“Women tech entrepreneurs in Ecuador: Knowledge barriers, network gaps, and systemic dynamics”

AUTHORS	Fausto Vinicio Calderón-Pineda Ana María Ortega-Álvarez

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Fausto Calderón-Pineda (Peru), **Ana María Ortega-Álvarez** (Colombia)

WOMEN TECH ENTREPRENEURS IN ECUADOR: KNOWLEDGE BARRIERS, NETWORK GAPS, AND SYSTEMIC DYNAMICS

Abstract

Although Ecuador has a high rate of women's business ownership, only a small proportion of these enterprises operate within the technology sector. This study aims to examine women's technological entrepreneurship in Ecuador using a qualitative phenomenological approach. Semi-structured interviews were conducted with 23 female entrepreneurs between September and October 2025. The findings revealed recurring themes in participants' experiences, including gender inequality, bureaucratic obstacles, conservative social attitudes, and limited access to professional networks. Despite these challenges, the entrepreneurs emphasize that they possess considerable resilience and innovation, adapting to emerging technologies and building strategic support networks. Participants also highlighted the importance of inclusive public policies to address these barriers and promote a more equitable and sustainable entrepreneurial ecosystem for women in the technology sector. Although the study focuses on a single country, its findings provide valuable insights into the current state of women's technological entrepreneurship and highlight the significant role of the institutional and social environment in shaping the development of such ventures.

Keywords emic perception, entrepreneurial ecosystems, gender barriers, women technology entrepreneurship

JEL Classification L26, O32, J16

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Fausto Vinicio Calderón-Pineda, Mg., Doctoral Student, Pontifical Catholic University of Peru, CENTRUM Catholic Graduate Business School, Peru. (Corresponding author)

[Mg., Estudiante de Doctorado, Pontificia Universidad Católica del Perú, CENTRUM Católica Graduate Business School, Perú].

Ana María Ortega-Álvarez, Ph.D., Full Professor, Department of Organizations, Leadership, and Strategy, School of Management, EAFIT University, Colombia.

[Ph.D., Profesor Titular, Departamento de Organización, Dirección y Estrategia, Escuela de Administración, Universidad EAFIT, Colombia].

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INTRODUCTION

Technological startups have emerged as a determining factor in economic development and innovation in emerging economies, driving new forms of production, accelerating technology adoption, and contributing to business diversification. This type of entrepreneurship is understood as the creation of companies based on technological innovations, with low initial costs, external financing, and a focus on specific market niches (Ahn et al., 2022; Moro Visconti, 2020; Wang & Chebo, 2021). Due to their nature, this type of business acquires a strategic dimension when analyzed from a gender perspective, especially in contexts where women face structural barriers to their participation in high-tech sectors (AlQubaisi et al., 2024; Williams & Syddall, 2022).

In the Ecuadorian context, the figures are revealing, although the country has a general rate of female entrepreneurship of 51.18%, only 1.2% of these ventures are developed in the technology sector (Sánchez-Riofrío et al., 2024). This difference highlights a structural problem that limits women's access to opportunities in the digital economy and suggests systemic factors that hinder the consolidation of these enterprises (Deng et al., 2021).

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1. LITERATURE REVIEW

1.1. Gendered institutional theory

Gendered institutional theory views organizations as sites that produce gender dynamics. It focuses on the relationships among the psychological, cultural, and social dimensions that shape the organization as an interdependent structure, but from a gender perspective (Rodriguez & Guenther, 2022). This theory has received attention in recent years because it considers the interactions between gender and social, political, economic, and technological life (Clark-Saboda & Lemke, 2023).

Based on this theory, researchers have documented the resilience and innovation capacity of women entrepreneurs in the face of these obstacles (Badzaban et al., 2021). These abilities are developed by women because they usually face additional challenges and systemic barriers to business survival that their male counterparts typically do not, such as discriminatory practices, restrictive cultural norms, and exclusion from business networks (Mashapure et al., 2022).

From a regional viewpoint, during the COVID-19 pandemic, women entrepreneurs in Latin America significantly increased their adoption of digital technologies. Acevedo-Duque et al. (2021) reported that many entrepreneurs reconfigured their business models to adapt to the new digital environment, demonstrating their capacity to respond to uncertainty. This adaptability has also been analyzed by Suseno and Abbott (2021), who highlight the emergence of digital social innovations driven by women during the health crisis as a reflection of their transformative role within the social system. As shown in the example, women's individual resilience is often closely linked to broader community resilience, cultivated through support networks that offer emotional and practical assistance (Bridges et al., 2023; Gyan & Kwakye, 2025; Singh et al., 2022).

There is evidence that the cultural dimension also affects the formation of entrepreneurial intentions and the emergence of entrepreneurial behavior among women (Badghish et al., 2023; Ghimire, 2024). This effect occurs through its influence on actual rules and regulations, social norms of behavior, and the shared interpretation of reality (Althalathini & Abdul-Rahman, 2025). Moreover, women compete differently because they exhibit skills, abilities, and preferences that differ from those of men (Paryavi et al., 2025). These dissimilarities also become evident when examining additional important characteristics of entrepreneurial activities. For example, women are often more active in social entrepreneurship and tend to have slower growth aspirations (Muhammad Tayyeb & Paulet, 2025).

