

Ecosystem variables associated with a proxy of cultural and social norms in entrepreneurship: women's perspectives from the Global South

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Abstract

Purpose – This study aims to analyze how entrepreneurial ecosystem variables are associated with variations in a proxy measure of cultural and social norms, interpreted from women's perspectives in the Global South.

Design/methodology/approach – We used data from the Global Entrepreneurship Monitor (GEM) expert survey for the period 2017–2021, incorporating the perceptions of 764 female experts. A composite index of culture and social norms, derived from the GEM framework, was constructed as the dependent variable. The modeling strategy adopted a sequential analytical approach. First, an ordinary least squares regression model with stepwise variable selection was estimated to identify significant predictors. Subsequently, a multivariate mixed-effects model was applied to capture variations across countries and the educational levels of female experts.

Findings – The study shows that several enabling conditions of the entrepreneurial ecosystem are positively associated with a more favorable cultural orientation toward entrepreneurship from the perspective of women in the Global South. The coexistence of inclusive public policies, educational opportunities and technological resources corresponds to ecosystems where entrepreneurship is perceived as more legitimate and socially accepted. In contrast, certain government interventions, such as subsidies and overly bureaucratic procedures, display weaker or negative associations.

Originality/value – This study offers a novel contribution by analyzing culture and social norms as dynamic and relational outcomes of the entrepreneurial ecosystem, rather than as static contextual factors. The research broadens the understanding of how enabling conditions within entrepreneurial ecosystems are associated with women's perceptions of cultural and social norms, providing insights from a region that remains underrepresented in entrepreneurship scholarship.

Keywords Ecosystem, Entrepreneurial culture, Social norms, Women's entrepreneurship, Global south

Paper type Research article

Introduction

Culture and social norms are regarded as an enabling condition within the entrepreneurial ecosystem (GEM, 2025; Stam and Van De Ven, 2021), because they shape the framework of values, beliefs, attitudes, and behaviors (Barrero *et al.*, 2024) that directly influence society's perception of entrepreneurship and individuals' willingness to take risks and innovate (Brownell *et al.*, 2025; Canestrino *et al.*, 2020; Davidsson, 1995). In this sense, an entrepreneurial culture is associated with the social acceptance of entrepreneurial initiative, a lower stigmatization of failure, and greater perceived legitimacy of entrepreneurs as agents of transformation; taken together, these factors facilitate the formation of support networks, foster cooperation among ecosystem actors, and enhance the transfer of knowledge and resources. That said, culture and social norms not only influence personality and individual motivations, but also bear on national economic development and on organizations' capacity to innovate, adapt, and grow sustainably (Doan, 2022; Fritsch and Wyrwich, 2017).

However, it must be acknowledged that culture and social norms can constitute a significant barrier that constrains entrepreneurial opportunities, a phenomenon that is more pronounced among women in the so-called Global South. In societies where patriarchal



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structures prevail, collective values and beliefs assign women traditional roles associated with caregiving and the family (Mousa *et al.*, 2024; Wiig *et al.*, 2024), while privileging men as leaders, breadwinners, and economic agents (Stoker *et al.*, 2024). This sociocultural framework reinforces stereotypes that associate entrepreneurship with masculine attributes such as risk-taking, competitiveness, and autonomy (Wiig *et al.*, 2024), thereby creating a context in which women face greater difficulties integrating into business networks (He *et al.*, 2019)—typically male-dominated—and accessing critical resources such as finance, training, and mentoring (Mamabolo and Lekoko, 2021). Moreover, family expectations and social pressures constrain women's participation in the labor market and in decision-making arenas, reducing their self-efficacy and visibility within the entrepreneurial ecosystem (Wiig *et al.*, 2024). These cultural and normative barriers not only restrict individual aspirations but also perpetuate structural inequalities that hinder the consolidation of an inclusive and equitable entrepreneurial ecosystem in the Global South.

Although culture and social norms have been extensively examined through theoretical lenses and conceptual frameworks related to entrepreneurship—such as the Theory of Planned Behavior, Hofstede's Cultural Dimensions, Institutional Theory, Social Role Theory, and Bandura's Social Cognitive Theory—these approaches have primarily focused on explaining individual entrepreneurial intentions, the influence of stereotypes, or the relationship between cultural values and attitudes toward new venture creation. Nevertheless, a gap remains in analyzing culture and social norms through the lens of entrepreneurial ecosystem theory, which limits understanding of how this enabling condition interacts with other ecosystem variables (e.g. finance, policies, programs, education, knowledge transfer, legal and market infrastructure) in shaping the cultural contexts that influence women's participation in entrepreneurship.

Against this backdrop, this study is guided by the question: Which entrepreneurial ecosystem variables are associated with variations in a proxy measure of culture and social norms of entrepreneurship, as perceived by women in the Global South? Theoretically, addressing this gap repositions culture and norms as endogenous, dynamic outcomes of the ecosystem; enables the identification of the variables that matter from the lived realities of women in the Global South; and sharpens their operationalization and measurement through change-sensitive indicators and longitudinal or multilevel designs. For decision-makers, answering this research question provides a framework to prioritize combinations of enabling conditions that coincide with shifts in beliefs and practices, to incorporate cultural change as a criterion for policy evaluation, and to coordinate regulatory, educational, and support instruments around explicit goals of equality in entrepreneurship.

