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Political efficacy among rural women: a multidimensional analysis of empowerment, social capital, and institutional engagement

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Introduction: Political efficacy is a key determinant of democratic participation; however, it remains unevenly distributed, particularly among rural women in India. Existing research has largely emphasized sociodemographic predictors, with limited attention to the combined associations of sociocultural, relational, digital, and institutional factors on political efficacy. This study addresses this gap by adopting a multidimensional framework to examine the determinants of political efficacy among rural women in India.

Methods: A quantitative cross-sectional design was employed using data from 394 rural women in Kerala. Data were obtained through a structured questionnaire administered online (Google Forms) and in person (face-to-face). Political efficacy, gender norms, household decision-making power, social capital, digital engagement, and institutional exposure were also assessed. The incremental contribution of the predictors was measured using hierarchical multiple regression analysis.

Results: Sociodemographic variables were significant in the baseline model but no longer significant in the fully adjusted model. In contrast, gender norms and the power to make household decisions were strong and reliable predictors of political efficacy in this study. Social capital and digital engagement contributed additional explanatory power, whereas institutional exposure had a significant independent effect in the final model. The full model accounted for 42% of the variance in political efficacy.

Discussion: The findings indicate that political efficacy is more strongly associated with sociocultural, relational, digital, and institutional factors than with the sociodemographic characteristics included in the analysis. The findings further suggest that gender norms, household agency, social capital, digital engagement, and institutional exposure should be considered together when developing policies and programs to support women's political efficacy.

KEYWORDS

digital engagement, gender norms, household decision-making, institutional exposure, political efficacy, rural women, social capital

Introduction

The notion of political efficacy, or the belief of individuals in their capacity to understand, engage with, and influence politics, is fundamental to democratic theory (Klugman et al., 2015; Lindholm, 2023; Raïq et al., 2025). Higher levels of political efficacy are consistently associated with greater civic participation, responsiveness to governance structures, and sustained engagement in public affairs (Schulz et al., 2010; Oser et al., 1996). However, the distribution of political efficacy is unequal. Persistent inequalities in access, voice, and representation mean that certain groups, especially rural women, continue to experience limited political agency (Feldman et al., 2014; Schmidt et al., 2021).

In rural contexts, women's engagement with political processes is formed by a complex interplay of structural limitations and sociocultural expectations. Limited access to assets, restricted mobility, and entrenched gender norms often restrict opportunities to participate and the confidence to engage politically (Jabali et al., 2025; Sartori et al., 2017; Sokani, 2025). The factors that constrain women's anticipatory political behaviors operate at the material conditions level, but also at the level of perception, shaping how they evaluate their own competence (Fraile and Marinova, 2024). Thus, studying the political efficacy of rural women requires us to understand both the structural realities and their lived experiences.

Existing research has consistently identified socio-demographic factors such as education, age, and income as important correlates of political efficacy. However, the explanatory power of these theories, when used in isolation, appears to be weak. Their effects weaken once more proximate and contextual variables are considered (Koc, 2023; Alscher and Jana, 2025; Lai and Beh, 2025; Wu, 2003). This pattern suggests that political efficacy is associated not only with background characteristics but also with social and institutional contextual factors. Recent studies have placed greater emphasis on socio-cultural and relational aspects, especially gender norms and household decision-making, which affect women's political agency (Guérin et al., 2013; Prillaman, 2023; Onyina et al., 2025; Yu et al., 2023). These factors are associated with perceived legitimacy and the capacity to engage beyond the household, suggesting that political efficacy may be closely related to everyday experiences of power and autonomy within the household. At the community level, social capital and, increasingly, digital engagement represent key pathways through which access to information, networks, and collective interactions can shape political perceptions and engagement (Sadat, 2025; Rees et al., 2026).

In parallel, access to information has become an increasingly salient factor, particularly with the expansion of digital technologies. Digital engagement may be associated with reduced informational barriers, greater exposure to public issues, and additional opportunities for expression and interaction (Tavares et al., 2020; Firmstone and Coleman, 2014; Rispoli and Vannucci, 2025). For women in rural settings, where traditional channels of information may be limited, digital access may be associated with differences in awareness and participation (Raïq et al., 2025; Bai and Lin, 2025). In addition, institutional exposure—through interactions with governance systems and public institutions—may be associated with perceptions of accessibility, responsiveness, and political relevance, which may in turn be associated with political efficacy (Wolak, 2017; Zaiter et al., 2023).

Despite the growing attention to these dimensions, existing research has largely examined them in isolation, with limited integration into a unified analytical framework. Consequently, the combined

and relative influences of these factors on political efficacy remain insufficiently understood, particularly in rural contexts. Against this background, the present study adopts a multidimensional framework to examine political efficacy among rural women, integrating sociodemographic, sociocultural, relational, digital, and institutional dimensions into a single analytical model. This study pursues three objectives: (i) to assess the level of political efficacy among rural women, (ii) to examine the relationships between key explanatory factors and political efficacy, and (iii) to evaluate their relative contributions using a hierarchical regression approach.

Accordingly, we propose four hypotheses. First, socio-demographic characteristics are expected to be associated with political efficacy. Second, gender norms and household decision-making power are expected to exert additional influence beyond sociodemographic factors. Third, social capital and digital engagement are expected to enhance the explanatory power further. Finally, institutional exposure is expected to have an independent effect after controlling for all the preceding variables. By integrating these dimensions within a single model, this study contributes to a more nuanced understanding of political efficacy as a socially embedded, multidimensional construct. This highlights the importance of examining the social, relational, digital, and institutional contexts associated with women's political engagement.

Literature review

Political efficacy and unequal distribution of political agency: Political efficacy has been widely conceptualized as a foundational element of democratic engagement, capturing individuals' beliefs about their ability to understand and influence political processes (Honig et al., 2021; Lane et al., 2021; Punksungka et al., 2025). Empirical research consistently demonstrates that higher political efficacy is associated with increased participation, greater responsiveness to governance structures, and stronger civic engagement (Lindholm, 2023; Oser et al., 1996; Lai and Beh, 2025). However, these associations are not uniformly distributed. Political efficacy is deeply stratified and is associated with broader inequalities embedded within social and institutional structures.

Gender is one of the most persistent axes of stratification. Studies in diverse contexts have shown that women, particularly those in structurally constrained environments, tend to report lower levels of political efficacy (Wolak, 2020; Matthieu et al., 2024). This disparity is not simply a function of individual characteristics but is associated with systemic factors, including restricted access to resources, limited institutional engagement, and normative expectations surrounding gender roles (Preece, 2016). (Fraile and Marinova, 2024). In rural settings, these constraints are often intensified, making political efficacy a particularly relevant lens for understanding women's political positions.

