FMDB ***Transactions on Sustainable Technoprise Letters***

Entrepreneurship Training and Barriers to Sustainable Livelihoods for Rural Women: Evidence from Lebanon

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Abstract: This study examines the impact of entrepreneurship training on the livelihoods of rural women in Lebanon, focusing on how such programs enhance human capital, expand capabilities, and contribute to sustainable development. Guided by Amartya Sen's Capability Approach and Human Capital Theory, the study explores whether training enhances women's agency, financial independence, and social participation, while identifying structural obstacles that undermine sustainability. A mixed methods design combined survey data from 240 women across three rural regions with semi-structured interviews from 12 Non-Governmental Organisations (NGOs). Quantitative analysis examined the associations between training, skill acquisition, and entrepreneurial outcomes, while qualitative insights captured program design and the barriers encountered. Results show that training significantly enhanced women's start-up and leadership skills, with positive correlations to business creation and employment outcomes ($p < .05$). Leadership training expanded confidence and networks, positioning women as community actors. Yet systemic barriers persisted: 62% of non-starters cited financial exclusion as the primary constraint, while weak follow-up and sociocultural norms further limited outcomes. The findings highlight that training alone is insufficient without accessible finance, sustained mentoring, and enabling institutions. The study contributes evidence for policymakers, NGOs, and donors designing inclusive livelihood interventions in fragile contexts.

Keywords: Entrepreneurship Training; Rural Women; Sustainable Livelihoods; Human Capital; Capability Approach; Women Empowerment; Non-Governmental Organisations (NGOs).

Received on: 02/11/2024, **Revised on:** 24/01/2025, **Accepted on:** 18/03/2025, **Published on:** 07/06/2025

Journal Homepage: https://www.fmdbpub.com/user/journals/details/FTSTPL

DOI: https://doi.org/10.69888/FTSTPL.2025.000440

Cite as: H. Harb, "Entrepreneurship Training and Barriers to Sustainable Livelihoods for Rural Women: Evidence from Lebanon," *FMDB Transactions on Sustainable Technoprise Letters,* vol. 3, no. 2, pp. 98–114, 2025.

1. Introduction

1.1. Background

Entrepreneurship has gained prominence as a pathway for inclusive growth, particularly in fragile and post-conflict contexts. In Lebanon, where decades of instability and economic collapse have eroded institutional capacity, international donors and NGOs increasingly view women's economic empowerment as a driver of social and economic recovery. Women's participation

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is no longer a symbolic aspiration but an imperative for national rehabilitation and social cohesion [21]. Despite women constituting nearly 40% of the global workforce, Lebanon lags significantly behind this figure (Figure 1). Only 29% of women participate in the labour market compared with 76% of men, placing the country near the bottom of the Global Gender Gap Index [50]. Globally, female entrepreneurship has expanded, with approximately 329 million women across 83 economies either managing or starting enterprises [13]. While some countries report parity or female-led advantages, Lebanon's women-led businesses remain concentrated in low-return sectors, reflecting systemic inefficiencies in leveraging women's potential. Governmental and donor initiatives, such as the We-Fi program and UNDP-supported projects, aim to redress this imbalance, but evidence on long-term outcomes remains limited.

1.2. Policy Context: Lebanon's Crisis and NGO Interventions

The significance of entrepreneurship training for women in Lebanon must be understood within the context of the unprecedented crisis that has been unfolding since 2019. Currency collapse, banking restrictions, and soaring inflation have created one of the most severe economic downturns globally. Unemployment has surged, and basic goods have become inaccessible to large segments of the population; rural households, in particular, face mounting insecurity in their livelihoods. The COVID-19 pandemic and the 2020 Beirut port explosion exacerbated these shocks, leaving Lebanon's economy in a prolonged state of freefall. For rural women, these structural disruptions magnified pre-existing vulnerabilities. Transportation costs rose sharply, informal lending networks broke down, and access to markets became increasingly restricted. NGOs and international agencies responded by adapting training models to the crisis context, emphasising low-cost ventures, digital platforms, and community-based production. Programs such as the "e-Commerce and Women-Led SMEs in Lebanon" initiative, supported by the World Bank and We-Fi, aimed to expand the digital reach of women entrepreneurs [42]. Other NGOs focused on skills in cooperative management, digital literacy, and local supply-chain resilience. Yet even these adaptations faced limits: financial institutions continued to demand collateral that rural women could not provide, while infrastructural challenges in remote areas, such as limited internet connectivity, unpaved roads, and inadequate transport systems, further reduced the feasibility of scaling enterprises. Understanding entrepreneurship training in Lebanon thus requires recognising its double role: as a short-term crisis response and as part of a longer-term strategy for gender equity and rural development.

1.3. Entrepreneurship Training as Human Capital Development

Entrepreneurship training is widely recognised as a practical strategy for building human capital, especially in rural areas. Training fosters skills in opportunity recognition, resource management, and leadership, equipping women to generate income and challenge restrictive gender roles [23]. Beyond economic functions, training shapes self-efficacy and expands social roles within communities. These elements align with Human Capital Theory, which posits that education and skills are crucial to entrepreneurial success [16]; [19]. Amartya Sen's Capability Approach offers a complementary lens by emphasising not only what individuals achieve but what they are empowered to do and become [6]; [7]. Training thus represents more than a technical intervention; it expands women's capabilities to negotiate institutional barriers and pursue livelihoods they value [25]. The Sustainable Livelihoods Approach adds yet another dimension, highlighting how individual assets interact with vulnerabilities and institutions to determine livelihood strategies [17]. Linking these frameworks together, entrepreneurship training can be understood as a mechanism for capability expansion, but one whose effectiveness is moderated by systemic constraints such as finance, mobility, and infrastructure [37].

1.4. Capabilities and Sustainable Livelihoods

Human Capital Theory, however, is insufficient for understanding empowerment in fragile contexts because it focuses primarily on inputs and outputs. Amartya Sen's Capability Approach provides a broader perspective, emphasising not just what people achieve but what they are free and able to achieve [6]; [7]. In Lebanon, entrepreneurship training enhances women's capabilities by expanding their agency, decision-making, and social participation. Yet systemic barriers such as gender-biased lending, mobility restrictions, and fragile markets often prevent these capabilities from being converted into sustainable outcomes. The Sustainable Livelihoods Approach (SLA) further situates these processes within broader institutional and structural contexts. It highlights how human and social assets interact with financial, physical, and natural resources, and how vulnerabilities and conversion factors determine whether skills can translate into resilient livelihood strategies [37]; [17]. Linking these perspectives enables entrepreneurship training to be viewed as both an investment in women's capabilities and a strategy shaped by structural constraints.

