GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN IN PUBLICA COMMODA SEIT 1737

GRK 2654
Sustainable Food Systems

RTG 2654 Sustainable Food Systems

University of Goettingen

SustainableFood Discussion Papers

No. 20

Reconstructing the Ecuadorian Short Food Supply Chain consumer profile

Karen Arcia
Annika Thies
Albaluz Ramos
Adriana Arboleda

February 2025

RTG 2654 Sustainable Food Systems · Heinrich Düker Weg 12 · 37073 Göttingen · Germany
www.uni-goettingen.de/sustainablefood

ISSN (2750-1671)

Suggested Citation

Arcia, K., A. Thies, A. Ramos, A. Arboleda (2025). Reconstructing the Ecuadorian Short Food Supply Chain consumer profile. SustainableFood Discussion Paper 20, University of Goettingen.

Imprint

SustainableFood Discussion Paper Series (ISSN 2750-1671)

Publisher and distributor:
RTG 2654 Sustainable Food Systems (SustainableFood) – Georg-August University of Göttingen
Heinrich Düker Weg 12, 37073 Göttingen, Germany

An electronic version of the paper may be downloaded from the RTG website:

www.uni-goettingen.de/sustainablefood

Reconstructing the Ecuadorian Short Food Supply Chain consumer profile

Karen Arcia[a,b,c,*], Annika Thies[c], Albaluz Ramos[d], Adriana Arboleda[e]

[a] *Research Training Group 2654: Sustainable Food Systems, Heinrich-Düker-Weg 12, Göttingen, 37073, Germany*
[b] *Department of Agricultural Economics and Rural Development, Georg-August-Universität Göttingen, Platz der Göttinger Sieben 5, Göttingen, 37073, Germany*
[c] *Thünen Institute- Institut für Marktanalyse, Bundesallee 63, Braunschweig, 38116, Germany*
[d] *Universidad Pedagógica y Tecnológica de Colombia, Avenida Central del Norte 39-115, Tunja, Colombia*
[e] *World Food Program, Avenida Mariana de Jesús Oe7-02 y Nuño de Valderrama, Piso 8, Quito, Ecuador*

Abstract

Purpose: We consolidate fragmented knowledge on Ecuadorian Alternative Commercialization Circuits (CIALCOs) by profiling their consumers and identifying challenges for expansion. While Ecuadorian CIALCOs have evolved since the 1980s to emphasize producer-consumer relationships and sustainability, research on stakeholder profiles remains scarce. We fill this gap by synthesizing consumer characteristics and market barriers to inform Short Food Supply Chains (SFSC) policy and practice.

Methods: A systematic review of 23 documents (2009–2020) was conducted, identifying six key themes through content analysis and statistical synthesis.

Findings: A typical CIALCO consumer is a middle-aged female with secondary education, working or retired, from a household of 3-6 members. Consumers in Quito generally earn over USD$1000 monthly, while those outside Quito earn about half. They spend 2-33% of their income on CIALCOs, influenced by demographics and socioeconomics. These consumers perceive themselves as health-centric and socially engaged yet prioritize personal well-being over communal purchasing motivations. While pricing and service meet consumer expectations, infrastructure, waste management, and traceability remain key obstacles. Willingness to pay a premium suggests potential for market expansion, but gaps in digital outreach and operational efficiency must be addressed.

Implications: Findings inform policy and practice by identifying key barriers to CIALCO scalability, such as infrastructure, digital outreach, and traceability. The study highlights actionable areas for improving SFSC operations and market accessibility, contributing to more sustainable and inclusive food systems in Ecuador.

Limitations: Given the limited availability of indexed literature on Ecuadorian SFSCs, incorporating non-peer-reviewed sources is essential to access local knowledge. These sources undergo transparent reporting to ensure reliability and relevance. The focus on fairs in the Andean region may overlook geographic and typological diversity within Ecuador's CIALCOs. Future research should include diverse regions and typologies and explore the psychological and sociocultural motivations behind CIALCO consumption.

Value: We provide the first systematic synthesis of Ecuador's CIALCO consumer segment. This provide a basis for empirical research and strategic interventions in Ecuadorian SFSCs.