Early models of political efficacy largely emphasized sociodemographic variables such as education, income, and age. Education, in particular, has been treated as a central predictor because it is associated with higher levels of political awareness, cognitive skills, and access to information (Lai and Beh, 2025). (Levy and Zint, 2012). Similarly, income has been linked to resource availability, and age has been associated with accumulated political experience (Brady et al., 1995; Safadi and Lombe, 2014; Santiago, 2023). However, the

explanatory power of these variables has been increasingly questioned. A growing body of research shows that while sociodemographic factors often appear significant in isolation, their effects tend to diminish in multivariate models that incorporate contextual and relational variables (Entwistle et al., 2007; Gálvez-Hernández et al., 2025). This pattern suggests that the associations between sociodemographic characteristics and political efficacy become attenuated after contextual and relational variables are included in the analysis. This suggests that political efficacy is associated not only with individual characteristics but also with the environments and relationships within which individuals are embedded.

Among the factors that have gained prominence in recent scholarship, gender norms occupy a central role. Gender norms are associated with expectations about appropriate roles, behaviors, and spaces for women, often reinforcing a division between the private and public spheres (Onyina et al., 2025; Petesch and Badstue, 2019; Aregu et al., 2018). These norms may be associated with both participation and self-perception, shaping whether women see themselves as legitimate political actors in the long run.

Empirical studies suggest that women holding more egalitarian views are more likely to exhibit higher levels of political efficacy and engagement (Fraile and Marinova, 2024; Wolak, 2020; Reich and Bachl, 2025). However, this relationship is complex. Normative changes do not automatically translate into behavioral changes, particularly when structural constraints persist. This indicates that gender norms operate in interaction with other factors, rather than as stand-alone determinants (Duflo, 2012; Chandramohan et al., 2023).

The issue of intra-household agency is closely linked to gender norms. Household decision-making power has been widely used as an indicator of women's empowerment, reflecting their ability to exercise their voice within the domestic sphere (Acosta et al., 2019; Yu et al., 2023; Kumar et al., 2025). Research suggests that such agency may be associated with greater confidence and negotiation capacity, which may extend to public engagement (Mapapa and Milando, 2023). At the same time, some studies highlight a disconnect between private and public agency, particularly in contexts where external barriers limit women's participation (Hiller and Touré, 2020; Zhang, 2024). This underscores the need to examine household-level empowerment alongside broader enabling conditions.

Social capital has been extensively studied as a mechanism that links individuals to collective life. Through networks of trust, reciprocity, and participation, social capital is associated with information exchange, collective action, and engagement with institutions (Putnam, 1993; Jelili, 2023; Rispoli and Vannucci, 2025). In the context of women's empowerment, group-based participation is associated with increased awareness, mobility, and interaction with governance structures (Kumar et al., 2018; Auchynnikava et al., 2024).

However, the literature reveals important distinctions. Not all forms of social capital are equally empowering for women. Bonding networks may reinforce existing norms and limit exposure to new opportunities, whereas bridging networks can expand access to diverse resources and perspectives (Heras, 2023; Pigg and Crank, 2004; Wesselow, 2023). This suggests that the effect of social capital on political efficacy depends not only on its presence but also on its structure and orientation.

The expansion of digital technologies has introduced new dimensions to the study of political engagement in recent years. Digital platforms can lower barriers to information, facilitate communication, and create alternative spaces for participation (Sadat, 2025;

Koç-Michalska and Lilleker, 2018; Venus et al., 2025). For rural women, digital engagement may be associated with reduced traditional constraints related to mobility and access to services. However, the literature cautions against assuming uniformly positive effects. Digital divides, molded by factors such as literacy, affordability, and social norms, continue to influence how and whether individuals engage with digital tools (Makun et al., 2022; Vassilakopoulou and Hustad, 2021; Martini and Sgambato, 2025). Moreover, access is not necessarily associated with meaningful use (Paton, 2024). This suggests that digital engagement should be understood as a layered process involving not only availability but also capability and agency (Cookson et al., 2023).

Despite its relevance to political efficacy, institutional exposure has received comparatively less attention in the literature. Interactions with institutions—whether through governance bodies, administrative processes, or public service systems—may be associated with perceptions of accessibility and responsiveness (Wolak, 2017; Wichowsky and Moynihan, 2008). Such interactions may be associated with lower uncertainty, greater familiarity, and enhanced confidence in navigating political structures.

In the case of rural women, institutional exposure is especially relevant because of continuing decentralization and local self-governance reforms (Harrington et al., 2023; Kurebwa, 2016; Raghunandan, 2017). These reforms have led to considerable formal participation; however, their perceived efficacy remains uneven. Some studies suggest that exposure alone is insufficient; the quality and inclusiveness of institutional interactions are equally important (Ahmed et al., 2025; Malesky et al., 2014; Rao et al., 2017).

Despite extensive research across these domains, the literature remains fragmented. Most studies emphasize individual factors, such as gender norms, social capital, and digital engagement, in isolation, with little attention to the combined effects (Achuo et al., 2024; Raïq et al., 2025; Wang et al., 2026; Bahagijo et al., 2022). This limited perspective may limit our understanding of how these different dimensions of empowerment and access combine to produce political efficacy. Although political efficacy has been examined among rural women in China (Feldman et al., 2014; Huang, 2018; Syamsu et al., 2025), evidence from India remains limited, particularly studies integrating sociodemographic, sociocultural, relational, digital, and institutional factors within a single analytical framework. This study addresses these gaps by adopting an integrated analytical framework that examines sociodemographic, sociocultural, social, digital, and institutional variables within one hierarchical model. By assessing their incremental and relative contributions, this study seeks to provide a more comprehensive and nuanced understanding of the factors associated with political efficacy among rural women.

Conceptual framework and hypothesis development

The proposed conceptual framework is informed by social cognitive theory (SCT) (Bandura, 1986, 2001), which posits that individuals' beliefs and behaviors develop through the reciprocal interaction of personal, behavioral, and environmental factors. Within this perspective, political efficacy reflects individuals' beliefs about their capability to participate effectively in political processes. Sociocultural factors (e.g., gender norms and household decision-making), together with social capital, digital engagement, and institutional exposure, represent important environmental and experiential conditions that

may be associated with differences in political efficacy among rural women. Accordingly, SCT provides an appropriate theoretical lens for understanding the proposed relationships among the study variables and underpins the conceptual framework presented in this study.

This study adopts a multidimensional framework to examine political efficacy among rural women, conceptualizing it as an outcome associated with the layered and interrelated domains of influence. Rather than treating political efficacy as a direct function of individual background characteristics, the framework positions it as a socially embedded construct associated with interactions between sociodemographic positions, sociocultural norms, relational resources, informational access, and institutional engagement (Punksungka et al., 2025; Burke et al., 2009; Stoker et al., 2024). These domains were introduced sequentially in line with the hierarchical modeling strategy, allowing for an assessment of their incremental and relative contributions.