1.5. Barriers in Rural Contexts

Despite the potential of training, women entrepreneurs in Lebanon continue to face systemic barriers. Access to finance remains the most decisive. Only one-third of financial institutions in Lebanon extend credit to women, and collateral requirements are prohibitive [20]. Cultural norms further confine women to domestic responsibilities, limiting their time, mobility, and confidence to engage in entrepreneurial ventures [30]. The 2019 economic collapse deepened these barriers. Hyperinflation eroded savings, supply chains fragmented, and informal support networks weakened. Rural areas were particularly disadvantaged by geographic isolation, poor infrastructure, and limited digital connectivity. Even when NGOs provided effective training, these systemic obstacles often prevented women from translating skills into sustainable businesses.

1.6. Problem Statement and Research Gap

While entrepreneurship programs for women are proliferating in Lebanon, few studies assess their long-term impact on livelihood sustainability and empowerment. Most research focuses on short-term skill acquisition, overlooking whether women achieve durable income generation, financial independence, or community influence. Moreover, little attention has been given to how training interacts with human capital development and broader social empowerment within rural communities. Existing literature from the MENA region has tended to emphasise either economic outputs (business creation, income growth) or sociocultural barriers, but rarely integrates both dimensions into a comprehensive framework [8]; [10]. This study addresses these gaps through a mixed-methods design, examining the extent to which entrepreneurship training enhances women's self-efficacy, economic independence, and community impact, while also identifying barriers to sustainability.

1.7. Objectives and Research Questions

The study pursues five objectives:

- Analyse the impact of entrepreneurship training on rural women's livelihoods in Lebanon.
- Assess whether programs contribute to independent income generation.
- Determine whether training equips women with relevant business and social skills.
- Examine links between training and sustainable livelihood outcomes.
- Identify socio-economic and cultural constraints that limit women's participation.

Corresponding research questions investigate how training influences livelihoods, whether it leads to sustainable income, what skills are acquired, its relationship to human development, and what barriers persist.

1.8. Significance of the Study

This research makes both theoretical and practical contributions. Theoretically, it extends Human Capital Theory and Sen's Capability Approach into fragile contexts, demonstrating their explanatory power and limitations. It also incorporates the Sustainable Livelihoods Approach to highlight the role of conversion factors such as finance, mentoring, and infrastructure in shaping outcomes. Practically, the study provides evidence-based insights for policymakers, donors, and NGOs designing entrepreneurship programs in crisis economies. By situating Lebanon within regional and global debates on women's entrepreneurship, this study highlights that training can be a catalyst for empowerment. Still, it requires an enabling ecosystem to translate skills into sustainable livelihoods.

2. Literature Review

2.1. Human Capital and Development

Human capital has long been recognised as a cornerstone of economic growth and social advancement. Early theorists framed it as the skills, knowledge, and health individuals acquire through education and training, which enhance productivity. More recent research broadens this understanding to encompass not only economic productivity but also empowerment, resilience, and social inclusion [2]. In fragile economies like Lebanon, where wage employment is limited and institutional structures are weak, human capital formation through non-traditional pathways such as entrepreneurship is especially critical. Investing in women's human capital produces multiplier effects, improving household welfare, children's education, and community resilience. Scholars highlight that closing gender gaps in education and training yields broad development benefits [33]; [51]. For rural women, who are often excluded from mainstream labour markets, entrepreneurship training is not only a vehicle for income generation but also one of the few available strategies for building human capital and achieving economic agency [12].

2.2. Entrepreneurship and Human Development

Entrepreneurship is increasingly understood as a driver of growth, innovation, and social transformation. Schumpeter [18] emphasised the entrepreneur as an innovator and disruptor, while later scholarship underscores entrepreneurship's role in job creation, poverty reduction, and income diversification [48]; [43]. In fragile or post-conflict contexts, entrepreneurship is often more about survival than innovation, serving as a coping mechanism in the absence of secure wage employment. Globally, women's entrepreneurship has experienced substantial growth [49]. Programs such as BRAC in Bangladesh and grassroots initiatives in India have demonstrated how training can expand women's economic roles, enhance participation in household decision-making, and improve community welfare [28]. These experiences underscore the dual role of entrepreneurship as both a livelihood strategy and a means of challenging and reshaping gender norms. However, in Lebanon, women remain underrepresented in higher-growth sectors and their businesses are disproportionately concentrated in low-value, informal activities. This disconnect illustrates the gap between potential and realised outcomes.

2.3. Entrepreneurship Training and Human Capital Formation

Entrepreneurship training directly contributes to human capital by providing knowledge, technical skills, and managerial competencies, thereby enhancing individual capabilities. Empirical studies confirm that training enhances entrepreneurial self-efficacy, which is the belief in one's capacity to perform entrepreneurial tasks, and which in turn predicts intention, persistence, and performance [16]; [5]; [3]. For rural women, training has both economic and social implications. It equips them with tools for enterprise creation and challenges restrictive gender norms by fostering leadership, negotiation, and networking skills [15]. Importantly, training challenges restrictive gender norms by legitimising women's presence in the public economic sphere. Evidence from Sub-Saharan Africa and South Asia shows that training can reshape women's roles in families and communities, but only when combined with access to finance, mentoring, and institutional support. Otherwise, skill gains risk being underutilised.

2.4. Capability Approach as a Theoretical Lens

While Human Capital Theory emphasises the economic value of education and skills, Amartya Sen's Capability Approach offers a broader framework for assessing human development. It emphasises not only what individuals achieve but also what they are free and able to achieve, what they value being and doing [6]; [7]. Applied to women's entrepreneurship in Lebanon, the Capability Approach highlights how structural barriers, including patriarchal norms, mobility restrictions, and exclusion from finance, limit women's actual freedoms. Entrepreneurship training, therefore, is not merely a technical intervention but a catalyst for expanding capabilities, agency, and participation [37]. When combined with the Sustainable Livelihoods Approach, this framework highlights the interaction between assets, institutional contexts, and cultural factors in shaping livelihood outcomes [17].

