant relationship with willingness towards formalisation. Respondents belonging to the first category of digital literacy i.e. intermediate are approximately 2.84 times more likely to express willingness towards formalisation compared with the reference category, while respondents in the second category with advanced digital knowledge are around 6.26 times more likely to do so. The gradual increase in odds across categories indicates that higher levels of digital literacy are associated with a greater likelihood of willingness toward formalisation. Taken together, the findings suggest that socio-demographic characteristics such as age, marital status, educational attainment, and year of business establishment do not significantly shape willingness towards formalisation. Rather, digital literacy emerges as the key factor influencing formalisation intentions. The results highlight the increasing importance of digital capability in entrepreneurial contexts and suggest that individuals with stronger digital skills may feel more confident and better prepared to engage with formal systems and institutional procedures.

Studies on digital entrepreneurial ecosystems argue that digital entrepreneurial alertness and knowledge significantly shape entrepreneurial intention and formal market participation by improving access to information, networks, and digital infrastructures, with innovative digital attitude serving as a mediating mechanism between digital capabilities and entrepreneurial outcomes (Lopes *et al.*, 2026) [6]. Similarly, research grounded in social cognitive career theory demonstrates that digital competence functions not merely as a technical skill but as a socio-cognitive resource that moderates the relationship between entrepreneurial education, self-efficacy, and digital entrepreneurship intention, thereby strengthening entrepreneurial agency in digitally mediated markets (Lam *et al.*, 2025) [5]. Furthermore, contemporary studies on women's digital entrepreneurship emphasize that structural barriers, including unequal technological access, limited institutional support, and inadequate digital skills, continue to shape women's entrepreneurial trajectories despite the opportunities generated by social media platforms (Lopes *et al.*, 2025).

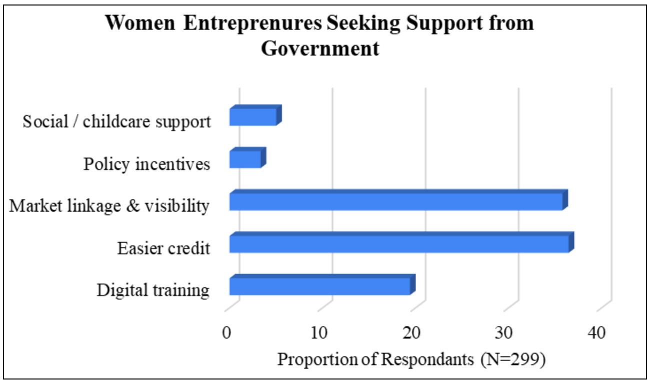

Fig 1: Women Entrepreneurs seeking Support from Government (Source: Primary Survey, 2026)

In a nutshell, the findings suggest that in the context of women entrepreneurs operating through social media platforms in West Bengal, demographic characteristics such as age and education are less influential in determining willingness toward formalization than the ability to effectively navigate digital environments. Digital literacy thus functions as a critical enabling factor that mediates access to formal entrepreneurial opportunities, enhances institutional engagement, and reduces barriers associated with informal business practices. The findings therefore underscore the importance of policy interventions focused on strengthening advanced digital skills, technological accessibility, and platform-oriented entrepreneurial training among women entrepreneurs in digitally mediated economies. As primary survey speaks, among the various forms of support, easier access to credit emerges as the most frequently mentioned requirement, reported by approximately 36.45 percent of respondents (Fig 1). Access to finance remains a critical concern for women-led enterprises, as financial constraints often limit business expansion, investment opportunities, and long-term sustainability. The prominence of this demand suggests that existing financial systems may not be adequately addressing the needs of women entrepreneurs, making accessible and simplified credit facilities an important area for policy intervention. Closely following this, market linkage and visibility support was identified by around 35.79 percent of respondents. This reflects the growing need among women entrepreneurs to strengthen their market presence and reach wider customer bases. In the context of digital entrepreneurship, visibility plays a significant role in business growth, particularly for enterprises operating through online platforms and social media. The finding suggests that entrepreneurs are not only concerned with producing goods and services but are equally focused on improving market access and increasing business exposure. Another notable area of support is digital training, reported by approximately 19.40 percent of respondents. Although this proportion is lower than that of financial and market-related support, it still represents a substantial segment of women entrepreneurs who recognize the importance of digital skills. As business activities increasingly shift toward online platforms, digital competence becomes essential for marketing, customer engagement, financial transactions, and overall business management. This finding also corresponds with broader evidence that digital capability can influence entrepreneurial confidence and opportunities. In contrast, social or childcare support (5.02 percent) and policy incentives (3.34 percent) received comparatively lower responses. While these factors may still influence entrepreneurial experiences, they appear to be perceived as less immediate concerns compared to financial access and market-related needs. This may indicate that respondents place greater emphasis on practical support mechanisms directly linked to business growth and sustainability.

The diagram reflects a group of women with clear entrepreneurial ambition. The barriers they face are institutional and infrastructural rather than personal. With targeted support in credit access, market linkage, and digital skills, the entrepreneurial potential of these women can be meaningfully realized within the broader framework of Women-Led Development.

Conclusion

This study explored the structural barriers and entrepreneurial prospects of women-led enterprises operating through social media platforms in West Bengal, with a particular focus on understanding the factors influencing their willingness toward business formalization. The findings from the Exploratory Factor Analysis identified three major dimensions of constraints that shape the entrepreneurial experiences of these women. The first dimension, labelled as Personal, Infrastructural and Procedural Constraints, reflects the interconnected challenges arising from limited confidence in using digital tools, the complexity of government registration procedures, and the burden of domestic and caregiving responsibilities. Together, these factors create obstacles that can limit women entrepreneurs' ability to expand their enterprises and participate in formal business systems. The second dimension, identified as Confidence and Knowledge Gap Challenges points to the continuing impact of insufficient knowledge regarding formalization processes and digital marketing practices. These gaps can influence business sustainability and may affect entrepreneurs' ability to effectively navigate increasingly digital marketplaces. The third dimension, Financial Constraints emerged as a separate yet significant challenge, emphasizing that difficulties in accessing credit and financial resources continue to hinder business growth and development. The Binary Logistic Regression results further indicate that digital literacy is the most influential factor shaping willingness toward formalization. Unlike socio-demographic characteristics such as age and educational attainment, digital capability demonstrates a stronger and more meaningful relationship with formalization intentions. Women entrepreneurs possessing higher levels of digital competence were found to be significantly more likely to express a positive willingness toward engaging with formal business systems. The findings suggest that the barriers experienced by women-led digital enterprises are not isolated in nature but are interconnected and multi-layered. The study highlights that strengthening digital skills has the potential to become one of the most effective intervention areas for encouraging business formalization and improving participation in digital economic spaces. In this regard, efforts aimed at enhancing digital capabilities may contribute not only to entrepreneurial growth but also to broader developmental objectives associated with women-led development within the vision of Viksit Bharat@2047.

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