At the most distal level, sociodemographic characteristics such as age, education, and income are expected to be associated with political efficacy by influencing access to resources, exposure to information, and opportunities for engagement (van Slageren et al., 2026). Education has been linked to increased political awareness and cognitive capacity, whereas income may facilitate access to networks and participation opportunities (Shore, 2020). Age may reflect accumulated experience with social and political institutions. However, as suggested by prior research, the associations between sociodemographic characteristics and political efficacy may become attenuated after contextual variables are included (Burden et al., 2016; Huang, 2018; Nyqvist et al., 2024).

H1: Socio-demographic characteristics are significantly associated with political efficacy among rural women.

Moving beyond background characteristics, the framework emphasizes the role of sociocultural factors, particularly gender norms and intra-household decision-making power. Gender norms are associated with expectations about women's roles and influence whether engagement in public life is perceived as legitimate or attainable (Harris, 2022; Qanti et al., 2021). More egalitarian attitudes are expected to expand perceived possibilities for action (Woo et al., 2022). Similarly, participation in household decision-making reflects a form of agency that may be associated with greater confidence, voice, and the capacity to engage beyond the domestic sphere (Seymour and Peterman, 2018; Yu et al., 2023). These dimensions capture how power and agency are negotiated within everyday social contexts.

H2: More egalitarian sex norms and greater household decision-making power are associated with higher political efficacy, beyond sociodemographic influences.

At the relational level, social capital is conceptualized as a key mechanism through which individuals access support, information, and opportunities for collective engagement. Participation in social networks and community groups may be associated with trust, enhanced awareness, and create pathways for interaction with broader social and political processes (Auchynnika et al., 2024; Kumar et al., 2018; Kur et al., 2025). Digital engagement represents an increasingly important informational resource. Access to digital platforms may be associated with lower informational asymmetries, facilitate communication, and enable exposure to civic and political content (Harris,

2022; Gutiérrez-Aguilar et al., 2024). Together, these factors reflect the ways in which individuals are connected to both social and informational environments.

H3: Higher levels of social capital and digital engagement are associated with higher political efficacy, beyond sociodemographic and sociocultural factors.

Finally, the framework incorporates institutional exposure as a structural dimension of political participation. Interactions with formal institutions, such as local governance bodies, administrative systems, or public programs, may be associated with perceptions of accessibility, responsiveness, and effectiveness (Lillvis, 2017; Adnan et al., 2025; Touchton and Wampler, 2023). Greater exposure is expected to be associated with lower perceived distance from institutions and strengthen the belief that engagement can yield meaningful outcomes. Unlike other predictors, institutional exposure is a direct interface between individuals and the political system, representing a distinct dimension associated with political efficacy.

H4: Greater institutional exposure is associated with higher political efficacy after controlling for sociodemographic, socio-cultural, social, and digital factors.

Taken together, the conceptual framework integrates these domains into a coherent analytical structure in which sociodemographic characteristics form the baseline, and subsequent layers—socio-cultural, relational, informational, and institutional—add depth to the explanation. This layered approach reflects the assumption that political efficacy is associated with multiple interacting dimensions.

Materials and methods

This study employed a quantitative, cross-sectional research design to examine the factors associated with political efficacy among rural women. A cross-sectional approach was considered appropriate for assessing the relationships among multiple sociodemographic, intra-household, and normative factors (gender norms and decision-making power), community-level resources (social capital), digital engagement, and institutional exposure. The design enabled the identification of associations and the evaluation of the relative contribution of different predictor domains using multivariate statistical techniques.

Sample and data collection

This study was conducted on rural women in Kerala, India. A total of 394 women participated in this study. A non-probability purposive sampling approach was employed to recruit participants from rural communities, ensuring the inclusion of respondents from diverse socioeconomic and educational backgrounds.

Data were collected using a structured questionnaire administered through a combination of online and field-based methods. The online survey was conducted using Google Forms, which facilitated access to respondents with digital connections. Face-to-face administration was used to include participants with limited access to digital devices or lower literacy levels. This mixed-mode data collection approach was adopted to enhance sample diversity, reduce the exclusion of less

accessible groups, and improve the overall representativeness of the data within the constraints of the non-probability sampling design.

Participation was voluntary, and respondents were informed of the study's purpose before data collection. Confidentiality and anonymity were maintained throughout the study, and no personally identifiable information was recorded.

Measures

All variables were measured using structured scales with a five-point Likert-type response format ranging from 1 (strongly disagree) to 5 (strongly agree). Composite scores were calculated by summing item responses for each construct; higher scores indicate higher levels of the construct/variable.

Political efficacy, the dependent variable, was measured using an eight-item scale with total scores ranging from 8 to 40. Higher scores reflect a greater perceived ability to understand and influence political processes. The items were based on the traditions of internal and external political efficacy measurement (Niemi et al., 1991; Morrell, 2003) in the literature on political efficacy.

Gender norms were assessed using a five-item scale that captured attitudes toward gender roles. As the items were negatively worded, we reverse-coded the scale so that higher scores reflected more egalitarian orientations. The total scores ranged from 5 to 25. The items were informed by established gender-role attitude measures (García-Cueto et al., 2015).

Household decision-making power was measured using a four-item scale that reflects women's participation in key household decisions. Scores ranged from 4 to 20, with higher values indicating greater intra-household agency. This measure was adapted from the women's empowerment and household decision-making literature, particularly in DHS-oriented approaches (Phan, 2016).

Social capital was assessed using a four-item scale capturing elements of trust, social networks, and community participation. Community-based social capital measurement frameworks informed this construct (Onyx and Bullen, 2000). Digital engagement was evaluated using a four-item component that aligned with our access and use of platforms for information and communication. The items were adapted from the digital skills and digital engagement literature (Van Deursen et al., 2016). Institutional exposure was assessed using a four-item scale measuring respondents' interactions with formal institutions, including governance structures and public services. As no standardized instrument was available for this construct, the scale was

developed specifically for this study based on the literature on women's participation in rural local governance and institutional engagement (Malik and Nayak, 2025). The items captured access to institutional information, participation in institution-based activities, engagement with public officials, and awareness of public policies and services. Responses to the four-item scale ranged from 4 to 20, with higher scores indicating greater institutional exposure. Social capital, digital engagement, and institutional exposure each consisted of four items, yielding total score ranges from 4 to 20.

Socio-demographic variables included age (in years), education level (ordinal categories), and monthly household income (categorized into income brackets), which were treated as control variables in the analysis. Internal consistency reliability was assessed using Cronbach's alpha, and the reliability coefficients for all constructs are presented in Table 1.

Mode of analysis

Data were analyzed using hierarchical multiple regression to examine the incremental contribution of different sets of predictors to political efficacy. This approach was selected to align with the study's theoretical structure, in which variables were conceptualized as operating at different levels, ranging from distal sociodemographic characteristics to more proximal sociocultural, relational, digital, and institutional factors.