2.5. Global Landscape of Women's Entrepreneurship

Women's entrepreneurship is widely acknowledged as a driver of inclusive growth, yet disparities remain stark. The Global Entrepreneurship Monitor (GEM) reports that women entrepreneurs represent nearly 40% of the entrepreneurial population worldwide; however, they are more likely to operate in low-value sectors and face survivalist pressures, struggling to scale their businesses [1]; [36]. Structural disadvantages, including unequal access to credit, networks, and markets, restrict women's ability to translate entrepreneurial activity into sustainable livelihoods [9]; [31]. Comparative studies show significant variation across institutional and cultural contexts. In some economies, women entrepreneurs are achieving parity or even outpacing their male counterparts, while in others, entrenched social norms and systemic discrimination continue to limit their participation. This variability underscores the importance of analysing women's entrepreneurship within specific national and cultural contexts.

2.6. Women's Entrepreneurship in Lebanon

Lebanon reflects many of these global patterns. Women represent less than 10% of business owners, among the lowest rates in the region [49]; [4]. While women's educational attainment is relatively high, this has not translated into equivalent entrepreneurial participation. Recent studies emphasise Lebanese women's adaptability and resilience in navigating crises. They rely heavily on networks, community support, and informal strategies to sustain livelihoods [35]; [26]. Yet most activity remains necessity-driven, clustered in low-capital sectors such as handicrafts, food processing, or small retail. This pattern reflects the absence of enabling institutions and demonstrates how structural barriers confine women to subsistence-level entrepreneurship.

2.7. Barriers to Women's Entrepreneurship

2.7.1. Cultural Constraints

Patriarchal norms continue to shape women's roles in Lebanon. Domestic responsibilities, caregiving expectations, and restricted mobility constrain the time and energy available for entrepreneurial activity [30]. These cultural factors also influence confidence levels, risk-taking behaviour, and willingness to pursue non-traditional business ventures [44]. These constraints are particularly severe in rural areas, where professional networks and market access are limited [39].

2.7.2. Gender-Based Discrimination

Persistent gender-based discrimination reduces women's entrepreneurial legitimacy. Women-led firms in Lebanon generate significantly less revenue than those owned by men [20]. Discriminatory lending practices and institutional biases further restrict access to finance, reinforcing structural exclusion [11]; [38]; [27].

2.7.3. Institutional Barriers

Weak institutions compound these challenges. While Lebanon has policies that promote entrepreneurship, their implementation remains fragmented, and enforcement is inconsistent. Women face limited access to targeted mentorship, weak legal protections, and fragile state support structures [14]. Since the 2019 economic crisis, NGOs have filled many gaps, but interventions are often short-term and donor-driven, lacking sustainability [32]; [45].

2.7.4. Psychological Barriers

Psychological obstacles, such as self-doubt, fear of failure, and a lack of role models, hinder women's entrepreneurship. These are shaped by broader cultural and institutional environments [47]. Programs that integrate mentorship and leadership development have proven effective in countering such limitations [44].

2.7.5. Financial Barriers

Access to finance remains one of the most decisive constraints. Women often lack collateral, face biased lending practices, and have limited access to formal financial institutions [1]; [41]. While microfinance offers partial relief, it risks confining women to small-scale, low-value ventures unless accompanied by structural reforms [24].

2.8. Role of NGOs in Women's Empowerment

In the absence of strong state support, NGOs play a central role in women's entrepreneurship in Lebanon. Organisations such as Al Majmoua, Fair Trade Lebanon, and international foundations have provided training, microcredit, and mentoring with positive short-term impacts [12]. Despite these efforts, programs often fail to dismantle structural barriers. Many remain focused on small-scale, donor-driven projects that perpetuate occupational segregation. Recent evidence suggests integrated approaches, combining training with finance, market linkages, and advocacy, are more effective in fostering genuine empowerment [40]; [27].

2.9. Sustainable Livelihoods and Measurement Implications

The Sustainable Livelihoods Approach emphasises the interaction of different forms of capital (human, social, financial, physical, natural) in shaping resilience. For Lebanese women, training increased human and social capital; however, fragile financial and institutional contexts undermined its sustainability [34]; [44]. Measuring empowerment in fragile contexts requires multidimensional indicators beyond business start-ups, including leadership, social connectivity, and agency. Participatory evaluation frameworks that involve women in defining success offer more accurate assessments [14]; [45].

2.10. Conceptual Synthesis

The reviewed literature demonstrates strong links between entrepreneurship training, human capital formation, and women's empowerment, while underscoring the persistence of certain barriers. Theoretical perspectives from Human Capital Theory, the Capability Approach, and the Sustainable Livelihoods Framework together provide a foundation for analysing how training shapes livelihoods in fragile contexts. Despite progress globally, Lebanon remains understudied. Empirical research on rural women's entrepreneurship is limited, and little is known about how training programs overcome or fail against systemic barriers. This study addresses these gaps by examining how entrepreneurship training affects the capabilities and livelihoods of rural women, while identifying the systemic barriers that hinder sustainability.

2.11. Conceptual Framework

This study is guided by a multi-layered conceptual framework that integrates Human Capital Theory, Amartya Sen's Capability Approach, and the Sustainable Livelihoods Approach (SLA). Together, these perspectives provide a comprehensive lens for analysing how entrepreneurship training shapes women's empowerment and livelihood outcomes in rural Lebanon. From a human capital perspective, entrepreneurship training enhances the knowledge, skills, and managerial capacities necessary for identifying opportunities and sustaining enterprises [16]; [19]. Training is therefore not only an educational intervention but also an investment in the individual's productive potential. The Capability Approach complements this by shifting the focus from resources alone to what women are actually able to do and become [6]; [7]. Training outcomes are thus evaluated not only in terms of business creation but also in terms of expanded freedoms—such as the ability to negotiate financial resources, exercise decision-making authority, or participate in community leadership.

Finally, the Sustainable Livelihoods Approach situates these dynamics within broader structural and institutional contexts [37]; [17]. It emphasises how livelihood strategies are shaped by the interaction of assets, vulnerabilities, and enabling environments. This perspective is especially relevant in fragile economies like Lebanon, where systemic shocks such as economic collapse, inflation, and infrastructural deficits determine the extent to which training inputs translate into tangible outcomes. By linking these three perspectives, the framework explains why entrepreneurship training may yield uneven results: while skills and capabilities are strengthened, the sustainability of women's livelihoods ultimately depends on whether institutional and structural conversion factors are in place: finance, infrastructure, social norms, and post-training support. This integrated approach guides the study's analysis of both the opportunities and barriers shaping women's entrepreneurial trajectories in rural Lebanon.