Additionally, women face different external cultural factors and constraints than men. For example, society often allocates them to different social and family roles, with gender stereotypes (Carreiro, 2021; Tabassum & Nayak, 2021). Consequently, in societies where these stereotypes are dominant, women tend to lack support from their social environment, and can also be shown financial and labor discrimination, preventing them from accessing loans, gaining relevant management experience, and building networks (Akanji et al., 2024; Thelma & Ngulube, 2024).

1.2. Systemic dynamics

Systemic dynamics is a strategic methodology for understanding how complex, interconnected business systems behave. It focuses on how startups, organizations, and entrepreneurial ecosystems operate (Vettik-Leemet & Mets, 2024). This type of analysis has shown that the entrepreneurial ecosystems are inherently masculinized, creating systemic disadvantages for women. Key mechanisms of gendered institutional dynamics in entrepreneurship studies operate across several distinct domains; among the most influential are the masculine entrepreneurial archetype, mainstream entrepreneurial norms historically constructed around a male-gendered ideal, often characterized by high-risk tolerance and full-time dedication. Another mechanism is the homophily in resource distribution, which restricts female founders' access to crucial seed capital, mentorship, and high-value business connections. Another noteworthy point is the spatial and institutional contexts, which are related to the local norms that may force women into specific industries or restrict the size and scalability of their enterprises (Kapusniak, 2026; Wang et al., 2024).

In this regard, various studies have documented how women entrepreneurs face systemic dynamics within technological and social ecosystems. For example, Meoli et al. (2024) and Nafees et al. (2025) have shown that the insufficient representation of women in STEM (Science, Technology, Engineering, and Mathematics) areas, the scarcity of role models, and the persistence of gender stereotypes act as structural factors that hinder their full participation. This issue is intensified in Latin America, where historical inequalities are reflected in limited access to venture capital, specialized mentoring, and key professional networks for business development (Voss et al., 2025).

The specialized literature has also noted that these challenges are not merely individual or circumstantial but are shaped by systemic dynamics that structure the architecture of entrepreneurial social systems (Machado et al., 2025). In this sense, women not only face difficulties in starting their technological ventures but also encounter greater barriers to consolidating them and scaling their operations. For example, Mari et al. (2024) and Adikaram and Razik (2023) describe how these barriers operate in a double-layered system. On the one hand, women entrepreneurs must face the everyday challenges of the technology sector, characterized by high volatility, constant change, and intense innovation demands. On the other hand, they face specific gender-related obstacles, such as biases in project evaluation by investors, exclusion from networking spaces, and limited access to financing during critical stages of business growth. These studies highlight that, even when women possess comparable levels of technical training or business experience, their ventures are often perceived as having less potential by key actors in the social system, perpetuating a vicious cycle of invisibility and disadvantage.

Likewise, Sadraei (2025) and Paiva et al. (2024) have highlighted the importance of digital professional networks as critical mechanisms of consolidation. These networks not only facilitate the exchange of strategic information but also serve as channels for accessing resources, training, visibility, and opportunities for internationalization. However, access to these networks is not equitable: women often face greater barriers to joining technical communities or investment forums, which limits their ability to grow alongside their male peers. This phenomenon, known as the network gap, has been documented in multiple studies as a persistent structural obstacle (Kakeesh, 2024; Nevi et al., 2025).

From a more structural perspective, Zajko (2021), has examined how social systems tend to reproduce existing inequalities unless specific interventions are implemented to correct their systemic biases. Blanco Rada and Park (2024) analyzed how the adaptive mechanisms developed by women entrepreneurs, such as the creation of parallel collaboration networks, gender-focused incubators, or hybrid business models, can become systemic responses that transform the social system from within. However, their impact depends largely on the institutional and cultural environment in which they are hosted.

Despite this growing body of literature, a notable lack of studies remains in the Latin American context. In their systematic reviews, Anggadwita and Indarti (2023) and Matharu and Juneja (2024) noted the scarcity of literature addressing female technological entrepreneurship in these regional economies from an ecosystem perspective. Most available research has focused on quantitative indicators or scattered case studies, lacking a comprehensive view that articulates the phenomenon's structural and institutional dimensions. In the case of Ecuador, the literature is even more limited, hindering a proper understanding of the conditions women face in their efforts to establish technological ventures in an environment historically dominated by men. This gap is particularly critical, given that Ecuador, despite having high overall female participation in entrepreneurship, has one of the lowest rates of female participation in the technology sector in the region.

Previously, the factors that contribute to the consolidation of women-led technology startups worldwide have been extensively defined. Consequently, we propose the following hypotheses with a distinctly Ecuadorian focus:

H1: Ecuadorian women technology entrepreneurs experience systemic barriers arising from the interplay among sociocultural, institutional, and individual factors that collectively shape their entrepreneurial trajectories and business consolidation processes.

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H2: Support networks shape business consolidation by providing access to resources, knowledge, mentorship, and strategic relationships that strengthen entrepreneurs' capacity to sustain and grow their ventures.