As the Institutional Exposure scale was developed specifically for this study, exploratory factor analysis (EFA) using Principal Axis Factoring and corrected item-total correlation analysis were conducted before the main analyses to assess its construct validity and item discrimination. The suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity.

The predictors were entered sequentially into five models. Model 1 included age, educational attainment, and monthly household income as sociodemographic control variables, selected based on their established theoretical and empirical relevance to political efficacy. Other sociodemographic characteristics were collected to describe the study sample. However, they were not included in the hierarchical regression model to maintain parsimony and preserve the analysis's theory-driven structure. Model 2 added socio-cultural variables (gender norms and household decision-making power); Model 3 incorporated social capital; Model 4 added digital engagement; and Model 5 included institutional exposure. This stepwise procedure

TABLE 1 Descriptive statistics and internal consistency reliability of study variables.

Variable	No. of items	Observed range (Min–Max)	Mean	SD	Cronbach's α
Political efficacy	8	8–40	23.86	7.43	0.898
Gender norms	5	5–25	14.85	4.89	0.853
Household decision-making	4	4–20	11.91	3.76	0.781
Institutional exposure	4	4–20	11.96	3.81	0.790
Social capital	4	4–20	11.93	3.67	0.752
Digital engagement	4	4–20	12.00	3.93	0.821

M = mean; SD = standard deviation; α = Cronbach's alpha. All constructs were measured using five-point Likert-type scales, with higher scores indicating higher levels of each construct.

enabled the assessment of both the independent and cumulative contributions of each block, as well as changes in explained variance (ΔR^2).

Before the regression analysis, bivariate correlations were examined to assess the relationships among variables and identify potential multicollinearity. Diagnostic tests were conducted to evaluate the regression assumptions, including collinearity statistics (tolerance and variance inflation factor), independence of errors (Durbin–Watson statistic), residual distribution, and influence diagnostics (Cook's distance and leverage values). All statistical analyses were conducted using standard significance thresholds ($p < 0.05$, $p < 0.01$, and $p < 0.001$).

Results

This section presents the empirical findings in a structured sequence, moving from descriptive statistics to multivariate analysis. The results begin with the socio-demographic profile of the respondents, followed by descriptive statistics and the reliability of the study constructs. Bivariate relationships were then examined using correlation analysis. Hierarchical multiple regression was employed as the core analytical component to assess the incremental contribution of the predictor blocks to political efficacy. Finally, regression diagnostics and hypothesis-testing results were reported to confirm the model's robustness and interpretability.

Socio-demographic characteristics of respondents

The socio-demographic profile of the respondents helps in understanding the study and fluctuations in political efficacy. These attributes provide a framework for investigating the extent to which structural and contextual components influence women's access to assets, decision-making arenas, and political participation in the study area. The socio-demographic characteristics of the respondents are shown in Table 2. The mean age of the participants was 38.6 years ($SD = 9.4$), indicating that the sample predominantly consisted of women in their middle adult life stage, a period often associated with intensified household responsibilities and greater engagement in community and governance structures.

Educational attainment was concentrated at the secondary level (37.1%), followed by higher secondary education (25.9%) and graduate-level education or above (19.3%). Only 4.6% of respondents had no formal education, indicating that the sample had relatively high educational attainment.

Marital status was strongly skewed toward married respondents (70.1%), reflecting the dominant family structure in the study context. A smaller proportion of women who were widowed (11.7%), single (10.7%), or divorced/separated (7.6%) reported some flexibility in household roles and responsibilities, thereby affecting autonomy and decision-making.

Occupational patterns reveal that a large proportion of respondents are homemakers (42.6%), followed by wage laborers (23.4%) and self-employed (16.2%). The relatively small share of salaried employment (12.2%) suggests limited formal-sector participation,

TABLE 2 Socio-demographic characteristics of respondents ($N = 394$).

Variable	Category	<i>n</i>	%
Age (years)	Mean $\pm$ SD	38.6 $\pm$ 9.4	—
Education level	No formal education	18	4.6
	Primary	52	13.2
	Secondary	146	37.1
	Higher secondary	102	25.9
	Graduate and above	76	19.3
Marital status	Single	42	10.7
	Married	276	70.1
	Widowed	46	11.7
	Divorced/Separated	30	7.6
Occupation	Homemaker	168	42.6
	Wage labour	92	23.4
	Self-employed	64	16.2
	Salaried	48	12.2
	Others	22	5.6
Monthly household income (₹)	Below 10,000	104	26.4
	10,000–20,000	126	32.0
	20,001–35,000	88	22.3
	35,001–50,000	48	12.2
	Above 50,000	28	7.1
Household size	Mean $\pm$ SD	4.3 $\pm$ 1.6	—
Children (<15 years)	Mean $\pm$ SD	1.8 $\pm$ 1.1	—
Smartphone access	No	36	9.1
	Yes	358	90.9
Political family background	No	302	76.6
	Yes	92	23.4

Values are presented as frequencies (*n*) and percentages (%) for categorical variables and as means $\pm$ standard deviation ($M \pm SD$) for continuous variables. Percentages may not sum to 100 due to rounding. Monthly household income is reported in Indian Rupees (₹).

indicating the predominance of informal or unpaid roles in the rural economy.

Most households fall within the low- and lower-middle-income distribution patterns. In particular, 26.4% earned <₹10,000 per month, while 32.0% earned between ₹10,000 and ₹20,000 per month. Thus, most of the participants had limited economic resources.

The analysis of household characteristics indicates a mean household size of 4.3 members ($SD = 1.6$) and a mean of 1.8 children under 15 years ($SD = 1.1$). This shows that the households are moderately sized with current dependents present. These factors may shape both time availability and engagement in activities beyond the household.

Despite these structural constraints, access to digital resources appears to be fairly high, with 90.9% of respondents having access to a smartphone. In contrast, only 23.4% reported a political family background, indicating that direct exposure to formal political processes within the family context was relatively limited.

Taken together, the sociodemographic profile reflects a population characterized by moderate educational attainment, limited formal employment, constrained economic resources, and substantial household responsibilities, alongside high levels of digital access and relatively low levels of direct political socialization. This combination provides an important contextual foundation for interpreting the subsequent analyses of political efficacy.

Descriptive statistics and reliability of study constructs

Assessing descriptive statistics and measurement reliability is critical for ensuring the quality and interpretability of the study variables. This analysis provides an overview of central tendencies and variability and confirms that the constructs are measured consistently and are suitable for subsequent inferential analyses.

Table 1 presents the descriptive statistics and internal consistency estimates for the study constructs. Political efficacy exhibited a moderate mean level ($M = 23.86$, $SD = 7.43$), suggesting that respondents reported a mid-range perception of their political competence.

The mean scores of household decision-making, institutional exposure, social capital, and digital engagement were relatively similar across the explanatory variables. Moreover, the mean scores for these variables ranged from 11.91 to 12.00. The clustering of responses around the midpoint suggests that respondents had a moderate level of empowerment and social connectedness, as well as engagement with institutional and informational resources. The gender norms scale ($M = 14.85$, $SD = 4.89$) was reverse-coded, indicating that the responses were moderately egalitarian.