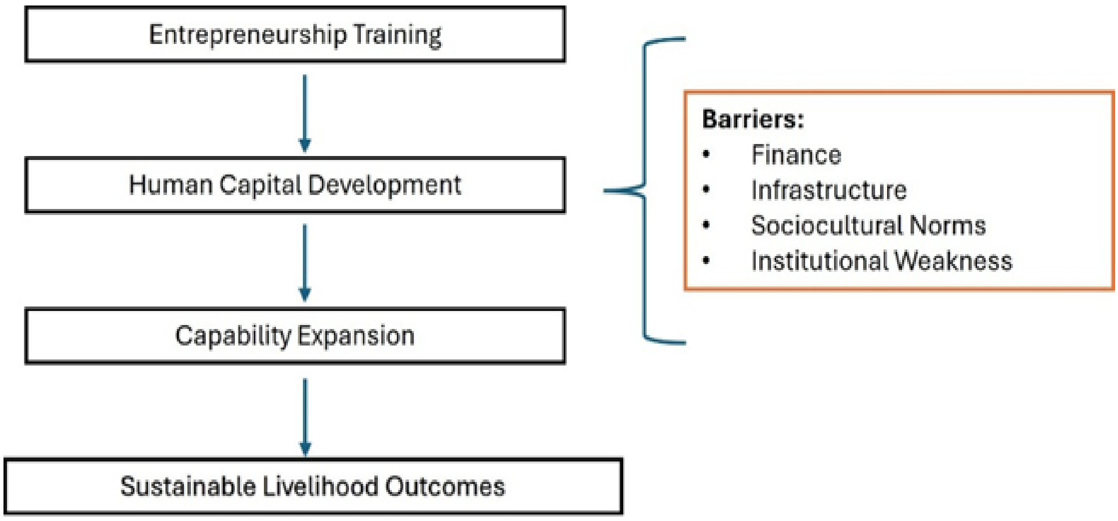

Figure 1: Conceptual framework: linking training, human capital, capabilities, and livelihoods

As illustrated in Figure 1, entrepreneurship training contributes to human capital formation, which expands women's capabilities and enhances their potential to achieve sustainable livelihoods. The framework also highlights that financial exclusion, mobility restrictions, and weak institutions intervene at multiple stages as structural barriers, influencing whether training translates into long-term empowerment.

3. Research Hypotheses

Grounded in Human Capital Theory and Sen's Capability Approach, this study examines the impact of entrepreneurship training on the livelihoods of rural women, while also identifying barriers that hinder its sustainability. Based on the literature and contextual gaps in Lebanon, four hypotheses are advanced:

3.1. H1: Training and Business Start-up Skills

Participation in entrepreneurship training is positively associated with the acquisition of business start-up skills, which increase the likelihood of establishing viable enterprises.

3.2. H2: Leadership Skills and Social Connectivity

Entrepreneurship training that fosters leadership competencies is positively associated with women's social connectivity, enabling stronger networks and community engagement.

3.3. H3: NGO Follow-up and Livelihood Outcomes

Sustained NGO support after training (mentoring, monitoring, and advisory services) is positively associated with improved livelihood outcomes, including start-ups, employment, and program satisfaction.

3.4. H4: Access to Finance and Business Start-up

Access to financial resources moderates the relationship between training and business creation. Women with greater access to credit are more likely to start sustainable enterprises.

4. Methodology

4.1. Research Design

A cross-sectional mixed-methods design was adopted, combining quantitative surveys with qualitative interviews. This approach was rooted in a pragmatist paradigm, recognising that complex social realities in fragile contexts are best understood through methodological pluralism. The design allowed for both statistical testing of hypothesised relationships and qualitative exploration of the social and institutional barriers that quantitative measures alone could not capture. While the cross-sectional nature limited causal inference, it provided a snapshot of women's livelihoods during Lebanon's severe economic crisis (2019-2023), when longitudinal studies were not feasible. The integration of methods enhanced validity by triangulating numeric patterns with explanatory narratives.

4.2. Study Area

The research focused on three rural regions in Lebanon, "North, South, and Beqaa", chosen for their socio-economic diversity and the presence of multiple NGO-led entrepreneurship initiatives.

- North Lebanon is marked by high unemployment, entrenched poverty, and weaker NGO coverage, reflecting the challenges of neglected peripheries.
- South Lebanon benefits from stronger NGO engagement in post-conflict recovery, though patriarchal norms remain deeply embedded.
- The Beqaa Valley serves as Lebanon's agricultural hub, with significant female participation in informal labour and a long history of donor projects.

Together, these regions illustrate the heterogeneity of rural Lebanon, offering a rich basis for comparative insights.

4.3. Population and Sampling

The study targeted two groups:

- Rural women who had participated in entrepreneurship training programs (primary beneficiaries).
- NGO representatives involved in program design and delivery.

For the quantitative survey, a stratified random sample of 240 women was drawn (80 per region). This exceeded the minimum requirement calculated using Cochran's formula at a 95% confidence level, ensuring statistical representativeness. Stratification by region guaranteed that variation in the socio-economic context was captured. For the qualitative component, 12 NGOs (four per region) were purposively selected, reflecting diversity in organisational size, funding source, and program design. NGO staff included program managers, trainers, and field officers, ensuring multiple perspectives on design and implementation.

4.4. Data Collection

4.4.1. Surveys with Women Beneficiaries

Structured questionnaires were administered to 240 women, covering:

- Demographic and socio-economic profile.
- Skills acquired through training (business start-up, leadership, and financial management).
- Barriers to entrepreneurship (finance, cultural norms, mobility).

- Program follow-up and satisfaction.
- Outcomes include business creation, employment, and perceived changes in livelihood.

4.4.2. Interviews with NGO Staff

Semi-structured interviews were conducted with 12 NGO staff to capture program design, challenges, and sustainability measures. Questions addressed:

- Needs assessments and curriculum design.
- Approaches to leadership and empowerment.
- Post-training follow-up mechanisms.
- Observed impact and barriers in implementation.

All interviews were audio-recorded with consent, transcribed verbatim in Arabic, and translated into English when necessary for coding.

4.5. Fieldwork Procedures

Data collection was designed to be flexible, given the mobility and resource constraints faced by rural women during Lebanon's crisis years (2019-2023). Surveys were primarily administered online through SurveyMonkey, which allowed efficient outreach across geographically dispersed regions and reduced the logistical burdens on participants. Recognising that digital literacy and connectivity varied, the research team supplemented the online tool with follow-up phone calls to clarify questions, assist with completion, or capture responses orally when needed. This mixed-mode approach minimised non-response bias and ensured that women with limited internet access or literacy were not excluded. To further protect participants' rights, enumerators followed a standardised script to explain the study's purpose, voluntary nature, and confidentiality measures before obtaining consent. For those responding by phone, verbal consent was documented in accordance with the approved ethical procedures. NGO staff interviews were scheduled in advance and conducted via a combination of online conferencing tools and phone calls, lasting 45 to 75 minutes each. All interviews were transcribed and anonymised to safeguard participant identity.