This study aimed to explore and interpret the lived experiences of Ecuadorian women technology entrepreneurs in order to understand how sociocultural, institutional, individual, and network-related factors interact within the entrepreneurial ecosystem to shape the consolidation of their ventures. To achieve this objective, the following hypothesis was proposed: the consolidation of women-led technology ventures in Ecuador is shaped by the dynamic interaction among sociocultural, institutional, individual, and network-related factors, with entrepreneurs' lived experiences revealing systemic barriers and enabling conditions that influence their entrepreneurial trajectories.

2. METHOD

2.1. Design

This study employs a qualitative, descriptive, and interpretive approach, utilizing a cross-sectional phenomenological design (Creswell & Poth, 2018; Moustakas, 1994). The design allows us to capture the meanings that women entrepreneurs attribute to their trajectory, barriers, and adaptive strategies using the systemic dynamics theory (Kakeesh, 2024).

2.2. Participants

The study included 23 women technology entrepreneurs who operate in the technology sector. The number of participants was chosen based on the suggestions of Draper et al. (2025), who explain that the range for this type of study is typically greater than 20 until exceeding the thematic saturation range.

The inclusion criteria for this group were:

a) voluntary participation with the signing of informed consent;

b) Ecuadorian nationality;

c) active leadership of a venture in the technology sector;

d) a legally registered enterprise; and

e) residence and business operation in a major city of the country.

We excluded those persons:

a) did not reside in Ecuador or whose enterprises were not active within the national territory;

b) developed initiatives not linked to the technological field according to the operational definition of the study;

c) had oral or written communication difficulties in Spanish; and

d) were under health, cognitive, or institutional conditions that limited their autonomous and conscious participation in the research process.

2.3. Instruments

A semi-structured, ad hoc interview was conducted from September to October 2025, in accordance with the study's qualitative and phenomenological approach. The instrument was developed based on the theoretical framework and research objectives. The interview included an initial section with closed questions of a sociodemographic and contextual nature, to characterize the participants and provide a broader understanding of the environment in which their enterprises operate. The second section included open questions to explore in depth the trajectories, barriers, adaptive strategies, and perceptions of women entrepreneurs in the Ecuadorian technology sector (Table A1 in Appendix A). Its content was reviewed by experts in entrepreneurship, gender studies, and qualitative methodology to ensure conceptual validity and coherence with the phenomenological approach. This strategy enabled the capture of both the diversity of individual experiences and the emerging patterns.

2.4. Procedure

To identify and access women leaders of technological ventures in Ecuador, contacts were established with various institutional and community sources. Efforts were made with the Chamber of Commerce,

organizations that support entrepreneurs, social networks focused on female entrepreneurship, and entrepreneurs who were made visible on digital platforms. Additionally, the Superintendence of Companies, Securities, and Insurance consultation system was used to filter companies registered under the technology sector codes.

Once the potential participants were identified, they were contacted individually to explain the research objectives. The study was guided by the principles of the Declaration of Helsinki for research involving human subjects. Participation was voluntary, and the anonymity of all interviewees was guaranteed through the use of pseudonyms to protect their identities. The audio recordings and transcripts were stripped of identifying details and stored securely. Ethical approval was waived because the study was considered a "low-risk" procedure, used anonymized data, and involved voluntary participation. The volunteers signed an informed consent in which the most important methodological aspects were detailed, including the use of Atlas.ti version 23, used during coding, filtering, concurrency analysis, and graph creation. This decision was made in accordance with the parameters detailed above and following the Human Subject Regulations Decision Charts: 2018 Requirements, established by the U.S. Department of Health and Human Services (2020).

2.5. Data analysis

An emic perspective study was conducted to offer explanations for the women's comments from a social perspective. This analysis aimed to consolidate all participants' responses into a single figure that organizes their answers from an emic perspective. This analysis was conducted following the instructions of Sasiwongsaroj et al. (2024) and Shafique (2022).

Qualitative data analysis was conducted using a transcendental phenomenological approach and the software Atlas.ti (version 23), following the guidelines proposed by Aguas (2022) and Qiao et al. (2025). The phases of this process were:

1. Dialogue filtering: Captured participants' experiences and perceptions (Woods & Sikes, 2022).
2. Code generation: Extracted and generated code from the collected responses. This process enabled the identification of the most repeated words across participants' responses.
3. Code validation: We performed this analysis using logic verification, with the support of two experts on the subject, who were not involved in the investigation.
4. Filtering: A multi-layered verification code was built to filter and organize the code into categories and subcategories.
5. Concurrency analysis: Static analysis was combined with large-scale language models (LLM) to identify categories and subcategories in the filtered codes (Gulsia & Yadav, 2023).
6. Graph creation: A co-occurrence heat map was created by transforming the raw data into a visual matrix (Gupta, 2024; Tracy, 2024).

3. RESULTS AND DISCUSSION

3.1. Participants

The sociodemographic description of the participants is presented in Table 1. The mean age was 43.39 years (SD = 8.20). Regarding the level of training, 60.87% (14♀) of the participants have postgraduate studies, followed by 34.78% (8♀) with graduate studies. All businesses are fully formalized in accordance with Ecuadorian regulations. Observing years of experience, 34.78% (8♀) have 2–4 years, and 60.87% (14♀) have 5 or more years. Further, 52.17% (12♀) of participants led teams of 2–5 people. Most of the participants are dedicated to software/web development (60.87%, 14♀), and 91.30% (21♀) do not receive funding.