The variability observed across constructs, as reflected in the standard deviations, suggests sufficient dispersion in the responses to support subsequent inferential analysis. Political efficacy and digital engagement, in particular, displayed relatively high variability, indicating differences in perceived capability and access to digital resources within the sample.

All constructs demonstrated acceptable to excellent internal consistency. Cronbach's alpha values ranged from 0.752 (social capital) to 0.898 (political efficacy), exceeding the conventional threshold of 0.70. These findings confirm that the measurement scales exhibit satisfactory reliability and are appropriate for use in correlation and regression analysis.

Because the Institutional Exposure scale was developed specifically for this study, its psychometric properties were further evaluated using exploratory factor analysis (EFA). As presented in Table 3, the

Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.790, and Bartlett's test of sphericity was statistically significant ($\chi^2(6) = 427.845$, $p < 0.001$), indicating that the data were suitable for factor analysis. The EFA yielded a single-factor solution with an eigenvalue of 2.451, accounting for 61.28% of the total variance. The corrected item–total correlations ranged from 0.585 to 0.621, while factor loadings ranged from 0.773 to 0.801, supporting the construct validity and unidimensionality of the Institutional Exposure scale.

Correlation analysis

Examining bivariate correlations is an important preliminary step in identifying the patterns and strengths of relationships among the study variables. This analysis helps establish initial associations with political efficacy and assess potential multicollinearity before multivariate modeling. The bivariate correlations among the study variables are presented in Table 4. Political efficacy was negatively associated with age ($r = -0.160$, $p < 0.01$), indicating that younger respondents reported higher levels of political efficacy. In contrast, education ($r = 0.294$, $p < 0.001$) and monthly household income ($r = 0.163$, $p < 0.01$) showed positive associations with political efficacy, suggesting that higher socioeconomic status is modestly associated with greater perceived political competence.

More substantively, political efficacy showed consistent, statistically significant positive relationships with all key explanatory variables. The strongest association was observed with gender norms ($r = 0.443$, $p < 0.001$), followed by institutional exposure ($r = 0.421$, $p < 0.001$), household decision-making power ($r = 0.402$, $p < 0.001$), social capital ($r = 0.398$, $p < 0.001$), and digital engagement ($r = 0.381$, $p < 0.001$). This pattern indicates that both attitudinal factors (e.g., gender norms) and access-related factors (e.g., institutional exposure and digital engagement) are closely linked to variations in political efficacy.

The intercorrelations among the independent variables were generally moderate and aligned with theoretical expectations. Education was positively associated with gender norms, household decision-making, social capital, digital engagement, and institutional exposure, suggesting that educational attainment may be linked to broader empowerment and access processes. Notably, digital engagement was strongly associated with institutional exposure ($r = 0.391$, $p < 0.001$), suggesting a potential link between access to information and institutional interaction.

Notably, none of the correlation coefficients approached levels indicative of multicollinearity ($r \geq 0.70$), supporting the inclusion

TABLE 3 Psychometric evaluation of the institutional exposure scale.

Institutional exposure item	Item–total correlation	Factor loading
IE1. Receives information about government programs and public services through local institutions.	0.585	0.773
IE2. Participates in meetings, awareness programs, or activities organized by the local government or public institutions.	0.591	0.778
IE3. They feel comfortable approaching local institutions for information or assistance.	0.592	0.779
IE4. Institutional interactions improve understanding of public policies and civic responsibilities	0.621	0.801

Exploratory factor analysis was performed using Principal Axis Factoring. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.790, and Bartlett's test of sphericity was significant ($\chi^2(6) = 427.845$, $p < 0.001$), confirming the suitability of the data for factor analysis. One factor with an eigenvalue of 2.451 was extracted, explaining 61.28% of the total variance. Corrected item–total correlations ranged from 0.585 to 0.621, and factor loadings ranged from 0.773 to 0.801, supporting the construct validity and unidimensionality of the Institutional Exposure scale. Internal consistency reliability (Cronbach's $\alpha = 0.790$) is reported in Table 1.

TABLE 4 Correlation matrix of study variables.

Variable	1	2	3	4	5	6	7	8	9
1. Age	1								
2. Education	−0.058	1							
3. Monthly income	−0.070	0.076	1						
4. Gender norms	−0.209***	0.417***	0.181***	1					
5. Household decision-making	−0.102*	0.257***	0.194***	0.292***	1				
6. Social capital	−0.079	0.213***	0.162**	0.230***	0.247***	1			
7. Digital engagement	−0.072	0.221***	0.184***	0.310***	0.258***	0.237***	1		
8. Institutional exposure	−0.088	0.144**	0.094	0.151**	0.264***	0.259***	0.391***	1	
9. Political efficacy	−0.160**	0.294***	0.163**	0.443***	0.402***	0.398***	0.381***	0.421***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

of these variables in subsequent regression models. Overall, the correlation pattern provides preliminary empirical support for the hypothesized relationships, indicating that the predictors capture related but distinct dimensions of women's social and political positions.

Hierarchical regression analysis

This analysis was used to examine the incremental effects of sociodemographic characteristics; intra-household and normative factors (gender norms and decision-making power); community-level resources (social capital); digital engagement; and institutional exposure on rural women's political efficacy. Variables were entered sequentially in theoretically defined blocks, enabling a structured assessment of how each domain contributed to explaining variations in political efficacy.

As shown in Table 5, Model 1, which includes sociodemographic variables, explains a modest proportion of the variance in political efficacy. Age was negatively associated with political efficacy, whereas education and monthly household income were positive predictors, indicating that higher socioeconomic status was initially associated with greater perceived political competence.

The inclusion of gender norms and household decision-making in Model 2 substantially increased the model's strength. Both variables emerged as strong positive predictors, and their entry reduced the influence of sociodemographic factors, suggesting that intra-household agency and gender attitudes may account for a significant portion of the variance previously attributed to background characteristics.

In Model 3, social capital added explanatory power and remained a significant predictor of political efficacy, alongside gender norms and household decision-making. This indicates that relational resources and social embeddedness play a meaningful role in shaping political efficacy beyond individual and household characteristics.

Adding digital engagement to Model 4 further strengthened it. Digital engagement was significantly positively associated with political efficacy, highlighting the role of informational access and digital connectivity in enhancing awareness and participation-related capacities.

In the final model (Model 5), institutional exposure emerged as a significant predictor and one of the strongest contributors. In this fully specified model, institutional exposure ($\beta = 0.215$) and gender norms ($\beta = 0.213$) exhibited the largest effects, followed by social capital ($\beta = 0.202$) and digital engagement ($\beta = 0.174$). Household

decision-making power remained significant, although the effect size was comparatively smaller.