It is worth noting that, within the framework of this study, a proxy measure is used to represent the culture and social norms related to entrepreneurship, which responds to the abstract, multidimensional, and hardly observable nature of this construct. These aspects are difficult to capture through direct observation or single indicators. Based on data from the GEM, this study formulates a composite indicator that reflects the general cultural orientation of societies toward the appreciation of individual achievement, autonomy, risk-taking, creativity, and personal responsibility. Although this measure does not directly assess gender-specific attitudes or the social acceptance of women entrepreneurs, it captures the broader cultural context in which such attitudes are shaped and evolve. Therefore, the use of this proxy is methodologically appropriate, as it allows the operationalization of a complex construct into a quantifiable variable, enabling the identification of associations between entrepreneurial ecosystem conditions and general cultural patterns from a comparative and empirically grounded perspective.

Theoretical framework

Entrepreneurial ecosystem

The entrepreneurial ecosystem has become a central axis in research and in the design of public policies on economic and social development (Acs *et al.*, 2017; Wadichar *et al.*, 2024);

however, the origins of this theory are not recent or has it remained static. Over the past decade, academia has redoubled efforts to refine definitions and construct shared analytical frameworks. In its most general sense, an ecosystem is a community of life integrated with its physical environment and with the interactions among biotic and abiotic components (Harrison, 2025; O'Connor and Audretsch, 2023). Transposed to management and entrepreneurship, an entrepreneurial ecosystem refers to an interdependent web of actors, institutions, resources, and conditions that, in a coordinated manner, support the emergence, development, and continuity of new productive ventures (Malecki, 2018; O'Connor and Audretsch, 2023; Stam and Van De Ven, 2021).

Delving into its roots, the notion of the entrepreneurial ecosystem engages with earlier traditions in economic geography, regional innovation systems, the Triple Helix, the economics of entrepreneurship, and knowledge spillovers (Queissner *et al.*, 2025). Nevertheless, the ecosystem turn is distinguished by conceiving entrepreneurship as a systemic, emergent outcome of interactions among variables clustered into enabling conditions (Stam and Van De Ven, 2021). This perspective explicitly incorporates coevolution, path dependence, and different dynamics, wherein agents (e.g. entrepreneurs, intermediaries, governments, universities, and investors) learn, coordinate, and adapt their behaviors and strategies.

To grasp the complexity of entrepreneurial ecosystems, several analytical models have been proposed, one of the most influential being that of GEM, which examines access to and availability of finance, government policies, government programs, entrepreneurship education, R&D transfer, commercial and legal infrastructure, market dynamics, physical infrastructure, and social and cultural norms. This article adopts the GEM framework because it offers comprehensive coverage across countries and over time; furthermore, it incorporates perceptions of female experts, thereby capturing the contextual quality of entrepreneurial ecosystems in the Global South; and it facilitates the identification of factors that may be associated with ecosystem performance, thus informing the prioritization of policy interventions according to the ecosystem's maturity, aligning empirical evidence with design and implementation decisions.

Culture and social norms as an enabling condition of the entrepreneurial ecosystem

Culture and social norms constitute a decisive enabling condition of the entrepreneurial ecosystem because they define which behaviors are perceived as legitimate, desirable, and feasible (Barrero *et al.*, 2024). From a classic perspective, culture refers to shared patterns of meaning and values that distinguish groups (Hofstede, 2001); social norms, for their part, are expectations about what "ought" to be done, internalized and reinforced by pressure from proximate referents (e.g. family, peers, teachers, and mentors) (Ajzen, 1991). In frameworks such as GEM or that of Stam and Van De Ven (2021), culture and social norms are considered an enabling condition that relates to the emergence, quality, and sustainability of entrepreneurship.

The influence of culture and social norms on entrepreneurship has been explored through four mechanisms. The first is social legitimation, which posits that when entrepreneurship is valued, the stigma of failure diminishes, role models become more visible, and entrepreneurial intentions increase (Nguyen *et al.*, 2025). The second is normative beliefs and conformity, whereby individuals align their decision to undertake a venture with the anticipated approval of their reference groups (Barrero *et al.*, 2024). The third concerns cognition, wherein cultural frameworks shape how the desirability, feasibility, and risk of opportunities are assessed (Barrero *et al.*, 2024). The fourth involves social capital and networks, in which the density and diversity of ties open access to information, learning, finance, and specialized support, accelerating the diffusion of practices and coordination among actors and, in turn, influencing shared cultural and normative patterns (Barrero *et al.*, 2024).

Crucially, this relationship with culture and social norms is not isolated. From a systemic perspective, this enabling condition is not static; rather, it interacts dynamically with the other

enabling conditions of the entrepreneurial ecosystem (e.g. access to and availability of finance, government policies, government programs, and entrepreneurship education) (Stoker *et al.*, 2024). Cultural variations may arise as responses to the pressures, opportunities, and resources generated by these other conditions (Kakeesh, 2024). Thus, the institutional scaffolding—which includes policies, programs, and the legal infrastructure—sets the formal “rules of the game” in society (Chin *et al.*, 2024). Likewise, empowerment tools such as education and access to finance are associated with variations in cultural perceptions and gender norms (Stoker *et al.*, 2024). In turn, connection platforms, such as knowledge transfer and digital infrastructure, may contribute to the diffusion of alternative models and values, by creating new networks and spaces that enable women entrepreneurs to circumvent biases in traditional markets (Kakeesh, 2024). Women’s mentoring networks and e-commerce, for example, facilitate access to social capital and to global customers, potentially mitigating the effects of restrictive local norms and connecting women with more inclusive entrepreneurial environments (Barrero *et al.*, 2024).