3.2. Experience: Quotes from interviewees

Various categories were identified from interviews with women entrepreneurs in the technology sector. Table 2 presents the most notable comments from the interviews for each category analyzed.

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In the adaptation and innovation category, the trend is to adapt to technological changes and to place real importance on the customer. Regarding gender barriers, the collected quotes show that, initially, most interviewees felt distrust from clients upon noticing that a woman was leading the company or the project. Although it was an area with a marked male tendency, today, thanks to young people's ideological openness, there is greater openness toward women.

Among the general barriers, there is a tendency to cite problems with taxes and government permits. This is certainly an issue at the Latin American level, due to the excessive bureaucracy that exists in public administration. Another interesting topic was generational change. Many companies are now run by young heirs; however, decisions are still made by their parents, who are afraid of the major changes that current technology can bring.

In the opportunities and support networks categories, it is also worth noting that education and international networks have been a great source of support, especially some existing in countries like Brazil, Colombia, Costa Rica, and Panama.

3.3. Emic perception

Figure 1 consolidates all participants' responses into a single figure that organizes their answers and explanations from an emic perspective. Four major categories were identified (barriers, gender, opportunities, and future), and within each, certain words stood out as associated with patterns. The results indicate that women face significant structural barriers to obtaining operating permits, paying taxes, and consolidating their businesses. For example, the words linked to an ecosystem dominated by men and structural discrimination are repeated several times, consistent with previous evidence (Paiva et al., 2024; Sadraei, 2025). For example, this topic was documented by Memanova et al. (2025), which examines how historical inequalities impact women's participation in high-growth technology sectors, such as technology in Ecuador. The study reveals that challenging traditional cultural norms and societal expectations is essential. We reinforce the need to implement awareness campaigns and educational initiatives to actively dismantle biases and foster an environment that recognizes and celebrates women's roles in the technology sector.

Table 1. Description of sociodemographic variables

Interviewee	Age	Level of Education	Years of service	Number of employees	Area	Support
E1	40	Graduate	4	2	Software/Web Development	No
E2	35	Postgraduate	2	2	Software/Web Development	No
E3	50	Postgraduate	2	2	Artificial intelligence/data	No
E4	62	Postgraduate	4	3	Software/Web Development	No
E5	48	Postgraduate	2	2	Artificial intelligence/data	No
E6	44	Postgraduate	2	2	E-commerce	No
E7	50	Graduate	3	3	Software/Web Development	No
E8	44	Postgraduate	4	3	Software/Web Development	No
E9	39	Postgraduate	3	2	Educational technology	No
E10	36	Graduate	3	2	Software/Web Development	No
E11	41	Postgraduate	3	4	Educational technology	No
E12	55	Graduate	4	3	Software/Web Development	Yes
E13	37	Postgraduate	4	4	Software/Web Development	No
E14	40	Postgraduate	4	4	E-commerce	No
E15	36	Postgraduate	3	2	Educational technology	No
E16	42	Graduate	2	3	Software/Web Development	Yes
E17	38	Postgraduate	1	2	Software/Web Development	No
E18	48	Postgraduate	2	2	Software/Web Development	No
E19	38	Graduate	2	3	Educational technology	No
E20	33	Technician	3	2	Software/Web Development	No
E21	51	Postgraduate	2	3	Software/Web Development	No
E22	59	Graduate	4	2	E-commerce	No
E23	32	Graduate	3	3	Software/Web Development	No