Notably, the sociodemographic variables (age, education, and income) were no longer significant in the final model. This pattern suggests that the associations between sociodemographic characteristics and political efficacy become attenuated after the inclusion of more proximal contextual factors, including empowerment, social connectedness, access to information, and engagement with institutional structures. The results indicate stronger associations between political efficacy and socio-cultural, relational, digital, and institutional factors than with socio-demographic characteristics alone, underscoring the multidimensional nature of women's political engagement.

The model fit statistics for the hierarchical regression are presented in Table 6. The stepwise inclusion of predictor blocks resulted in a consistent and statistically significant improvement in the model explanatory power across all stages.

Model 1, which incorporates sociodemographic variables, accounts for 12.4% of the total variance in political efficacy. The addition of sociocultural variables in Model 2 resulted in a significant increase in explained variance ($\Delta R^2 = 0.158$, $p < 0.001$), bringing the total explained variance to 28.2%. This represents the largest incremental gain across all models, indicating the strong explanatory role of gender norms and household decision-making power.

The inclusion of social capital in Model 3 produced a further significant improvement ($\Delta R^2 = 0.047$, $p < 0.001$), followed by an additional increase with the introduction of digital engagement in Model 4 ($\Delta R^2 = 0.055$, $p < 0.001$). The results show that political efficacy goes beyond social and cultural drivers; it has both relational and informational value.

In the last phase, another 3.6% increase in explained variance ($\Delta R^2 = 0.036$, $p < 0.001$) was attributable to institutional exposure, resulting in an R^2 of 0.420 (Adjusted $R^2 = 0.408$). The most recent step was arguably smaller in magnitude than the previous steps. Still, it was statistically significant, implying that institutional interaction is independently associated with political efficacy.

Across all models, the change in F-statistics (ΔF) was statistically significant, confirming that each successive block of variables provided meaningful and additional explanatory value. Overall, the results demonstrate that the inclusion of socio-cultural, social, digital, and institutional variables substantially enhances the model's explanatory power beyond socio-demographic characteristics alone.

TABLE 5 Hierarchical regression models predicting political efficacy.

Predictor	Model 1 B (SE)	Model 1 β	Model 2 B (SE)	Model 2 β	Model 3 B (SE)	Model 3 β	Model 4 B (SE)	Model 4 β	Model 5 B (SE)	Model 5 β
Age	-0.116** (0.041)	-0.135	-0.054 (0.038)	-0.063	-0.052 (0.037)	-0.061	-0.050 (0.035)	-0.058	-0.041 (0.034)	-0.048
Education	1.856*** (0.326)	0.275	0.659* (0.321)	0.098	0.548 (0.312)	0.081	0.339 (0.301)	0.050	0.324 (0.292)	0.048
Monthly income	0.817** (0.293)	0.129	0.418 (0.271)	0.066	0.413 (0.262)	0.065	0.085 (0.257)	0.013	0.127 (0.249)	0.020
Gender norms	—	—	0.440*** (0.077)	0.289	0.358*** (0.076)	0.235	0.303*** (0.074)	0.199	0.325*** (0.072)	0.213
Household decision-making	—	—	0.512*** (0.091)	0.259	0.428*** (0.090)	0.216	0.365*** (0.088)	0.184	0.304*** (0.086)	0.153
Social capital	—	—	—	—	0.475*** (0.090)	0.235	0.503*** (0.086)	0.248	0.410*** (0.087)	0.202
Digital engagement	—	—	—	—	—	—	0.477*** (0.081)	0.252	0.330*** (0.083)	0.174
Institutional exposure	—	—	—	—	—	—	—	—	0.419*** (0.086)	0.215
Constant	20.291*** (2.103)	—	10.163*** (2.190)	—	7.025** (2.223)	—	3.899 (2.208)	—	1.767 (2.196)	—

B = unstandardized coefficient, SE = standard error, and β = standardized beta coefficient. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 6 Model summary for hierarchical regression predicting political efficacy.

Model	Predictors entered	R	R ²	Adjusted R ²	ΔR^2	F	ΔF	df for ΔF	p for ΔF
Model 1	Age, education, monthly household income	0.353	0.124	0.118	0.124	18.457***	18.457***	(3, 390)	<0.001
Model 2	+ Gender norms, Household decision-making power	0.531	0.282	0.273	0.158	30.499***	42.648***	(2, 388)	<0.001
Model 3	+ Social capital	0.574	0.329	0.319	0.047	31.682***	27.274***	(1, 387)	<0.001
Model 4	+ Digital engagement	0.620	0.384	0.373	0.055	34.388***	34.279***	(1, 386)	<0.001
Model 5	+ Institutional exposure	0.648	0.420	0.408	0.036	34.806***	23.623***	(1, 385)	<0.001

R² = coefficient of determination; ΔR^2 = change in explained variance. The final model explained 42.0% of the variance in political efficacy. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The collinearity statistics for the predictors included in the final regression model are presented in Table 7. All tolerance values exceeded the recommended threshold of 0.10, and the variance inflation factor (VIF) values ranged from 1.053 to 1.456, remaining well below conventional cut-off levels. These results indicate that multicollinearity is not a concern in the model and that the predictors contribute independently to explaining political efficacy. The absence of collinearity issues supports the stability and interpretability of the regression estimates.

The regression diagnostics for the final model are presented in Tables 7, 8. Collinearity statistics indicated no multicollinearity concerns, with all VIF values well below the acceptable thresholds.

Residual diagnostics further confirmed that the assumptions of multiple regression were satisfied.

The Durbin-Watson statistic (1.966) suggests that the residuals are independent. The standardized and studentized residuals fell within the acceptable ranges, indicating the absence of problematic outliers. Additionally, Cook's distance and leverage values did not indicate the presence of influential observations in the model. The Shapiro-Wilk test supported the assumption of normality, with the residuals approximating a normal distribution.

Taken together, these findings indicate that the regression model is statistically stable, with no violations of the key assumptions, supporting the validity and reliability of the estimated relationships.

TABLE 7 Collinearity statistics for predictors in the final regression model.

Predictor	Tolerance	VIF
Age	0.950	1.053
Education	0.795	1.257
Monthly household income	0.917	1.090
Gender norms	0.687	1.456
Household decision-making power	0.796	1.256
Social capital	0.816	1.226
Digital engagement	0.747	1.338
Institutional exposure	0.773	1.293

VIF = variance inflation factor. Tolerance values above 0.10 and VIF values below 5 indicate no multicollinearity.

As shown in Table 9, the hypothesis testing results reveal a clear hierarchy in the explanatory relevance of the variables. Hypothesis 1 received partial support, as sociodemographic characteristics were significant only in the baseline model and lost explanatory power when higher-order variables were introduced. This pattern suggests that background characteristics do not exert a stable, direct influence on political efficacy when empowerment-related and structural factors are taken into account.