4.6. Measurement and Operationalisation

Business start-up skills were assessed using Likert items that covered opportunity recognition, basic costing and pricing, cash flow preparation, and writing a simple business plan. A composite index was calculated as the mean of the items, with higher scores indicating a stronger perceived readiness. Internal consistency exceeded the accepted thresholds ($\alpha \geq .70$). The leadership and social connectivity subscales included items on confidence speaking in public, negotiating with suppliers or buyers, coordinating group activities, and the number or frequency of contacts with peers, mentors, and buyers. We report both the index and a binary indicator for improved connectivity since training. NGO follow-up was recorded as a binary exposure to structured mentoring, advisory check-ins, market fairs, or alum platforms within the last twelve months. For robustness, we also distinguish between minimal and intensive follow-up, where applicable, in the qualitative integration. Access to finance was captured by determining whether participants obtained a grant, in-kind equipment, or formal or semi-formal credit after completing the training. We also recorded reasons for not applying or being rejected, including concerns about collateral and interest rates. Outcomes included business start-up, employment for non-entrepreneurs, and program satisfaction. Business creation and employment were coded as binary outcomes. Satisfaction was measured on a multi-point scale and summarised as "very satisfied" versus other categories in line with the descriptive distribution.

4.7. Instruments and Validity

The survey included both closed and Likert-scale items, designed to measure business start-up skills, leadership, social connectivity, financial access, and livelihood outcomes. To ensure reliability, Cronbach's alpha values exceeded 0.70 across all indices. Before full rollout, the SurveyMonkey questionnaire was piloted with a small group of 15 rural women from Beqaa and North Lebanon to test clarity, accessibility, and usability in an online environment. The pilot revealed challenges with terminology and navigation for women with limited digital literacy. As a result, several adjustments were made: simplifying item wording, incorporating visual prompts for scaled responses, and enabling mobile-friendly access. Enumerator support through follow-up phone calls was also incorporated into the design to minimise exclusion. The semi-structured interview guide for NGO staff was likewise piloted with two organisations to confirm contextual relevance. All instruments were translated into Arabic and then back-translated into English to ensure linguistic accuracy and consistency. Construct validity was reinforced by aligning measures with established scales in entrepreneurship and empowerment research, such as self-efficacy and social connectivity.

4.8. Data Analysis

4.8.1. Quantitative Analysis

Descriptive statistics (frequencies, percentages, and means) were first applied to profile participants' socio-demographic characteristics and training outcomes. To test the research hypotheses, Chi-square (χ^2) tests of independence were used to examine associations between training participation and livelihood outcomes. Statistical significance was set at $p < 0.05$. To assess the strength of associations, Cramer's V coefficients were calculated. In addition, odds ratios (ORs) were computed where applicable to estimate the likelihood of outcomes among different subgroups (e.g., women with vs. without start-up skills, or those with vs. without NGO follow-up).

4.8.2. Qualitative Analysis

Thematic analysis was applied to the NGO interview transcripts and open-ended survey responses [46]. Atlas. ti software supported coding and theme development. The findings were triangulated with quantitative results to provide contextual explanations and enhance validity (Appendix A).

4.8.3 Integration

Mixed-methods integration occurred at the interpretation stage, where quantitative patterns were explained using qualitative insights. This strengthened the explanatory power of the findings and captured both the structural barriers and enabling factors that shape women's entrepreneurship.

4.9. Ethical Considerations

Ethical approval for this research was obtained from the doctoral committee at the University of Saint Joseph – Beirut, and the study adhered to international guidelines, including the WHO standards for gender-sensitive research. Given that surveys were administered online via SurveyMonkey and supplemented by phone calls, particular attention was paid to data privacy and informed consent. Survey links were encrypted and did not collect IP addresses or personal identifiers beyond basic demographic variables. Participants were assured that their responses would be kept anonymous and stored securely. For phone-based responses, verbal consent was recorded after the enumerator read a standardised script, and no phone numbers or names were linked to the data files. Confidentiality was further ensured by storing digital data in password-protected folders, accessible only to the research team. For NGO staff interviews, transcripts were anonymised by removing personal names, institutional identifiers, and location markers. These steps minimise risks of identification in small rural communities where privacy concerns are heightened. By combining secure digital tools with culturally sensitive consent procedures, the study protected participants' dignity and safety while ensuring methodological inclusivity for women with limited internet literacy or connectivity.

5. Results

The results are organised around the four hypotheses selected for this article, each addressing how entrepreneurship training and related factors influence rural women's livelihood outcomes. Findings are presented by integrating survey data with NGO interviews and participant narratives, which provide contextual explanations of the statistical associations. Cross-cutting themes are then highlighted to illuminate broader patterns, followed by a consolidated interpretation of effect sizes.

5.1. Descriptive Profile of Participants

The survey captured responses from 240 women across three rural regions (North, South, and Beqaa). Participants ranged in age from 18 to 55, with a mean age of 33 years. Marital status was diverse, with 41% married, 29% single, and the remainder widowed, divorced, or separated. Several NGOs intentionally targeted vulnerable categories such as widows and female heads of households, reflecting equity goals but also concentrating support on women facing steep livelihood challenges. Educational attainment was relatively high, with 62% having completed at least secondary education and 24% holding university degrees. Despite these qualifications, market participation remained limited, with only about 22% of individuals reporting stable employment before training. Literacy levels were uneven; while most participants could read and write, 17% had limited literacy. NGOs responded by using simplified curricula, visual aids, and Arabic-language delivery to ensure inclusiveness. Household dependency ratios were high, with many women supporting children, elderly parents, or siblings. As a result, women's entrepreneurship was often necessity-driven, linked more to family survival than to growth-oriented aspirations. Baseline income sources were concentrated in informal activities, such as seasonal agricultural labor, small-scale trade, or home-based production. This demographic context highlights the structural vulnerability of participants, which influenced how training outcomes were, or were not, translated into sustainable livelihoods.

5.2. Hypothesis Testing

5.2.1. H1: Entrepreneurship Training and Business Start-up Skills

Qualitative Insights: NGO staff observed that training modules strengthened women's ability to identify opportunities, negotiate with suppliers, and organise their household finances. Simplified tools and visual materials allowed women with limited literacy to engage meaningfully, while group exercises fostered peer-to-peer learning. Yet NGOs also cautioned that while technical skills enabled women to "see possibilities," most participants lacked the resources to act upon their new knowledge. Women themselves described the training as "eye-opening," but noted that without start-up capital, their business plans remained largely aspirational.