Female entrepreneurship within the framework of culture and social norms

Female entrepreneurship faces structural barriers that affect women’s integration into the entrepreneurial ecosystem (Wang *et al.*, 2019). Gender disparity in this context is influenced by culture and social norms, which act as informal institutions limiting women’s access to resources, support networks, and growth opportunities (Aljarodi *et al.*, 2024; Cooke and Xiao, 2021; Zhao and Yang, 2021; Zhou, 2011). In this sense, the entrepreneurial ecosystem is deeply shaped by cultural values and normative expectations that, by reinforcing traditional gender roles, contribute to the invisibility of women as economic agents in the business sphere (Raines *et al.*, 2024; Tost *et al.*, 2022; Wiig *et al.*, 2024). Consequently, the potential impact of female entrepreneurship on society and communities, such as job creation, social innovation, and poverty reduction, remains largely unacknowledged (Ali *et al.*, 2019; Ebewo *et al.*, 2025; Mouazen and Hernández-Lara, 2023).

That said, in numerous contexts, culture and social norms, particularly in the Global South, continue to constrain women’s legitimacy, ambition, and autonomy within the entrepreneurial ecosystem (Emon and Khan, 2023). These limitations define gender roles and often legitimize male supremacy, both in society at large and within the entrepreneurial environment (Wang *et al.*, 2019; Wiig *et al.*, 2024). The internalization of such cultural mandates produces an ambition constraint, in which women tend to underestimate their entrepreneurial abilities and self-censor for fear of challenging established norms (Muhammad *et al.*, 2023; Wiig *et al.*, 2024; Pelegrini and Moraes, 2022). Simultaneously, the social pressure to preserve family reputation and avoid shame or collective disapproval acts as a symbolic control mechanism that limits autonomous decision-making and reinforces dependency relationships with male figures (Banihani, 2020; Jarrar, 2022; Kakeesh, 2024). This patriarchal logic also manifests in women’s exclusion from key business networks, largely dominated by men and structured around closed trust dynamics, thereby restricting their access to mentors, financial capital, and strategic alliances essential for business sustainability (Lucarelli *et al.*, 2025; Yousafzai *et al.*, 2024). Consequently, female entrepreneurship develops in an environment where symbolic and cultural barriers perpetuate structural inequality and undermine women’s transformative potential as agents of innovation, social change, and economic growth.

In addition, culture and social norms have produced an entrepreneurial archetype associated with masculine traits such as risk-taking, competitiveness, and aggressiveness, creating a symbolic gap that excludes women from being perceived as legitimate entrepreneurs (Turley *et al.*, 2025). This masculine prototype not only shapes social expectations but also influences financing, selection, and mentorship processes, where women are evaluated with greater skepticism regarding their ability to lead complex or innovative projects (Aljarodi *et al.*, 2024; Best *et al.*, 2025). This bias translates into reduced investor

confidence and systematic exclusion from key networks, reinforcing inequality in access to capital, information, and growth opportunities.

Despite the restrictions imposed by culture and social norms, women entrepreneurs demonstrate remarkable agency that enables them to transform symbolic structures and create spaces of inclusion within the entrepreneurial ecosystem (Aman *et al.*, 2024). Their performance is characterized by a strategic negotiation of gender roles, combining traditionally masculine traits (competitiveness and assertiveness) with collaborative leadership styles to gain legitimacy as business leaders and access strategic resources for entrepreneurship (Yousafzai *et al.*, 2024). This adaptive capacity does not represent a mere imitation of masculine leadership but rather a reconfiguration of legitimacy norms that generates new narratives about what it means to undertake entrepreneurship from the female experience.

Accordingly, understanding the relationship between entrepreneurial ecosystem variables and cultural and normative dimensions makes it possible to reveal how social structures shape women's opportunities and trajectories in entrepreneurship. This analysis not only contributes to the theoretical understanding of the phenomenon but also provides a foundation for strengthening women's participation and promoting more inclusive and sustainable ecosystems in the Global South.

Methodology

To address the research question, we designed a quantitative study with repeated cross-sectional series, using data collected by GEM between 2017 and 2021 from the National Experts Survey (NES), wherein the perceptions of female experts across the Global South were taken into account. The following sections describe the process of secondary data selection, the characteristics of the sample, as well as the model and data analysis. This study is based on secondary data obtained from the Global Entrepreneurship Monitor (GEM) National Experts Survey (NES) covering the period 2017–2021. All datasets used in this research were previously anonymized by GEM prior to public release, ensuring that no personally identifiable information about respondents is accessible. Because the data are publicly available, fully anonymized, and collected under GEM's own ethical and methodological protocols, formal approval from an institutional ethics committee was not required for the purposes of this study. The research was conducted in full compliance with ethical standards for secondary data analysis, ensuring the protection of participants' privacy and the integrity of the dataset.

Selection of secondary data

To carry out the data selection process, we downloaded the datasets available on GEM's website, considering as the temporal frame those collected between 2017 and 2021, the latter being the most recent year available due to the lag between GEM's internal use of the data and their public release. Using the original datasets, we constructed a crosswalk of the variables assessed for each enabling condition comprising the framework in each year, retaining only those items that remained constant over time. Consequently, we did not incorporate the questions corresponding to the research and development transfer condition, as it was not evaluated in 2021, or those that were added or removed in specific periods. All of this was done to preserve variables that are consistent over time; the selected variables are presented in [Supplementary Material 1](#).