In contrast, Hypotheses 2, 3, and 4 were fully supported. Gender norms and household decision-making power remained significant across successive models, underscoring the importance of sociocultural agency. Similarly, social capital and digital engagement made independent contributions beyond the earlier predictor blocks, indicating that both social embeddedness and access to information matter for political efficacy. Institutional exposure also retained a significant net effect in the final model, confirming that contact with institutional structures constitutes a distinct factor positively associated with political efficacy. Collectively, these findings reinforce the central argument of the study: that political efficacy among rural women is more strongly associated with a broader ecology of empowerment, connectivity, and institutional access than with static sociodemographic positions.

Discussion

This study examined the determinants of political efficacy among rural women using an integrated analytical framework that combines sociodemographic, sociocultural, social capital, digital engagement, and institutional exposure. The findings reveal a clear and consistent pattern: political efficacy appears to be associated less with background characteristics alone and more with a set of interrelated empowerment processes that operate across household, community, informational, and institutional contexts.

A key finding of the study was that socio-demographic variables had limited and unstable roles. Although age, education, and income were significant in the baseline model, their effects diminished and became non-significant once socio-cultural, social capital, digital engagement, and institutional factors were introduced. This pattern suggests that the associations between socio-demographic

TABLE 8 Residual and influence diagnostics for the final regression model.

Diagnostic indicator	Value	Interpretation
Durbin-Watson	1.966	Residual independence acceptable
Standardized residuals	−2.445 to 2.889	Within acceptable range
Studentized residuals	−2.461 to 2.917	No serious outlier problem
Maximum Cook's distance	0.025	No influential case concern
Maximum leverage	0.060	No excessive leverage detected
Mean leverage	0.023	Acceptable for model size
Shapiro-Wilk W	0.993	Residuals approximately normal
Shapiro-Wilk p	0.060	Normality assumption acceptable

Values indicate that all key assumptions of multiple regression were adequately met.

characteristics and political efficacy became attenuated after the inclusion of socio-cultural, social capital, digital engagement, and institutional variables. In other words, the findings suggest that education and income may be associated with higher levels of political efficacy, potentially because they provide greater access to resources (Brady et al., 1995; Koc, 2023; Lee, 2024; Shore, 2020). A growing body of literature casts doubt on the sufficiency of socio-demographic explanations of political attitudes and highlights the relevance of context-specific pathways (Zakayo et al., 2025) context-specific pathways (Fehser et al., 2025).

In contrast, socio-cultural factors, particularly gender norms and household decision-making power, emerged as strong and consistent predictors across models. The significance of gender norms underscores the importance of attitudinal orientation in shaping women's political self-perceptions. Women who endorse more egalitarian views are more likely to perceive themselves as capable of engaging in political processes. This supports the argument that political efficacy is partly constructed through internalized norms about legitimacy and role expectations (Punksungka et al., 2025; Matthieu et al., 2024; Wolak, 2017). Simultaneously, the effect of household decision-making highlights the role of intra-household agency. Participation in domestic decision-making may be associated with greater confidence, voice, and a sense of control, which may extend beyond the household into the public sphere (Kurebwa, 2016; Yu et al., 2023; Zakayo et al., 2025).

These findings suggest that the private and public dimensions of agency are closely interconnected. Rather than viewing the household and political domains as separate spheres, the results indicate that household decision-making agency may be associated with broader political engagement. This reinforces the perspective that conceptualizes empowerment as a cumulative and contextually embedded process rather than a domain-specific outcome (Phan, 2016; Mapapa and Milando, 2023).

At the relational level, social capital was found to make a significant and independent contribution to political efficacy. This highlights the importance of social embeddedness and collective interaction in relation to political perceptions. Participation in networks and community groups may provide informational resources as well as social

TABLE 9 Summary of hypothesis testing.

Hypothesis	Statement	Empirical finding	Decision
H1	Socio-demographic characteristics are significantly associated with political efficacy among rural women in Kerala.	In Model 1, age ($B = -0.116, p < 0.01$), education ($B = 1.856, p < 0.001$), and monthly household income ($B = 0.817, p < 0.01$) were significant predictors of the dependent variable. However, these effects became non-significant in the final model after the addition of socio-cultural, social, digital, and institutional predictors.	Partially supported
H2	More egalitarian gender norms and greater household decision-making power are associated with higher political efficacy beyond socio-demographic influences.	In Model 2, both gender norms ($B = 0.440, p < 0.001$) and household decision-making power ($B = 0.512, p < 0.001$) significantly predicted political efficacy. Both remained significant in the final models.	Supported
H3	Higher levels of social capital and digital engagement are associated with higher political efficacy, beyond socio-demographic and socio-cultural factors.	Social capital significantly improved the model in Model 3 ($B = 0.475, p < 0.001$), and digital engagement did so in Model 4 ($B = 0.477, p < 0.001$). Both remained significant in the final models.	Supported
H4	Greater institutional exposure is associated with higher political efficacy after controlling for socio-demographic, socio-cultural, social, and digital factors.	Institutional exposure made a significant independent contribution to Model 5 ($B = 0.419, p < 0.001$) and remained significant in the final model.	Supported

validation and support, which may be associated with greater confidence in engaging with the political system (Auchynnika et al., 2024; Nyqvist et al., 2024; Wang et al., 2026; Pattie, 2022). However, the effect size suggests that social capital operates alongside, rather than independently of, other factors, such as norms and institutional exposure, indicating a layered and interconnected process.

The role of digital engagement further extends this relational dimension into the informational sphere. The positive association between digital engagement and political efficacy suggests that access to digital platforms may be associated with greater awareness, increased exposure to public issues, and more opportunities for expression (Liu and Han, 2025; Harris et al., 2022). In rural contexts, where traditional channels of information may be limited, digital access may be associated with greater opportunities for information access and political engagement (Bai and Lin, 2025). However, the relatively moderate effect size suggests that digital engagement is associated with an enabling rather than a standalone role, and that its relationship to political efficacy is likely contingent on interactions with social networks and institutional access.

One of the most notable findings of the study is the strong and independent effect of institutional exposure. Even after controlling for all other variables, institutional exposure remained a significant predictor of political efficacy and emerged as one of the strongest contributors in the final model. This finding highlights the association between direct interaction with formal systems and perceptions of political agency. Exposure to institutions may be associated with lower perceived barriers, greater familiarity with institutional procedures, and stronger perceptions of accessibility and responsiveness (Bowler and Donovan, 2002; Alscher and Jana, 2025; Achuo et al., 2024).

This result has important implications for understanding the limits of participation-focused interventions. While increasing opportunities for formal participation is necessary, the findings suggest that the quality and frequency of interactions with institutions are equally critical. Political efficacy appears to be positively associated not only with the existence of institutional structures but also with meaningful engagement with them (Sánchez-Soriano et al., 2024; Xiao et al., 2025).