Keywords: Short Food Supply Chain, Ecuador, Consumer preferences, Local food systems, CIALCOs
JEL: Q13, Q18, D12, L31

1. Introduction

Short Food Supply Chains (SFSCs), offer an alternative to conventional food production and consumption systems. By integrating political, social, and ecological perspectives, they strengthen producer-consumer relationships, promote proximity, information exchange, participation, and socio-environmental sustainability (Binimelis and Descombes, 2010; Dragicevic, 2021).

In Ecuador, Alternative Commercialization Circuits (CIALCOs, from the Spanish acronym *Circuitos Alternativos de Comercialización*) represent a unique form of SFSCs, designed to promote direct producer-consumer interactions and agroecological practices. The agroecological movement in Ecuador began in the 1980s within the provinces of Carchi and Azuay. By the 2000s, agroecological producers across the country started to organize and secure sales points in municipal markets.

*Corresponding author(s).
Email address: karcia@uni-goetingen.de (Karen Arcia)

In 2008, after a period of support neglect, public policies were introduced to promote agroecological production and direct sales (Chauveau and Sol-Doris, 2011). State support included the coordination of common areas, provision of selling infrastructure, and regulation of operating schedules (Personal Communication, Subsecretaría de Agricultura Familiar Campesina, Ecuadorian Ministry of Agriculture, Livestock, Aquaculture, and Fisheries (MAGAP)). By 2019–2020, approximately 255 CIALCO initiatives involving 6,577 small-scale producers supplied 100,000 consumers monthly with a variety of agricultural products. These initiatives operated under eight typologies: fairs, farm sales, box/basket schemes, peasant stores, points of sale, direct supply, horeca (hospitality, restaurant, and catering), and agrotourism (MAGAP, 2020).

Despite their role in supporting small-scale farmers and ensuring food sovereignty, limited empirical research exists on CIALCO consumer profiles and market barriers. Understanding who consumes from CIALCOs, their purchasing behaviors, and the challenges faced in expanding these circuits is essential for shaping policies that strengthen SFSCs in Ecuador and similar contexts.

A systematic review by Maró et al. (2023) represents the first global synthesis of survey-based studies on farmers' markets, analyzing 103 studies. However, their findings reveal a strong geographic bias, with 66 studies concentrated in North America, while Latin America remains severely underrepresented, with only two studies (one from Ecuador and one from Brazil). This gap stress the need for region-specific analyses to better understand consumer dynamics in emerging SFSCs.

We bridge this gap with the first synthesis of Ecuadorian CIALCO consumer profiles, specifically addressing:

(1) What are the main profiling criteria regarding CIALCO consumer research in Ecuador?
(2) What are the main findings within these themes?
(3) How these findings contribute to SFSC research and policy design in emerging markets?

By consolidating insights from 23 studies (2009-2020), this review synthesizes CIALCO consumer dynamics, focusing on sustainability and scalability within SFSCs.

The remainder of the paper is structured as follows: in Section 2, we explain the research methodology, including a descriptive analysis of the selected documentation; under Section 3, a thematic analysis based on the content of the articles has been conducted resulting in six themes; finally, Section 4 discusses findings and suggests future research directions.

2. Methods

Our review employs the six-step framework developed by Durach et al. (2017) to systematically analyze supply chain literature, as illustrated in Figure 1.