Subsequently, we consolidated the responses into a general database, incorporating only those from female experts surveyed in countries of the Global South. During this process, incomplete records were removed to avoid distortions in the model's results arising from imputations that might overlook the country-specific context in which the data were collected. In this way, we ensured that the analysis was grounded in complete, coherent information that is representative of the reality observed in each country.

Characteristics of the selected sample

After completing the secondary data selection phase, we obtained a total sample reflecting the perceptions of 764 female experts in the Global South. The temporal distribution of responses shows that 17.0% correspond to 2017 ($n = 130$), 17.8% to 2018 ($n = 136$), 32.7% to 2019 ($n = 250$), 18.8% to 2020 ($n = 144$), and 13.6% to 2021 ($n = 104$). Regarding age, 13.2% ($n = 101$) of participants were between 18 and 30 years old, 63.2% ($n = 483$) were between 31 and 45, and 23.6% ($n = 180$) were over 45. With respect to educational attainment, 0.8% ($n = 6$) had completed secondary education, 1.4% ($n = 11$) vocational training, 28.8% ($n = 220$) held an undergraduate degree, and 69.0% ($n = 527$) had attained postgraduate education.

With regard to geographic origin, participants came from a diverse set of countries within the Global South. The most represented were Egypt with 9.0% ($n = 69$), Chile and Panama with 6.8% each ($n = 52$), Brazil and Colombia with 6.4% each ($n = 49$), and Mexico with 5.4% ($n = 41$). Other countries with notable participation were India (5.5%, $n = 42$), South Africa (5.2%, $n = 40$), Puerto Rico (5.1%, $n = 39$), Morocco (4.7%, $n = 36$), and Indonesia (4.7%, $n = 36$). The remaining countries each contributed less than 4%. The participation breakdown is shown in [Figure 1](#).

Data modeling and analysis

The dependent variable of this study is a composite proxy measure representing the culture and social norms of entrepreneurship. This proxy, referred to as the Index of Culture and Social Norms (ICNS), was constructed from five items of the GEM Expert Survey, specifically, I01_9, I02_9, I03_9, I04_9, and I05_9, which capture key cultural dimensions associated with entrepreneurship: appreciation of individual achievement, autonomy, risk-taking, creativity, and personal responsibility. The use of a proxy measure is justified by the abstract and multidimensional nature of culture and social norms, which makes them difficult to observe directly or measure through single indicators ([Stam and Van de Ven, 2021](#)). Following GEM methodology, these items were aggregated through their arithmetic mean, resulting in an internally consistent index ($\alpha = 0.91$). This approach ensures both theoretical coherence and statistical reliability, reducing idiosyncratic error and enhancing the stability of estimates ([Hair et al., 2019](#)).

It is important to note that the ICNS does not aim to directly measure gender-specific attitudes or the social acceptance of women entrepreneurs. Rather, it captures the broader cultural environment in which such attitudes emerge and evolve, serving as a contextual proxy

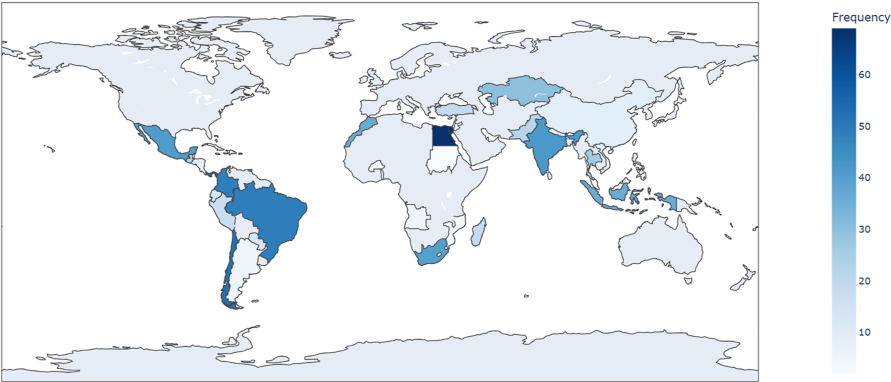


Figure 1. Country of origin of the female experts in the study in the Global South (2017–2021; $n = 764$). Source: Authors' own work

for the cultural and social norms conditions that shape entrepreneurship. Within the entrepreneurship ecosystem, indicators such as the ICNS are interpreted as signals of general cultural orientations, which may indirectly shape gendered entrepreneurial experiences due to pre-existing social structures (Nguyen *et al.*, 2025; Fritsch and Wyrwich, 2017).

Building upon this proxy variable, the analytical strategy followed a sequential modeling approach to examine statistical associations between entrepreneurial ecosystem conditions and variations in the ICNS, as perceived by female experts in the Global South. In the first stage, an Ordinary Least Squares (OLS) regression model with forward stepwise variable selection was estimated. This procedure began with an empty model and progressively incorporated those independent variables that exhibited the strongest and most statistically significant associations with the dependent variable, consistent with Hosmer *et al.* (2013). This allowed for the identification of a parsimonious and robust set of ecosystem variables that were most strongly associated to the proxy measure, providing an initial overview of associative patterns (Nisbet *et al.*, 2018; Ross, 2021).

Given the hierarchical structure of the GEM data, where observations are grouped by country and educational level of the experts, a second stage involved estimating a multivariate mixed-effects model. Only variables significant in the OLS stage were retained as fixed effects. Random intercepts were specified for country and educational level, capturing contextual heterogeneity without compromising model parsimony. This approach allowed for the identification of cross-level associations while accounting for unobserved variance between analytical units (Hair *et al.*, 2019). Importantly, these models are intended to describe patterns of association, not to establish causal mechanisms or directionality between variables.