The findings support a multidimensional understanding of political efficacy as a product of interacting domains. Socio-cultural, relational, digital, and institutional factors each contribute to the outcome; however, their effects are not additive in a simple sense. Rather, they appear to be jointly associated with political efficacy and may represent overlapping dimensions of women's social and institutional experiences. For instance, digital engagement may be associated with greater access to institutional information, whereas social capital may facilitate or be associated with greater opportunities for engagement with institutional spaces. Similarly, gender norms and household agency may be associated with differences in how women interpret and respond to these opportunities. This study contributes to the literature by demonstrating that political efficacy is best understood as a contextually embedded outcome associated with interacting domains of empowerment, rather than as a direct function of socio-demographic position alone. By integrating intra-household agency, social capital, digital engagement, and institutional exposure within a single analytical model, the study advances a more comprehensive framework for understanding women's political engagement.

Implications

These findings have important implications for policies and practices aimed at strengthening women's political agency. A key insight is that political efficacy is not fully explained by sociodemographic characteristics alone. While improvements in education and income remain important, the findings suggest that socio-cultural and institutional conditions should also be considered when seeking to support women's political agency (Duflo, 2012; Lupien, 2022).

The observed associations between gender norms and household decision-making power suggest that initiatives aimed at women's political empowerment may benefit from considering experiences in the private sphere. Interventions that promote intra-household agency and challenge restrictive gender norms may be associated with broader public engagement; however, this relationship should be confirmed through longitudinal or intervention-based research (Bargain et al., 2019; Hiller and Touré, 2020). This suggests the need to integrate

gender-transformative approaches into community development and governance initiatives rather than treating political participation as an exclusively institutional outcome (Amandaria et al., 2026; Goyal, 2023).

At the institutional level, the findings highlight the importance of meaningful engagement over mere access. Expanding formal participation opportunities is insufficient unless interactions with governance structures are accessible, responsive, and sustained (Levac and Gillis, 2025). Facilitating regular engagement through local forums, service platforms, and participatory mechanisms may increase familiarity with institutional procedures and may be associated with stronger perceptions of political agency (Sadat, 2025; Sánchez-Soriano et al., 2024).

Community-level processes may be important. The significance of social capital suggests that collective spaces, such as self-help groups and local associations, can function as platforms for building confidence, sharing information, and fostering political awareness (Knox et al., 2025; Xiao et al., 2025). However, the effectiveness of such interventions depends on the quality of the interaction and its linkage to institutional systems, which may facilitate the connection between social networks and political capability (Raïq et al., 2025).

The role of digital engagement underscores the growing importance of access to information. Digital platforms may provide greater opportunities for awareness and participation, particularly in rural contexts (Liu and Han, 2025; Zhang and Huo, 2026). However, access alone is insufficient. Policies must prioritize digital literacy and meaningful engagement, supporting the use of digital inclusion in ways that may be associated with greater civic capability (Bai and Lin, 2025; Fadilla and Rahmawati, 2025). Importantly, digital and institutional pathways should be integrated to create complementary rather than parallel forms of engagement (Sadat, 2025).

Taken together, these findings emphasize the need for coordinated and multidimensional approaches to empowerment. The findings suggest that coordinated approaches addressing norms, agency, social networks, information access, and institutional engagement may provide a useful framework for supporting women's political efficacy (McClendon et al., 2025). From a research perspective, this study highlights the importance of moving beyond single-domain explanations and adopting an integrated analytical framework. Future research should examine the interactions between these dimensions more explicitly, particularly through longitudinal and mixed-methods designs that better capture how political efficacy changes over time. The implications of this study extend beyond the specific context of rural women in Kerala, India. They point to a broader understanding of political efficacy as an outcome deeply embedded in social, relational, and institutional environments. Therefore, policies and programs seeking to support women's political efficacy should consider the interconnected social, relational, digital, and institutional conditions that shape women's political engagement.

Limitations and future research directions

This study has several limitations that should be considered. First, the cross-sectional design limits causal interpretation, as the observed relationships reflect associations rather than temporal or directional effects. Second, the use of non-probability purposive sampling restricts the generalizability of the findings beyond the study context. Third, reliance on self-reported measures collected from the same respondents at a single point in time may introduce response biases and common method variance, particularly for socially sensitive

constructs such as gender norms and decision-making power. Although structured measures, anonymous participation, and standardized data collection procedures were employed to reduce response bias, the possibility of residual common method variance cannot be excluded. In addition, measuring complex constructs with brief scales may not fully capture their multidimensional nature. Furthermore, the study was conducted exclusively among rural women in Kerala, a state characterized by relatively high female literacy, human development, and institutional development compared with many other regions of India. These contextual characteristics may influence the observed relationships and limit the transferability of the findings to rural populations in states with different socioeconomic and institutional conditions. Future research should address these limitations by employing longitudinal or experimental designs to establish causal pathways. Future studies could also use multi-source data, longitudinal designs, or mixed-methods approaches to minimize potential common method bias while providing deeper insights into the mechanisms underlying political efficacy, particularly regarding household dynamics and institutional interactions. The use of probability-based sampling and replication of this study across other Indian states with diverse structural and developmental contexts would enhance generalizability. Further research is also needed to examine the mediating and moderating relationships among variables and to develop more nuanced measures of social capital, digital engagement, and institutional exposure.

Conclusion

This study provides a comprehensive examination of political efficacy among rural women by moving beyond conventional sociodemographic explanations and adopting a multidimensional framework. The findings demonstrate that political efficacy is associated not only with background characteristics such as age, education, and income, but more importantly, with a set of interconnected factors operating across the socio-cultural, relational, digital, and institutional domains. In particular, gender norms and household decision-making power are strongly associated with women's political agency.

Meanwhile, the roles of social capital, digital engagement, and institutional exposure underscore that political efficacy is embedded within broader systems of connectivity, access to information, and interaction with governance structures. The diminishing significance of sociodemographic variables in the final model further reinforces the argument that political efficacy is better understood as a socially constructed and contextually mediated outcome.

By integrating these dimensions within a single analytical model, this study contributes to a nuanced understanding of how political efficacy develops among rural women. It also highlights the need for policy and research approaches that address the interconnected conditions shaping women's political participation rather than focusing on isolated determinants.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Marian College Kuttikkanam (MCKA/IERB/030326). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

AK: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. NV: Formal analysis, Investigation, Validation, Writing – original draft, Writing – review & editing. MR: Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. JB: Data curation, Investigation, Validation, Writing – original draft, Writing – review & editing. KS: Data curation, Investigation, Supervision, Writing – original draft, Writing – review & editing. SP: Formal analysis, Software, Validation, Writing – original draft, Writing – review & editing.

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The author(s) declared that Generative AI was used in the creation of this manuscript. Grammarly and paper pal were used to improve the grammar, spelling, and readability of the manuscript. The authors played a central role in the conception, data analysis, interpretation of results, and writing of the manuscript. The authors take overall responsibility for the contents of the manuscript.

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