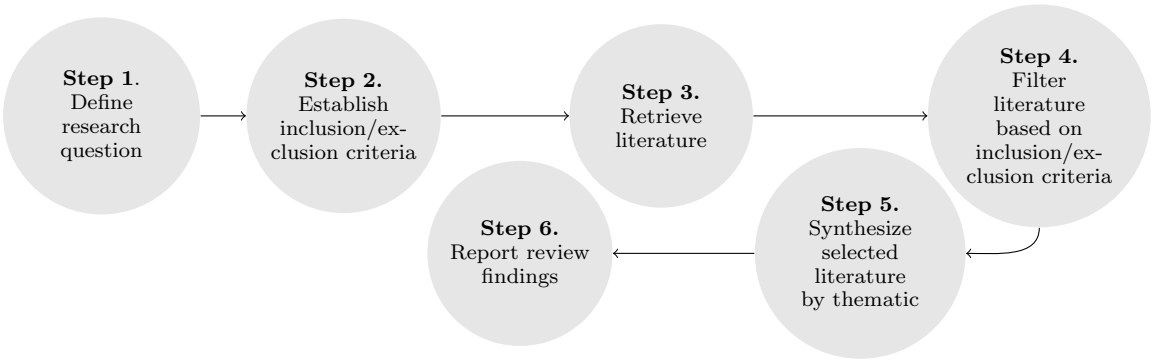

Figure 1: **Six-step framework** for conducting a systematic literature review in the supply chain domain proposed by Durach et al. (2017). **Source(s):** Authors' own elaboration.

2.1. Step 1 - Define research question

We conduct a literature review guided by the questions:

(1) What are the main profiling criteria regarding CIALCO consumer research in Ecuador?
(2) What are the main findings within these themes?
(3) How these findings contribute to SFSC research and policy design in emerging markets?

2.2. Steps 2 to 4 - Criteria establishment, literature retrieval, and filtering according criteria

We first defined our inclusion and exclusion criteria by conducting a preliminary search in Scopus using the TITLE-ABS-KEY field without publication date restrictions. This bilingual (English and Spanish) search used keywords listed in SI 1. The keyword selection was developed collaboratively with input from various stakeholders in Ecuador's CIALCOs context, including an academic expert, two government officials, two farmers, and a representative from an involved institution. Recognizing a knowledge gap in profiling Ecuadorian CIALCO consumers, we extended our literature search beyond indexed peer-reviewed articles from Scopus to incorporate book chapters, institutional reports, and academic theses sourced from Google Scholar and selected websites. Although non-peer-reviewed resources may have quality and bias concerns, they provide critical local insights that would otherwise be absent from global discussions. To ensure academic rigor, all selected sources were systematically evaluated for: transparency, clear reporting of data sources and methods,; Methodological soundness, use of primary data, replicability, and validity of claims; and consistency with peer-reviewed literature, to minimize bias.

The literature search, conducted in November and December 2020, focused on works published between 2009 and 2020, aligning with key policy developments supporting CIALCOs in Ecuador (Martínez and Baca, 2020). To remain updated on new publications, we set alerts on Google Scholar and Scopus and conducted targeted searches on websites of Ecuadorian institutions, research centers, and organizations involved with SFSCs. We bypassed many academic repositories as their content was already covered by Google Scholar. See SI 2 for our website shortlist.

Figure 2 summarizes the inclusion/exclusion criteria applied in this review. We employed both automated and supervised screening strategies to collate the initial set of written documents. Scopus served as the primary database, where the automated search functionality covered indexed peer-reviewed articles containing the predetermined keywords in their titles, abstracts, or author-specified keywords. For Google Scholar, we applied the "allintext" command in combination with the SI 1 keywords and inclusion/exclusion criteria. The search across individual websites required a tailored approach, as each platform had different search capabilities.

In retrieved documents from non-indexed sources, abstracts were often unavailable. We therefore screened executive summaries, tables of contents, and introductory sections where necessary. The search process yielded 57 studies: Scopus (2), Google Scholar (39), and individual websites (16). After eliminating duplicates, we retained 41 unique records, which underwent full-text examination, resulting in the final selection of 23 documents that met the inclusion criteria. No new relevant articles emerged during the writing process that warranted inclusion.