Quantitative Evidence: Survey results confirmed that entrepreneurship training enhanced women's technical and managerial capacities. Among women who reported acquiring start-up skills (e.g., feasibility analysis, budgeting, basic business planning), 23.1% successfully launched businesses, compared to none among those without such skills. This relationship was statistically significant ($\chi^2 = 12.3$, $p < 0.001$), with a small-to-moderate effect size (Cramer's V = 0.21). Odds ratio analysis indicated that women with start-up skills were 3.5 times more likely to initiate businesses than those without. However, the overall start-up rate was 18%, indicating that training alone was insufficient to overcome structural constraints, such as financial and market fragility.

Synthesis: Training effectively enhanced women's human capital, producing measurable gains in start-up skills. Nevertheless, these skills translated into business creation for only a minority of participants, underscoring that technical preparation is necessary but insufficient in fragile contexts where financial exclusion and institutional weaknesses prevail.

5.2.2. H2: Leadership Skills and Social Connectivity

Qualitative Insights: Interviews with NGOs and participants confirmed that leadership training transformed how women perceived themselves and how they were perceived within their communities. Women reported feeling more confident attending municipal meetings, negotiating with buyers, or initiating group activities, such as cooperative ventures. Several participants described stepping into mentorship roles for peers, a development NGOs identified as "a ripple effect" of training. These transformations were often more visible in rural areas where women's public participation had previously been limited.

Quantitative Evidence: Leadership skills demonstrated one of the strongest statistical associations in the dataset. Among women who reported acquiring leadership competencies, such as public speaking, negotiation, and group coordination, 100% also reported expanded social connectivity, compared to 50.6% of those without leadership training ($\chi^2 = 45.6$, $p < 0.001$). The effect size was very strong (Cramer's V = 0.62), making leadership the single most powerful predictor of social capital formation in the study.

Synthesis: Leadership training expanded women's agency and social networks, aligning with the Capability Approach's emphasis on enhanced freedoms and participation. While these gains were less directly tied to immediate income, they represent critical dimensions of empowerment and resilience. Strengthened social connectivity not only provides emotional support but also generates informal networks that can facilitate market access, knowledge exchange, and collective action.

5.2.3. H3: NGO Follow-up and Livelihood Outcomes

Qualitative Insights: NGOs consistently highlighted that structured mentoring, networking opportunities, and alums platforms were critical to sustaining women's enterprises. Women with follow-up described feeling "guided" and more capable of adapting to shocks such as inflation or supply shortages. Conversely, participants without follow-up expressed frustration, reporting that they were "left alone" after training, which weakened motivation and contributed to business abandonment. Several NGOs acknowledged resource constraints, admitting that donor-funded projects rarely allocated sufficient budgets for long-term accompaniment.

5.2.4. Quantitative Evidence

The presence or absence of NGO follow-up emerged as one of the strongest determinants of livelihood outcomes:

Business Creation: 43.1% of women with post-training NGO follow-up launched businesses, compared to only 1.8% of those without ($\chi^2 = 58.9$, $p < 0.001$). The effect size was large (Cramer's V = 0.55). Odds ratios indicated women with structured follow-up were 38 times more likely to launch businesses than those left without support.

Employment (for Non-Entrepreneurs): Among women who did not become entrepreneurs, 59.6% of those with NGO follow-up secured wage employment compared to 20% without ($\chi^2 = 17.2$, $p < 0.001$, OR = 5.4).
Program satisfaction: 66% of women with follow-up reported being "very satisfied," compared to 4% without support ($p < 0.001$, $\chi^2 = 42.5$, df = 1, Cramer's V = 0.52).

Synthesis: NGO follow-up was not merely an added value but a decisive condition for translating skills into sustainable livelihood outcomes. The strong statistical and narrative evidence reinforces the notion that in fragile economies, one-off training cannot generate a durable impact without ongoing mentoring and institutional support.

5.2.5. H4: Access to Finance and Business Start-up

Qualitative Insights: NGO staff and participants repeatedly emphasised that without capital, business plans remained theoretical. Women described facing insurmountable collateral requirements, gender-biased lending practices, and prohibitive interest rates. NGOs provided modest in-kind grants or start-up kits, but these were insufficient for scaling or sustaining enterprises. The economic crisis further exacerbated barriers as currency collapse and inflation eroded savings and restricted borrowing capacity. Participants often turned to informal lending networks, which carried high risks and limited repayment flexibility.

Quantitative Evidence: Suggests That Financial exclusion was the most consistently cited barrier to entrepreneurship. Among women who did not start businesses, 61.6% identified a lack of finance as the primary constraint. Statistical analysis confirmed a strong association between access to finance and business creation ($\chi^2 = 51.4$, $p < 0.001$), with a large effect size (Cramer's V = 0.46). Odds ratios indicated women with access to grants, equipment, or credit were six times more likely to start businesses than those without.

Synthesis: Access to finance was the single most decisive factor in determining whether training outcomes translated into business start-ups. While skills and confidence were necessary, without financial capital, women could not operationalise their capabilities. These findings underline the interdependence of human and financial capital in fostering sustainable livelihoods.

5.3. Cross-Cutting Themes

Inclusivity and Vulnerability: Many programs deliberately targeted widows, divorced women, and female heads of households. While this enhanced equity, it also meant that interventions concentrated on participants facing severe livelihood constraints, which limited immediate outcomes.

Literacy and Curriculum Adaptation: Although literacy did not emerge as a significant statistical predictor, NGOs addressed this barrier through the use of simplified curricula, Arabic-language delivery, and practical exercises. These adaptations broadened inclusivity but also highlighted how education gaps constrain the conversion of training into advanced business opportunities.

Cultural and Institutional Constraints: Time poverty, patriarchal norms, and family resistance continued to be significant barriers. Women reported that, despite possessing skills and motivation, domestic responsibilities and traditional gender norms limited their entrepreneurial mobility. Weak state institutions compounded these challenges, leaving NGOs to fill the gaps with short-term, donor-driven projects.

Market Fragility and Digital Divides: Lebanon's economic crisis has created a volatile environment where demand has shrunk, supply chains have fractured, and inflation has eroded purchasing power. Some NGOs introduced digital platforms to connect women with markets, but unequal digital access limited uptake, particularly in remote areas.