Table 2. Experience: Quotes from interviewees

Categories	Quotes from interviewees
Adaptation and Innovation	"The biggest innovation we have made in recent years is positioning ourselves on social media as a marketing strategy; this has allowed us to reach more customers." (E5) "Our adaptation has been primarily from a commercial and customer relationship perspective, based on their specific requirements." (E8) "We take advantage of the gap between technology, production, and regeneration, as well as environmental, social, and economic balance." (E20)
Gender Barriers	"Perhaps the biggest change is now seen in young people, since not only men, but also women now have that different mindset regarding technology, as if they were born with it." (E6) "I have experienced some difficulties due to my gender, as the tech ecosystem is dominated by men. For example, with new clients, upon first contact, seeing that I am a woman often creates a certain distrust regarding the quality of my work. It is an immediate perception based not on experience, but stereotypes." (E14) "I have noticed that many women, even though they are technically capable, prefer to offer services as freelancers rather than formalize a business. This is due to the administrative, tax, and management burden involved in legal incorporation, coupled with the fact that the market doesn't adequately value or compensate for that effort." (E19) "When a woman approaches other producers to establish alliances, there is almost always some misgiving." (E3) "I encountered an initial lack of recognition, especially when approaching a client, who often perceives a woman's work as an activity that will not necessarily be carried out with the same capabilities or ideas as a man's." (E17)
Barriers	"Among the biggest barriers I can cite are the issue of taxes, the accounting requirements imposed by the government, and the obligations required by the company supervisory authority." (E3) "In several cases, children (younger and with an open mind toward digital technology) contact us to implement solutions, but ultimately the decision rests with their parents, who, due to their age or more conservative views, reject the proposals." (E23)
Entrepreneurship Factors	"The technology entrepreneurship ecosystem in Ecuador is constantly evolving and generating significant opportunities. There is a growing interest in technological innovation, which motivates companies to adopt new technological strategies to remain competitive." (E11)
Opportunities	"As an opportunity, I believe we can diversify our offerings. Perhaps we could enter the field of technological training, that is, become knowledge transmitters." (E9) "It is crucial that girls have more opportunities to interact with technology. Universities are already improving in terms of gender parity, but more work is needed to close the gap." (E2)
Future Projection and Sustainability	"We would like to have legal backing to be able to submit projects to the public procurement portal." (E7) "My goal is to continue training the team in new technologies and to find practical applications that can solve problems in the country and the region. We are interested in continuing to innovate, especially in artificial intelligence." (E10)
Support Networks	"I believe the professional networks I formed with my university classmates have been the most helpful to me. This is because there is a great deal of support from those who were in that educational process and took different paths within the same field." (E1) "In other countries like Brazil, Colombia, Costa Rica, and Panama, there are examples of how this type of partnership contributes to business success. Here, however, individual entrepreneurship is encouraged. There is no instruction on how cooperation can benefit producers of all sizes, from the smallest to the largest." (E1) "We have the support of other production companies in Brazil and also in Panama, where we have established good contacts with women entrepreneurs. These are not sporadic alliances or one-off agreements, nor are they formally constituted partnerships, but rather connections that have arisen out of necessity and shared interests." (E2) "One of the most important networks for the growth of my business has been the one formed by other women entrepreneurs in technology." (E4)

However, the emic analysis of opportunities and future projections reveals that Ecuadorian women in technology entrepreneurship have demonstrated a remarkable capacity for innovation and resilience in the face of structural barriers, adapting quickly to the digital environment and reconfiguring their business models to leverage new technologies. These results align with those of Suseno and Abbott (2021), who analyzed how women innovated and utilized digital technologies to reconfigure their businesses in response to the crisis. They also coincide with Blanco Rada and Park (2024), who highlight the creation of parallel collaboration networks and gender-focused incubators as adaptive responses that transform the entrepreneurial ecosystem from within.

Red lines highlight the interactions found between the most frequently repeated patterns in this analysis. For example, the interviewees emphasize that mentoring networks are fundamental for their development and consolidation. Based on their previous experiences, businesswomen indicate that the best support networks can be formed among university graduates and teachers at higher education institutions. However, limited access to these networks, par-

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ticularly those of key investors and mentors, remains a significant challenge. This aligns with Nevi et al. (2025), who note that women entrepreneurs often face structural barriers to joining technical communities or investment forums. Moreover, Acevedo-Duque et al. (2021) highlight how, despite these obstacles, women have demonstrated a remarkable capacity to adapt to the new digital environment. This resilience is reflected in the emergence of new digital professional networks as mechanisms for consolidation.

3.4. Qualitative analysis

For each category previously detailed in Table 2, subcategories were identified to enable a more detailed analysis. The interactions and the importance of each category (in bold) and subcategory are presented in Figure 2, which shows a co-occurrence heat map.

For example, the subcategories in adaptation and innovation include automation, growth, artificial intelligence, resilience, and technology. These terms are closely linked to local demand, with AI holding a special place. This is considered one of the most important technologies of the modern era because it serves as a "cognitive extension" for humanity, enabling machines to process vast amounts of data, recognize patterns, and make decisions beyond human capabilities (Li et al., 2023; Prasanth et al., 2023).

Likewise, the following subcategories were defined within the opportunities category: alliances, training, growth, expansion, financing, and formalization. This shows that the participants used these words in the interviews, which were linked to the previously established categories in Table 2. They also seek to forge strategic alliances that will enable them to generate growth and training. Note the prominent mention of formalization, which directly involves the local government; that is, public policies that allow these types of ventures to be formally recognized. And this pattern is repeated in all categories.

The co-occurrence heat map (Figure 2) shows higher occurrence values (18–33), represented by darker tones (black and dark blue), indicating a strong relationship between the categories. In order of occurrence, these tones are observed in words linked to positive terminology: growth (28), opportunities (28), entrepreneurship factors (28), mentoring (23), support networks (23), experience (20), and training (19). While in the words linked to negative experiences, the following stand out: challenges (33), barriers (33), gender barriers (23), difficulties (23), and gender influence (18).