Prior to estimating OLS model, we conducted exploratory analysis and validated the statistical assumptions of multiple linear regression. Through exploratory analysis, outliers were detected in the sample, as these could meaningfully influence statistical results (Hair *et al.*, 2019), and they were removed from subsequent analyses. In addition, a correlational analysis was performed using Spearman's coefficient, given that the data did not conform to a normal distribution (Field, 2013). Where correlations exceeded 0.7 (Hair *et al.*, 2019), one of the variables was eliminated to mitigate potential multicollinearity in the model, since this condition can affect the precision of coefficient estimates (Gujarati and Porter, 2009).

With the selected variables, OLS was implemented. We applied the ANOVA test to contrast the null hypothesis that all regression coefficients were equal to zero (Gujarati and Porter, 2009). For this purpose, the F statistic was used along with its corresponding *p*-value, with a threshold of less than 0.05 (Gujarati and Porter, 2009). Likewise, the Variance Inflation Factor (VIF) was evaluated, with values below five considered acceptable, indicating no severe collinearity (Hair *et al.*, 2019); this statistic was applied only to the variables that exhibited significance in the model. For OLS model evaluation, several statistics were used to assess both explanatory capacity and the validity of the assumptions of multiple linear regression. These included the coefficient of determination (R^2) and the adjusted coefficient of determination (adjusted R^2), where values closer to 1 indicated better model fit (Hair *et al.*, 2019). To test the statistical significance of the predictor variables in the final model, considering as statistically significant those with a *p*-value below 0.05.

For the linear mixed model was estimated using the Restricted Maximum Likelihood (REML) method, with the aim of capturing the variability associated with unobservable contextual factors—a common feature in studies with hierarchical or multilevel data structures (Field, 2013; Hair *et al.*, 2019). In particular, random intercepts were specified for the groups defined by country and educational level of the women experts, accounting for the possible systematic influence of these factors on the perception of cultural change in entrepreneurship. This approach allowed for an adequate modeling of the nested data structure and control of intragroup dependencies, thereby reducing the risk of Type I errors and increasing the precision of the estimates (Hox *et al.*, 2017; Snijders and Bosker, 2012). The mixed model was estimated on a total sample of 764 observations, corresponding to experts from 35 countries of the Global South, as well as from the four educational levels identified by the GEM. For

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analytical purposes, only those variables that were statistically significant in the previous OLS model were used, which ensured a parsimonious structure, reduced potential collinearity, and strengthened model stability (Hosmer *et al.*, 2013; Hair *et al.*, 2019).

The estimated coefficients for the fixed effects were reported, along with their *p*-values, and 95% confidence intervals, which allow for the evaluation of the magnitude and statistical relevance of each predictor (Field, 2013). Likewise, the variance of the random intercept was estimated, providing a measure of the unexplained heterogeneity between groups and contributing to a more accurate interpretation of the effect of higher-level groupings on the dependent variable (Snijders and Bosker, 2012).

For the OLS analysis with stepwise variable selection, the JASP software was used due to its intuitive interface and robust statistical diagnostic tools for conducting multiple regression analysis. In contrast, the mixed model was implemented in the Python programming language using the Google Colab environment through the stats models library, which allows the estimation of hierarchical models via the MixedLM function and the REML option, recommended for obtaining unbiased estimates of the variance of random effects (Seabold and Perktold, 2010).

Results

The exploratory data analysis revealed wide variability in responses, with mean values located predominantly in the mid-to-high ranges of the scale. Standard deviations indicated moderate dispersion, while skewness values reflected both positively and negatively skewed distributions. In turn, kurtosis ranged from flatter to more peaked distributions, evidencing heterogeneous distributional shapes across the variables analyzed. For the ICNS index (see Figure 2), the mean was 4.91, with a standard error of 0.074 and a standard deviation of 2.06,

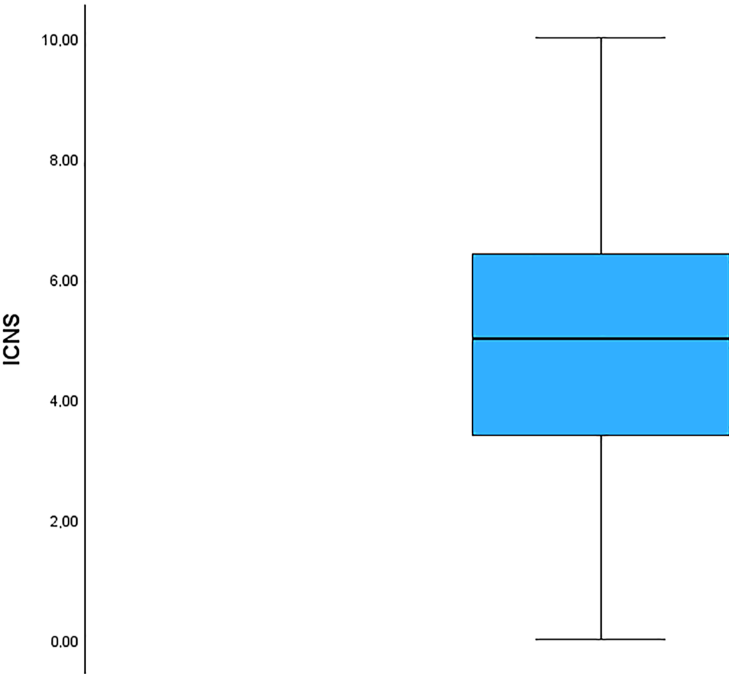


Figure 2. Distribution of responses to the ICNS item via box plot. Source: Authors’ own work

indicating moderate dispersion of responses around the mean. Regarding the distributional form, skewness was -0.147 with a standard error of 0.088 ; kurtosis was -0.529 with a standard error of 0.177 , suggesting a flatter-than-normal distribution. Descriptive statistics for each variable are presented in [Supplementary Material 2](#).