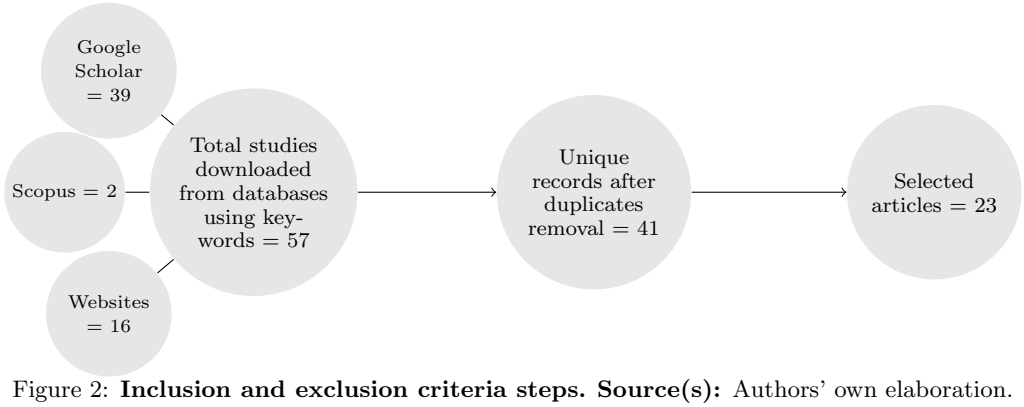

Figure 2: **Inclusion and exclusion criteria steps. Source(s):** Authors' own elaboration.

2.3. Steps 5 to 6 - Synthesizing the literature and reporting of results

To synthesize the final list of documents, we adopted a two-fold approach. First, we identified emerging themes related to the research topic during content analysis, categorizing documents by their thematic relevance, with some documents covering multiple themes. Next, leveraging from the R libraries **tidytext** and **tm** (Silge and Robinson, 2021; Feinerer et al., 2021), we tokenized the relevant content, standardized text, and parsed it into individual words for in-depth examination. Descriptive statistics and text filtering and clustering helped streamline our findings. By grouping

outcomes based on shared characteristics, we gained insights into each study. This strategy revealed six distinct topics, detailed in Table 1. The following section provides an overview of study characteristics and then explores the identified themes in detail.

Table 1: Themes, subtopics, and method synthesis of the documents included in this study. **Source:** Authors' own elaboration.

Theme	Details on subtopics and synthesis method
1. Demographic and socioeconomic profiling	Statistic summary, clustering of tokenized content, or narrative. Variables: gender, age, education, household size, employment, proximity to CIALCO, income, spending, and purchase frequency on CIALCO.
2. Consumption habits and lifestyles	Tabulated synthesis of consumption habits comparing CIALCO and Non-CIALCO customers.
3. Consumer motivations and decision-making	Initial typification based on Zoll et al. (2018); content clustering by semantic closeness; descriptive statistics, and motive ranking.
4. Consumer satisfaction	Standardized categorizations of satisfaction metrics.
5. Consumer willingness to pay (WTP)	WTP, amount of extra pay, and reasons, analyzed via descriptive statistics and tokenized content clustering.
6. Barriers and challenges for CIALCO expansion	Identification and clustering of barriers and challenges in maintaining, expanding CIALCO consumer base.

3. Results

3.1. Characteristics and scope of included studies

The consolidated dataset, detailed in Table 2, comprises 23 studies from 2009 to 2020. They indicate a rising academic interest in CIALCO consumer profiles, peaking in 2016 with eight studies, predominantly in urban contexts. The studies encompass six academic journal articles, eight bachelor's theses, two master's theses, and six business plan reports. The prevalence of gray literature underscores the limited presence of CIALCO consumer research in indexed academic sources, suggesting an underexplored field with opportunities for further study.

Only four studies are in English, and just two are peer-review, indicating potential barriers to global accessibility and academic visibility. Most research relies on cross-sectional surveys and qualitative approaches, with a heavy reliance on descriptive statistics, particularly in bachelor's theses. The limited use of inferential or predictive statistics suggests that this field is still in an exploratory phase, with a stronger emphasis on contextual rather than predictive analysis.

The studies, although spread across seven of Ecuador's 24 provinces and 14 of 221 cantons, mainly focus on the Inter-Andean or Sierra region. This concentration, within the provinces of Pichincha, Imbabura, and Chimborazo and more specifically in the cantons of Quito (10 studies), Riobamba (8 studies), and Ibarra (7 studies), can be attributed to their high urbanization, presence of academic institutions, and agroecological interest. Few studies reference other regions, with just one in Esmeraldas province in the Coastal region, highlighting the need for more diverse and representative research. Of eight CIALCO typologies in Ecuador as of 2020, four are covered in these studies. The 'fair' typology appears in 90%, the 'box scheme/basket' in 29%, while the 'store' and 'horeca' typologies appear in only two and one studies, respectively. Despite 25 fairs and two basket schemes being identifiable, some studies do not specify the CIALCO channel, only mentioning the producer organization or providing no details.