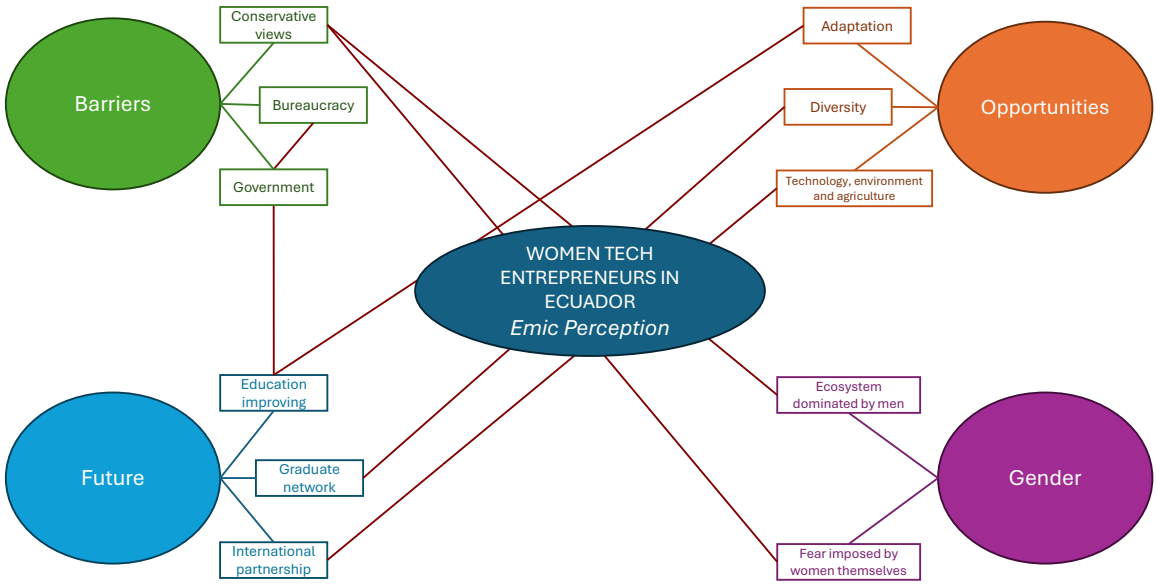

Figure 1. Categories and patterns identified in the emic perception analysis

On the other hand, lighter tones (light and dark yellow) reflect less frequent occurrence. In order of occurrence, these tones are observed in words linked to positive terminology: expansion (7), consolidation (7), AI (6), collaboration (6), financing (4), formalization (4), and education (3). While in the words linked to negative experiences, the following stand out: perception (7) and inequality (6). The interactions and the importance of each category and subcategory are presented graphically in Figure 2, which shows a heat map of co-occurrence among women entrepreneur categories. On the map, the categories barrier–challenge (33), entrepreneurship factors–growth (28), entrepreneurship factors–opportunities (28), gender barriers–difficulties (23), mentoring–sustainability (23), support network–mentoring (23) are among the most interconnected (23–33). These findings suggest that these factors play a crucial and recurring role in venture consolidation.

The interviewees detail negative experiences linked to difficulties and challenges due to general barriers and specific barriers due to their gender. As shown in Table 2, many of these experiences stem from the fact that the market is worldwide dominated by men, making it a real challenge to break this stereotype. This effect has been documented worldwide. For example, Sadraei (2025) and Paiva et al. (2024) highlighted the network gap and the low visibility of women entrepreneurs within the technology ecosystem; for these authors, the barriers include decades of entrenched gender inequality in society, institutional support, and limited access to financing.

Among the positive experiences, the combinations highlight the importance of entrepreneurship factors, mentoring, and support networks for the development of entrepreneurial projects. In other words, the Ecuadorian women interviewed believe that significant effort is needed to create support networks that foster spaces for exchanging ideas. These same networks, in turn, can generate training and mentoring programs that help boost technology companies. This theme was previously observed in the quotes obtained from the interviews (Table 2). Note that some of the interviewees already belong to international support networks; however, they emphasize the need to build local networks and call on universities to lead these efforts. The results of this research align with those of Machado et al. (2025), who emphasize that the obstacles are not only individual but also deeply rooted in the dynamics of the entrepreneurial system, which excludes or hinders the full integration of women into specific networks.

The interaction among sustainability, automation, and impact suggests that the interviewees recognize that, for their companies to be sustainable, they must focus on growth and process automation. In other words, they understand that continuous improvement and growth processes must be prioritized to enhance their production processes. Note that this subcategory is considered important, even though the funding source is not perceived as a barrier.

In terms of sustainability, women entrepreneurs were optimistic about the future projection of their businesses, highlighting growth and expansion as key objectives for the coming years. Consolidation and expectations about the continuity of its projects were essential to guarantee long-term sustainability. Most of them recognize the government's influence on this point, so the success seen in countries like Brazil after large feminization campaigns (de Carvalho, 2026) makes them hopeful that it will be the same in Ecuador in the near future. However, according to Işık et al. (2025), each nation must define strategies to strengthen gender-inclusive entrepreneurship and innovation while mitigating climate risks and labor-market vulnerabilities, as their analyses reveal significant asymmetries between developed and developing economies.

The moderately interconnected categories (17–20) are: entrepreneurship factors–experience (20), entrepreneurship factors–training (19), and gender barriers–influence of gender (18). On the other hand, despite the barriers, the entrepreneurs identified various opportunities that facilitated their growth, such as market expansion, strategic partnerships, and ongoing training. According to Kovaleva et al (2023), the most common motivators for women to become interested in the tech sector and to become entrepreneurs were the ability to innovate and, to achieve this, the need for training and experience gained through hard, daily, constant work. In addition, studies have

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shown that another crucial factor is academic level, which, in turn, has resilience and emotional intelligence as its antecedents (Bustamante-Mora et al., 2025).