Now, regarding the correlations, a total of 10 bivariate correlations greater than 0.70 were observed ([Supplementary Material 3](#)), and therefore the following variables were not incorporated into the multiple linear regression model: A06_9, C06_9, D01_9, D02_9, F03_9, G02_9, and G04_9.

Execution of the forward selection algorithm yielded a total of 12 models, the last of which explains the largest proportion of variance in the dependent variable. The ANOVA for this model indicated that the regression sum of squares was $1,586.09$, whereas the residual sum of squares was $1,672.19$, for a total of $3,258.27$. The regression mean square produced an F statistic of 59.36 , with a p -value less than 0.01 ; thus, taken together, the variables included in Model 12 account for a significant share of the variability in the dependent variable. In addition, the Vovk–Sellke maximum p -ratio ($VS\text{-}MPR = 5.43 \times 10^{96}$) supports the evidence in favor of the alternative hypothesis, suggesting that the relationship between the set of predictors and the dependent variable is not attributable to chance.

Turning to model fit, R^2 was 0.49 and adjusted R^2 was 0.48 , indicating that the set of independent variables included in the model explains approximately 49% of the variability observed in the dependent variable, with this estimate adjusted for the number of predictors incorporated. This proportion of explained variance is consistent with the ANOVA results, in which the regression sum of squares represents about half of the total sum of squares. The collinearity analysis showed that VIF values for the independent variables ranged from 1.12 to 2.24 , while tolerance values remained between 0.45 and 0.89 . These results are below the commonly accepted threshold of 5 , indicating no severe multicollinearity in the model.

The sequential inclusion procedure identified as the most influential predictors—with positive effects on changes in the culture and social norms of entrepreneurship in the Global South from women's perspectives—access to communications infrastructure and the availability of adequate, high-quality higher education for the creation and development of new ventures. Subsequently, freedom of competition—understood as the absence of barriers imposed by incumbent firms on new ventures—also showed a positive influence. Complementarily, other relevant variables were highlighted: the integration of entrepreneurship into primary and secondary education; the effectiveness and enforcement of antitrust legislation; the competence and effectiveness of government officials in supporting new and growing firms; the preparation provided by universities and faculties for the development of entrepreneurial initiatives; the prioritization of support for entrepreneurship in national government policies; and the predictable, consistent application of taxes and government regulations to nascent firms. In contrast, factors that tend to dampen cultural and social normative change in women's entrepreneurship in the Global South include the availability of sufficient government subsidies for new and growing firms, as well as the ease with which new firms can obtain most of the necessary permits and licenses within approximately one week. [Table 1](#) presents the results of Model 12.

In a second phase of the analysis, a linear mixed model was estimated with the purpose of capturing the variability associated with unobservable contextual factors. Initially, random intercepts were specified for groups defined by country, in order to incorporate the structural heterogeneity derived from national contexts. The model included a total of 764 observations distributed across 35 countries of the Global South, presenting a between-group variance of 0.080 . The model showed adequate convergence ($\text{Log-Likelihood} = -1414.6822$) and good overall fit ($\text{Scale} = 2.1618$). Regarding the second linear mixed model, which specified the experts' educational level as a random effect, it maintained a similar structure and also achieved satisfactory convergence ($\text{Log-Likelihood} = -1418.1017$; $\text{Scale} = 2.2215$), with a between-group variance of 0.074 , indicating lower heterogeneity associated with educational level compared to the country effect. The results of both models are detailed in [Table 2](#).

Table 1. Estimates of the predictors of change in the culture and social norms of entrepreneurship in the Global South from the perspective of women

Variables	Unstandardized	Standard error	Standardized	t	p-value	Tolerance	VIF
(Intercept)	0.97	0.19		5.19	<0.01		
D06_9	0.15	0.03	0.17	4.56	<0.01	0.48	2.07
G05_9	0.12	0.04	0.12	3.16	<0.01	0.45	2.24
H03_9	0.15	0.02	0.18	6.65	<0.01	0.89	1.12
D03_9	0.12	0.03	0.13	3.70	<0.01	0.54	1.85
G06_9	0.12	0.03	0.13	3.70	<0.01	0.55	1.82
C04_9	0.10	0.03	0.12	3.35	<0.01	0.54	1.84
G03_9	0.10	0.03	0.10	2.90	<0.01	0.55	1.81
A03_9	-0.11	0.03	-0.12	-3.56	<0.01	0.64	1.57
D04_9	0.09	0.03	0.11	2.74	<0.01	0.45	2.21
B02_9	0.06	0.03	0.08	2.30	0.02	0.59	1.70
B04_9	-0.07	0.03	-0.09	-2.83	<0.01	0.62	1.62
B06_9	0.06	0.03	0.07	2.18	0.03	0.65	1.55

Note(s): The following covariates were considered but not included: A01_9, A02_9, A04_9, A05_9, A07_9, A08_9, B01_9, B03_9, B05_9, B07_9, C01_9, C02_9, C03_9, C05_9, F01_9, F02_9, F04_9, G01_9, H01_9, H02_9, H04_9, H05_9

Source(s): Authors’ own work

Table 2. Comparative results of mixed linear models with random intercepts by country and educational level