5.4. Interpretation of Effect Sizes

Effect sizes provided a deeper understanding of the practical magnitude of observed associations:

- **Leadership Skills:** Social connectivity (H2) Very strong (Cramer's V = 0.62). Training not only built confidence but also reshaped women's agency and networks, consistent with empowerment-focused theories.

- **NGO Follow-up:** Business creation (H3a) Large (Cramer's V = 0.55). Structured mentoring and continued engagement were indispensable for sustaining enterprises.
- **Start-up Skills:** Business creation (H1) Small-to-moderate (Cramer's V = 0.21). Skills alone were insufficient without complementary support.
- **Access to Finance:** Business creation (H4) Strong (Cramer's V = 0.46). Capital availability determined whether entrepreneurial intentions materialised.
- **Odds Ratios:** Women with financing were six times more likely to launch ventures, while those with NGO follow-up were nearly 38 times more likely. Still, absolute start-up rates remained modest, reflecting systemic barriers to entry (Table 1).

Table 1: Association between training, barriers, and livelihood outcomes

Hypothesis	Independent Variable	Outcome Variable	χ^2 (df)	p-value	Cramer's V	Odds Ratio
H1	Start-up skills	Business creation	12.3 (1)	0.001	0.21	3.5
H2	Leadership skills	Social connectivity	45.6 (1)	<0.001	0.62	–
H3a	NGO follow-up	Business creation	58.9 (1)	<0.001	0.55	38.0
H3b	NGO follow-up	Employment	17.2 (1)	<0.001	0.29	5.4
H3c	NGO follow-up	Program satisfaction	42.5 (1)	<0.001	0.52	–
H4	Access to finance	Business creation	51.4 (1)	<0.001	0.46	6.1
Note: OR = Odds Ratio; – indicates not applicable or not calculated						

The findings affirm that entrepreneurship training enhances women's human capital (business and leadership skills) and expands their capabilities (confidence, social connectivity). However, the translation of these gains into sustainable livelihoods was heavily mediated by structural barriers, most notably financial exclusion and lack of sustained NGO follow-up. These results underscore the importance of integrated approaches that combine training with accessible finance, long-term mentoring, and institutional reforms to convert skill gains into resilient and sustainable livelihoods.

6. Discussion

This study examined the effectiveness of entrepreneurship training programs for rural women in Lebanon, highlighting both their transformative potential and the systemic barriers that undermine long-term sustainability. By integrating Human Capital Theory and Amartya Sen's Capability Approach, the findings offer a nuanced understanding of how training enhances women's skills and agency while also being constrained by institutional, financial, and socio-cultural challenges.

6.1. Entrepreneurship Training as Human Capital Development

The results strongly confirm that entrepreneurship training builds essential start-up and leadership skills. Women who acquired business planning and market analysis skills were significantly more likely to initiate enterprises, while leadership training fostered social connectivity and community participation. These outcomes support Human Capital Theory, which emphasises education and skills as primary drivers of productivity and economic participation. Similar findings have been documented in Sub-Saharan Africa and South Asia, where training interventions improved business practices and increased employment opportunities [51]. However, the relatively low overall rate of business creation (18%) indicates that skill acquisition alone is insufficient. This resonates with global critiques that entrepreneurship training, while effective in boosting knowledge, cannot by itself overcome structural constraints such as access to finance, weak institutions, and gender norms [29]; [22].

6.2. Expanding Capabilities Beyond Income

Sen's Capability Approach emphasises that empowerment extends beyond income to include agency, freedom of choice, and social participation. This study provides strong empirical evidence of these non-economic outcomes. Women who participated in leadership training reported higher self-confidence, improved decision-making skills, and stronger social networks, even when they did not go on to establish businesses [10]. These findings align with previous research from the MENA region, which shows that entrepreneurship can serve as a vehicle for women's voice, visibility, and agency. At the same time, the study underscores that expanded "capabilities" often fail to translate into actual "functionings" due to systemic barriers. Financial exclusion, limited market access, and restrictive social norms restricted women's ability to convert new skills into sustainable enterprises. This mirrors findings from fragile contexts such as Sudan and Yemen, where entrepreneurship initiatives improved confidence and networks but had limited economic outcomes without enabling ecosystems [1].

6.3. The Critical Role of Institutional Support

One of the most consistent findings was the decisive impact of NGO follow-up. Structured mentoring and advisory services were strongly associated with higher rates of business creation, employment, and satisfaction. These results confirm that one-off training programs are insufficient, particularly in turbulent economic environments. In Lebanon’s post-2019 crisis, participants without ongoing support reported being “left alone” and unable to maintain entrepreneurial momentum. This underscores the need for institutionalised support systems that embed training within multi-level partnerships involving NGOs, donors, and government agencies. Such structures not only provide practical guidance but also buffer women against macroeconomic shocks.

6.4. Financial Exclusion as the Binding Constraint

The most consistent barrier identified in both qualitative and quantitative findings was a lack of access to finance. Women without financial resources were six times less likely to start businesses than those with access. This echoes global studies that financial capital remains a binding constraint for women entrepreneurs, particularly in fragile economies. While microcredit has been widely used across the Global South, its impact is mixed when not accompanied by business development support. In Lebanon, banking restrictions and currency devaluation have further marginalized rural women, making donor-backed grants or cooperative lending schemes more feasible in the short term, without addressing financial exclusion. Entrepreneurship training risks reinforcing frustration rather than generating sustainable livelihoods.

6.5. Broader Implications

These findings have three broader implications. First, entrepreneurship training is most effective when integrated with post-training mentorship, financial access, and market linkages. Second, empowerment should be measured in multidimensional terms, encompassing social connectivity and agency, in addition to income. Third, structural reforms, such as inclusive financial systems, national entrepreneurship strategies, and community-based acceptance, are critical for scaling impact. The study thus makes a significant contribution both theoretically and empirically. It extends Human Capital Theory and the Capability Approach into fragile rural contexts, demonstrating their explanatory power while highlighting the limitations posed by systemic barriers. Empirically, it fills a gap in research on rural Lebanon and adds to the global evidence base on women’s entrepreneurship in crisis-affected regions.