3.5. Review of the hypotheses

H1: Ecuadorian women technology entrepreneurs experience systemic barriers arising from the interplay among sociocultural, institutional, and individual factors that collectively shape their entrepreneurial trajectories and business consolidation processes.

The findings provide consistent support for H1 across the three levels proposed. At the sociocultural level, participants repeatedly described client distrust triggered by their gender rather than their track record: "seeing that I am a woman often creates a certain distrust regarding the quality of my work... based not on experience, but stereotypes" (E14), a perception echoed by E17 and E3 regarding alliances with other producers. At the institutional level, the most frequent barriers were bureaucratic: taxes, accounting requirements, and supervisory obligations (E3), to the point that technically capable women prefer informality as freelancers over legal incorporation (E19). At the individual-systemic intersection, the co-occurrence analysis (Figure 2) confirms these patterns quantitatively: barrier–challenge (33) and gender barriers–difficulties (23) were among the strongest associations in the corpus, while 91.30% of participants operate without any external funding despite high educational attainment (60.87% postgraduate). Taken together, the barriers do not operate in isolation but reinforce one another (stereotype-driven distrust restricts network access, which in turn limits financing and consolidation), supporting the systemic interplay proposed in H1 and aligning with the double-layered system described by Mari et al. (2024) and Adikaram and Razik (2023).

H2: Support networks shape business consolidation by providing access to resources, knowledge, mentorship, and strategic relationships that strengthen entrepreneurs' capacity to sustain and grow their ventures.

The evidence also supports H2, with an important nuance. Participants identified networks as decisive for consolidation: university-based peer networks were described as "the most helpful" (E1),

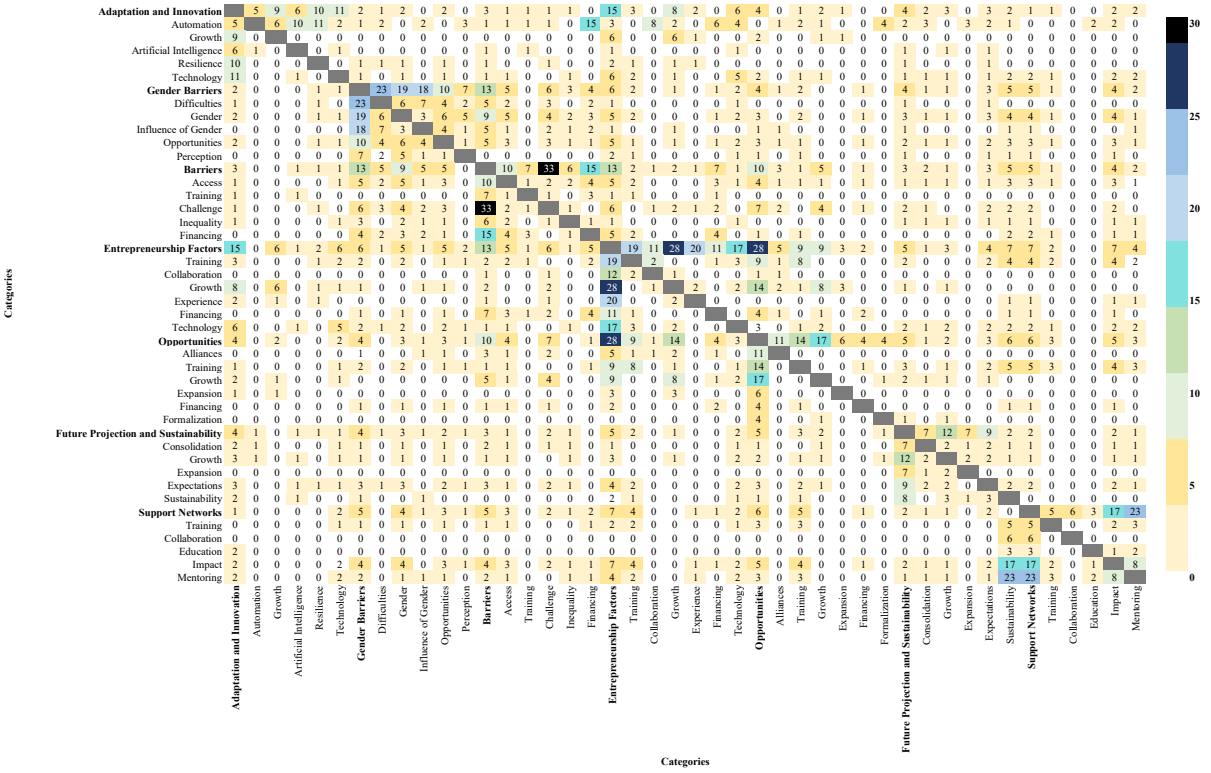

Figure 2. Heat map of co-occurrence between categories of women entrepreneurs

and networks formed by other women technology entrepreneurs as "one of the most important... for the growth of my business" (E4). The co-occurrence analysis reinforces this: support networks–mentoring (23) and mentoring–sustainability (23) rank among the strongest positive associations, indicating that access to mentoring is empirically linked to how participants conceive the continuity of their ventures. The nuance is that the networks currently sustaining these businesses are largely informal or international (Brazil, Colombia, Costa Rica, Panama; E1, E2), emerging "out of necessity and shared interests" rather than from institutional support. Thus, H2 is supported, but the mechanism operates despite, not because of, the local ecosystem, which explains participants' call for universities and government to formalize what they have had to build themselves, consistent with the adaptive systemic responses described by Blanco Rada and Park (2024).