Variables	Model 1. Variable country				Model 2. Variable education			
	Standardized	p-value	[0.05	0.95]	Standardized	p-value	[0.05	0.95]
(Intercept)	1.06	<0.01	0.67	1.46	0.86	<0.01	0.61	1.12
D06_9	0.14	<0.01	0.08	0.21	0.15	<0.01	0.09	0.22
G05_9	0.10	<0.01	0.03	0.17	0.12	<0.01	0.05	0.19
H03_9	0.14	<0.01	0.09	0.18	0.15	<0.01	0.10	0.19
D03_9	0.13	<0.01	0.06	0.20	0.13	<0.01	0.06	0.19
G06_9	0.12	<0.01	0.06	0.18	0.12	<0.01	0.06	0.17
C04_9	0.09	<0.01	0.03	0.16	0.11	<0.01	0.04	0.17
G03_9	0.09	<0.01	0.0	0.16	0.10	<0.01	0.03	0.17
A03_9	-0.10	<0.01	-0.16	-0.04	-0.11	<0.01	-0.16	-0.05
D04_9	0.08	0.02	0.01	0.15	0.09	<0.01	0.03	0.16
B02_9	0.07	0.02	0.01	0.12	0.07	0.02	0.01	0.12
B04_9	-0.07	<0.01	-0.12	-0.02	-0.07	<0.01	-0.12	-0.02
B06_9	0.06	0.02	0.009	0.11	0.06	0.03	0.01	0.11

Source(s): Authors’ own work

Discussion

Discussion of findings

The results achieved allowed the study to meet its objective and answer the research question aimed at identifying which variables of the entrepreneurial ecosystem are associated with variations in the culture and social norms of entrepreneurship through a proxy measure, from the perspective of women in the Global South. The OLS model showed an adequate fit ($R^2 = 0.472$; adjusted $R^2 = 0.449$), and the linear mixed-effects model, which included random effects for country and educational level of the experts surveyed by GEM, confirmed the directional stability of the standardized coefficients (β). In addition, the mixed-effects model captured the contextual variability attributable to structural factors of the ecosystem,

showing appropriate convergence and variance between countries (0.080) and among educational levels of the female experts (0.074).

First, entrepreneurial education, both at the basic and higher or technical levels, showed the strongest association with the ICNS. This finding indicates that educational systems in the Global South are closely linked with the development of a more favorable entrepreneurial culture. Promoting entrepreneurial education from early schooling and consolidating it within higher education not only strengthens business skills but also shapes social perceptions of entrepreneurship by legitimizing the entrepreneur as an agent of change and innovation. This result is consistent with [Barrero et al. \(2024\)](#), who argue that education acts as a vehicle for the cultural legitimization of entrepreneurship. In the Global South, where patriarchal structures persist ([Wiig et al., 2024](#); [Mousa et al., 2024](#)), education enables women to challenge restrictive social norms and expand their sense of agency.

Second, physical infrastructure, represented by the speed with which a new or growing firm can gain effective access to communications (telephone, internet, etc.), exhibited a positive and statistically significant association with the transformation of entrepreneurial culture and social norms. This finding suggests that digital infrastructure operates as both a symbolic and operational catalyst for cultural change by reducing the structural barriers that have historically limited women's participation in entrepreneurial activity in the Global South ([Best et al., 2025](#)). Efficient access to communication services enables network expansion, visibility of role models, and access to strategic information ([Aljarodi et al., 2024](#)). In this sense, connectivity serves not only an instrumental function but also a cognitive and legitimizing one, as it facilitates the circulation of alternative narratives about women's entrepreneurship and the redefinition of boundaries imposed by patriarchal norms ([Aljarodi et al., 2024](#)).

Third, the market was positively associated with culture and social norms, particularly regarding the absence of barriers to women's business entry, the ease of market access, and the effectiveness of antitrust laws. This result indicates that market structure and the quality of the regulatory environment form part of the cultural framework that legitimizes entrepreneurship as a socially and economically accepted activity ([Ebewo et al., 2025](#)). In the Global South, the existence of transparent regulatory mechanisms accompanied by efficient digital infrastructure reduces transaction costs and information asymmetries, thereby expanding opportunities for women entrepreneurs and supporting a culture based on innovation and meritocracy ([Ebewo et al., 2025](#); [Best et al., 2025](#)). The effectiveness of antitrust regulations and the promotion of fair competition are therefore not only economic mechanisms but also reflections of cultural values associated with transparency, fairness, and social inclusion ([Ebewo et al., 2025](#)). In this way, the absence of market blockages and greater openness can be interpreted as a potential enabler of cultural change, fostering environments in which women can access resources, clients, and networks on more equitable terms.

Fourth, the existence of government programs promoting entrepreneurship was positively associated with culture and social norms, highlighting the structuring role of the state as an institutional agent capable of shaping beliefs, perceptions, and values related to entrepreneurship ([Aljarodi et al., 2024](#)). Government initiatives primarily operate through policies, incentives, and formal support mechanisms, extending their influence to the cultural and social domains by strengthening the social legitimacy of entrepreneurship and supporting women's internalization of values such as self-efficacy, leadership, and autonomy ([Aljarodi et al., 2024](#); [Ebewo et al., 2025](#); [Turley et al., 2025](#)). In this sense, the results indicate that positive perceptions of public programs for business creation are associated with higher ICNS levels, suggesting that state action may serve as a symbolic mechanism of cultural transformation within the entrepreneurial ecosystems of the Global South, particularly in relation to women's entrepreneurship.