6.6. Regional Placement and Theoretical Payoffs

Viewed against regional evidence, the Lebanese pattern resembles that of other crisis or transition economies, where women’s ventures cluster in low-capital segments and rely heavily on networks for resilience [1]; [45]. The strong returns to mentoring here mirror findings from program evaluations in South Asia and parts of Africa, where structured accompaniment reduced early-stage exit and improved pricing decisions and supplier relations [51]. What distinguishes Lebanon is the intensity of macroeconomic volatility, which makes post-training support less an add-on and more the backbone of any plausible livelihood strategy. Theoretically, the results suggest a payoff from combining Human Capital Theory with the Capability and Sustainable Livelihoods lenses. Skills alone describe only the input side. Capabilities explain changes in agency and choice that precede income, and the livelihoods frame explains why conversion factors determine whether capabilities can become functionings. Program designers should therefore target not just what women learn but what stands between those skills and the lives they want to lead, with particular attention to finance, mentoring, and mobility.

7. Conclusion and Recommendations

This study examined the role of entrepreneurship training in enhancing the livelihoods of rural women in Lebanon, with particular focus on barriers to sustainability. The findings demonstrate that training programs, when effectively designed, can develop women’s business start-up skills, enhance leadership and social connectivity, and boost self-confidence. These gains reflect important dimensions of human capital and capabilities, offering pathways for empowerment that extend beyond income generation.

However, the research also revealed that training alone is insufficient to ensure sustainable livelihoods. Structural barriers, including lack of access to finance, weak post-training follow-up, fragile infrastructure, and entrenched socio-cultural norms, limit the extent to which women can translate new skills into viable enterprises. In this regard, entrepreneurship training serves as an important but partial solution: it empowers women at the individual level, but it requires supportive ecosystems to transform empowerment into lasting economic outcomes.

7.1. Policy and Programmatic Recommendations

- **Integrate financial access with training:** Linking entrepreneurship programs to microfinance institutions, cooperative lending schemes, or donor-backed seed grants is crucial for addressing financial exclusion, which remains the most significant barrier to entrepreneurship.
- **Institutionalise long-term mentoring and follow-up:** Training should be embedded within sustained support systems, including mentorship, networking platforms, and advisory services, to ensure business survival in fragile economic conditions.
- **Strengthen community-based approaches:** Localised training hubs, digital marketplaces, and women's cooperatives can reduce geographic and cultural barriers while amplifying community resilience.
- **Adopt multidimensional evaluation metrics:** Program success should be measured not only in terms of business start-ups but also in expanded capabilities such as self-efficacy, leadership, and social participation.
- **Promote enabling policies:** National stakeholders should create regulatory frameworks that reduce lending bias, encourage inclusive entrepreneurship, and integrate gender-sensitive strategies into Lebanon's recovery and development plans.

7.2. Limitations and Future Research

This study has limitations. The cross-sectional design restricts causal inference, and the reliance on self-reported data introduces potential bias. While the sample covered three regions, it may not fully represent remote or marginalised rural areas. The timing, during Lebanon's severe economic crisis, may also have magnified barriers, limiting generalizability. Future research should adopt longitudinal and comparative designs, examine subgroup differences (such as age, caregiving responsibilities, and region), and test alternative follow-up models for cost-effectiveness. Comparisons across the MENA region could also reveal how institutional variation affects women's entrepreneurial outcomes.

8. Final Reflection

Entrepreneurship training for rural women in Lebanon has demonstrated transformative potential, but systemic barriers prevent its full realisation. Addressing these obstacles requires integrated strategies that combine training with financial access, mentoring, and enabling policy frameworks. Only through such comprehensive approaches can women's empowerment be translated into sustainable livelihoods and contribute to national recovery. Theoretically, this study extends Human Capital, Capability, and Sustainable Livelihoods frameworks into a fragile context, showing how skill acquisition interacts with conversion factors to shape outcomes. Practically, it highlights that NGOs, donors, and policymakers must go beyond technical training to create ecosystems where women can apply, sustain, and grow their entrepreneurial capacities. By situating Lebanon within regional and global debates, the study contributes both theoretical insight and practical guidance. It demonstrates that empowerment is multidimensional and contingent upon supportive structures in fragile economies. Bridging these insights with policy and program design is essential to ensure that women's entrepreneurship becomes not only a survival mechanism but also a pathway to resilience and inclusive development.

Appendix A: Interview Guide

Title of Study	Entrepreneurship Training and Barriers to Sustainable Livelihoods for Rural Women: Evidence from Lebanon
Introduction to the Interview	Hello, I am Hazem Harb, a doctoral student at the University of Saint Joseph, Beirut. I am conducting a research study to explore the impact of entrepreneurship programs on the livelihood sustainability of rural women in Lebanon. Your participation is highly valued, and all the information you provide will be kept confidential and used solely for research purposes to inform recommendations for improved future interventions. Please ensure you have signed the consent form before proceeding. This interview will take approximately 30 minutes.
Interview Sections and Structure	Respondent and Program Identification Program Implementation and Participant Selection Training Curriculum and Support Services Program Monitoring and Recommendations The questions are designed to be open-ended, allowing respondents to elaborate and share their experiences freely. Probing questions may be used to gather further detail where necessary.

Respondent and Program Identification	Respondent Name: Representing NGO: Project Name: Donor:
Program Implementation and Participant Selection	In which year(s) did you implement the entrepreneurship program? What geographical area(s) did the program target? What were the main selection criteria used for choosing rural women participants?
Training Curriculum and Support Services	Was the training material developed with consideration for participants' education and literacy levels, or was it pre-designed by the donor? Please explain. Did the training curriculum include specific entrepreneurship skills (e.g., developing business ideas, creating business plans)? If yes, please describe. Were employability skills (e.g., CV writing, presentation skills) part of the training? If so, kindly elaborate. Did the program incorporate soft or social skills training (e.g., leadership, teamwork, communication)? Please explain. Did you support participants with cash or in-kind grants to help them launch their start-ups? Did you link participants with potential employers or market opportunities? If yes, please describe how
Program Monitoring and Recommendations	What monitoring and evaluation tools did you use to measure the program's impact on participants' livelihoods? Would you like to share any additional ideas, suggestions, or recommendations for enhancing future entrepreneurship programs designed for rural women?
Closing Remarks	Thank you for your time and valuable input. Your participation will contribute to shaping future initiatives that aim to enhance the economic empowerment and livelihood sustainability of rural women in Lebanon.

Acknowledgment: This work represents the author's independent effort. No collaboration was involved in the completion of this research.

Data Availability Statement: The data for this study can be made available upon request to the corresponding author.

Funding Statement: This work was completed without any external funding.

Conflicts of Interest Statement: The author reports no conflicts of interest. This study reflects their independent effort with proper citation of all sources.

Ethics and Consent Statement: All research procedures were conducted in accordance with ethical standards, and participants provided informed consent prior to their involvement.

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