3.6. Limitations

This study has several limitations. First, it focused on a limited number of women entrepreneurs in Ecuador, limiting the generalizability of the results to other contexts. However, this can be considered an opportunity to expand on the same topic but with a broader focus, such as at the Latin American level. Additionally, the analysis does not provide an in-depth examination of how barriers and opportunities evolve at different stages of entrepreneurship and within their environment. Similarly, this topic can be expanded to include information from all the agents involved.

3.7. Future research lines

Future research could compare the challenges and opportunities faced by women tech entrepreneurs across different Latin American countries. It would also be beneficial to conduct longitudinal studies to examine the evolution of barriers and the strategies women entrepreneurs employ over time. Additionally, further investigations can be conducted into institutional interventions that promote gender equality within the entrepreneurial ecosystem. Ultimately, quantitative studies and the application of new technologies, such as artificial intelligence, can complement qualitative findings and offer a broader perspective on addressing gender gaps in the technology sector.

CONCLUSION

The study sought to interpret the common experiences of women entrepreneurs in the technology sector, aiming to uncover how their environment operates across social, cultural, institutional, and individual dimensions, as well as within support networks.

In demographic terms, the results showed that the level of training is high, as 60.87% of participants have postgraduate studies. Although all participants have their businesses legally formalized, 91.30% have not received any financing whatsoever. Regarding gender barriers, the interviewees' quotes show that they felt distrust from clients when they noticed a woman was leading the company or the project. This was corroborated by qualitative analysis, which found that the interviewees detailed negative experiences linked to general and gender-specific barriers. Many of these experiences stem from the fact that the market is global, and in this type of company, men dominate, making it a real challenge to break this stereotype. Among the positive experiences, this study highlights the importance of entrepreneurship factors, mentoring, and support networks for the development of entrepreneurial projects. In other words, the Ecuadorian women interviewed believe that significant effort is needed to create support networks that foster spaces for exchanging ideas, and that local universities are called to lead these efforts.

This study advances understanding of women's technology entrepreneurship by reframing barriers as systemic configurations rather than individual deficits. From a knowledge management perspective, the findings underscore that restricting women's access to professional networks constitutes

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a knowledge barrier that undermines both individual firm performance and the collective knowledge capital of the technology sector. Inclusive knowledge ecosystems (built through university-led mentoring programs, gender-focused incubators, and policy interventions) are, therefore, not only equity goals but strategic imperatives for maximizing organizational knowledge performance in emerging economies.

AUTHOR CONTRIBUTIONS

Conceptualization: Fausto Calderón-Pineda.
Data curation: Fausto Calderón-Pineda.
Formal analysis: Fausto Calderón-Pineda.
Investigation: Fausto Calderón-Pineda.
Methodology: Fausto Calderón-Pineda, Ana María Ortega-Álvarez.
Resources: Fausto Calderón-Pineda.
Supervision: Ana María Ortega-Álvarez.
Visualization: Fausto Calderón-Pineda.
Writing – original draft: Fausto Calderón-Pineda, Ana María Ortega-Álvarez.
Writing – review & editing: Fausto Calderón-Pineda, Ana María Ortega-Álvarez.

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DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

In preparing this manuscript, Atlas.ti version 23 was used for qualitative data coding and analysis, with support from artificial intelligence functions. The authors critically reviewed and interpreted all outputs and took full responsibility for the content.

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APPENDIX A

Table A1. Script used in individual interviews

Questions
Section II. Entrepreneurial Trajectory and Motivations
How did the idea of creating your technological venture arise?
What were the main motivations that drove you to become an entrepreneur in the technology sector?
How has your venture evolved from its inception to the present day?
Section III. Barriers and Challenges Faced
What obstacles have you encountered as a woman in the process of consolidating your venture?
Do you consider that your gender has influenced the opportunities or difficulties you have faced in the technological ecosystem? How?
Have you perceived gaps in access to financing, networks, training, or institutional support?
Section IV. Networks, Resources, and Support
What type of networks or alliances have been key to the growth of your venture?
Have you participated in mentoring, incubation, or specialized training programs? What impact have they had on your trajectory?
How do you currently access strategic resources (technology, financing, knowledge)?
Section V. Adaptation and Innovation
How has your business responded to recent changes in the digital and economic environment, especially after the pandemic?
Have you developed innovative strategies to adapt to these changes? Could you share a specific example?
What elements do you consider have strengthened the resilience of your business?
Section VI. Ecosystem Perception and Future Outlook
How would you describe the technological entrepreneurship ecosystem in Ecuador from your personal experience?
What changes do you consider necessary for more women to consolidate businesses in this sector?
What are your future expectations or goals regarding your business?