Moreover, the positive association between the ICNS and public policies supporting new ventures, as well as the consistency of fiscal and tax frameworks, reflects that institutional stability and regulatory coherence contribute to the perception of entrepreneurship as a legitimate and socially valued economic activity ([Fritsch and Wyrwich, 2017](#); [Barrero et al., 2024](#)).

In contexts where fiscal rules are predictable and business creation incentives are transparent, actors perceive a more favorable environment for innovation and opportunity recognition, which helps reduce the symbolic and psychological barriers affecting women's participation (Wiig *et al.*, 2024).

Finally, it is counterintuitive that the availability of government subsidies and the ease of obtaining operating permits display a negative association with the ICNS. This outcome can be interpreted as a reflection of unintended consequences from poorly designed incentives that, rather than promoting autonomous entrepreneurship, may foster institutional dependency and reduce individual initiative (Nguyen *et al.*, 2025). Excessive state intervention or bureaucratic inefficiency can also weaken institutional trust and reinforce informal or clientelistic practices (Barrero *et al.*, 2024), thereby constraining the emergence of cultural dispositions linked to autonomy and self-efficacy. Thus, public support mechanisms that are not aligned with long-term goals of sustainability and empowerment may limit the development of endogenous capabilities and hinder the consolidation of more inclusive entrepreneurial ecosystems in the Global South.

The mixed-effects model results also revealed significant differences by country and educational level of the experts, underscoring the cultural and structural heterogeneity of the Global South. In countries with stronger institutional development, values related to autonomy, innovation, and individual responsibility—as represented by the ICNS—tend to align more closely with entrepreneurial education and infrastructure (Nguyen *et al.*, 2025). Conversely, in contexts with lower institutional maturity, traditional norms that restrict women's participation and limit the diffusion of inclusive entrepreneurship models persist (Mousa *et al.*, 2024; Wiig *et al.*, 2024). Moreover, experts with higher educational attainment tended to evaluate entrepreneurial culture more positively, suggesting that higher education is associated with greater internalization of values such as innovation, independence, and risk acceptance. These findings highlight that variations in entrepreneurial culture emerge from contextual and structural interactions that differ across countries and educational groups in the Global South, rather than from a single explanatory pattern.

Theoretical implications

The results of this study contribute to a broader understanding of the entrepreneurial ecosystem, showing that culture and social norms can be analyzed as dynamic and relational dimensions associated with diverse enabling conditions. The associations observed between the ICNS proxy and variables such as digital infrastructure, education, market access, and government programs suggest that entrepreneurial culture should not be regarded as a static attribute of societies but rather as a manifestation of the systemic functioning of the ecosystem. This perspective expands traditional views of entrepreneurship by situating it within a network of interactions where values, perceptions, and individual dispositions intersect with the structural and material resources of the environment. Thus, the study offers a theoretical contribution by positioning entrepreneurial culture as part of the interdependent relationships that sustain the ecosystem, emphasizing that its analysis requires simultaneous consideration of the economic, social, and symbolic dimensions that shape it.

The research also provides a methodological contribution by introducing the ICNS as a proxy measure capable of representing the general cultural orientation of ecosystems toward entrepreneurship based on comparative and cross-national data. This index allows the observation of systematic associations between structural ecosystem conditions and cultural patterns that accompany entrepreneurial processes, without assuming directionality or causality. By integrating this measure into ecosystem analysis, the study proposes an empirically grounded approach that links cultural and structural dimensions in a consistent and verifiable manner. In doing so, it enhances the theoretical dialog between ecosystem research and entrepreneurship studies, particularly those exploring women's perspectives in the Global South.

Practical implications

From an applied perspective, the findings provide useful insights for the design and evaluation of policies and strategies aimed at strengthening entrepreneurial ecosystems in the Global South. The associations identified between culture and social norms with variables such as entrepreneurial education, digital infrastructure, market openness, and state programs suggest that environments perceived as more inclusive and collaborative tend to coincide with conditions that support the social legitimization of entrepreneurship. This perspective encourages policymakers, academic institutions, and support organizations to view culture as a transversal dimension of the ecosystem, one that requires coherence among educational instruments, institutional frameworks, and support networks. Furthermore, incorporating indicators such as the ICNS into monitoring systems may facilitate the identification of trends and contexts where perceptions and values associated with entrepreneurship exhibit greater dynamism or resistance to change.

Limitations and future lines of research

Among the main limitations of this study is the use of cross-sectional data from the GEM, which prevents capturing the temporal evolution of cultural change. Additionally, because the research relies on secondary data, it is constrained by the theoretical and operational framework of GEM, limiting the ability to incorporate alternative or complementary measures of culture and social norms. The ICNS therefore functions as a proxy measure that approximates the general cultural orientation toward entrepreneurship but does not directly capture gender-specific norms or the social acceptance of women entrepreneurs. As a result, the findings should be interpreted as descriptive associations rather than causal relationships. Moreover, since the analysis is based on the perceptions of female experts, the results may differ from the experiences of non-expert entrepreneurs or those in the early stages of business creation. Future research should employ longitudinal and multilevel designs to observe the joint evolution of ecosystem conditions and cultural transformations over time, and incorporate qualitative methods to capture personal narratives and symbolic dynamics surrounding women's entrepreneurship. Finally, comparing regions of the Global South with developed economies could deepen understanding of how historical trajectories and institutional contexts shape the social norms and cultural values that underpin contemporary entrepreneurial ecosystems.

Supplementary material

The supplementary material for this article can be found online.

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