Sample sizes in consumer quantitative surveys varied significantly among the studies that reported this information. The largest survey included 3813 households (both CIALCO and non-CIALCO consumers), while the smallest involved 73 CIALCO consumers. Note that most studies determined their sample sizes based on a predefined consumer population, yet there were exceptions and related challenges. As such, the findings should be viewed with caution and may not fully represent the entire Ecuadorian CIALCO consumer population. Six out of the 23 studies that provided consumer data (8; 9; 10; 11; 12; 13) relied mainly on observations by producers, organization leaders, and researchers' direct engagement such as attending fairs. These studies reported consumer percentages for various variables but did not provide an exact headcount of consumers. (14) provides the total number of active consumers surveyed. However, the lack of specific details regarding the distribution of these respondents across the six different fairs surveyed could potentially skew or imprecise any percentage-based analysis attending to report for the overall sample. Attempts to clarify this with the original authors were unsuccessful. Despite these limitations, the studies still offer valuable insights and are included in this analysis.

Table 2: Overview of included studies. In Sample size, AC=Actual Consumers, PC=Potential Consumers, FC=Former Consumers, P=Producers, POR=Producer Organization Representative **Source(s):** Authors' own elaboration.

N. Author	Type of written document	Research method	Sample size	Municipality	Theme					CIALCOs-Name
					1	2	3	4	5	6
1. E. and Molina P. (2019)	Bachelor's Thesis	Mixed-methods: quantitative & qualitative interviews & producer-focused groups	Not stated	Riobamba		x				Various fairs, markets, stores, and distribution points for agroecological food
2. April-Lalonde et al. (2020)	Article Journal: Sustainability	Mixed-methods: qualitative mini ethnographies (n=15 households), consumer households cross-sectional survey (n=2914), descriptive statistics, logistic regression	total=2914 households; AC CIALCO=315;Control=685	Quito, Ibarra, Riobamba	x	x	x		x	Consumers from various non-specified fairs, baskets, agroecological stores and agroecological restaurant via direct purchase channel
3. Borja and Oyarz'un (2018)	Article Jornal: Innovative markets for sustainable agriculture	Qualitative methods: participant observation, interviews with consumers & network players, secondary documentation analysis	AC=30	Ibarra/Riobamba		x	x			Utopia Community Basket
4. Cevallos R. and Tufiño J. (2014)	Bachelor's Thesis	Mixed-methods: interviews with consumers and network players, secondary documentation analysis	AC plus PC=475	Quito	x			x	x	Corporación Ecuatoriana de Agricultores Biológicos PRO-BIO
5. Chamorro (2015)	Bachelor's Thesis	Cross-sectional survey on consumers, descriptive statistics	AC=192, PC=21	Quito	x	x				6 Fairs from Agrupar project: Biofairs Quitumbe; Norte - Eugenio Espejo; La Delicia; Eloy Alfaro; Centro-Manuela Saenz; Calderón
6. Delgado Parra (2018)	Bachelor's Thesis	Cross-sectional survey and field observation of socioeconomic & operational dynamics of actors' organization; descriptive statistics	AC=115	Ibarra	x		x			Free Fair Asociación de productores Llacta Pura Pukuchikkuna
7. Durán (2019)	Bachelor's Thesis	Interviews with RESAK representatives, cross-sectional consumer survey, preferences assessment, marketing strategy proposal	AC=73, FC=20, POR=8	Quito	x	x	x		x	Agroecological Basket RESAK Association
8. Heifer and AndeanTech (2016d)	Business Plan Report	Interviews with producers, visits to fairs	Not stated	Otavalo	x	x		x		Agroecological Fair Imbabio "De la Mata a la Olla"
9. Heifer and AndeanTech (2016b)	Business Plan Report	Interviews with producers and visits to fairs	Not stated	Colta	x	x		x		Agroecological Fair Centro de Desarrollo Indigenas del Cantón Colta CEDEIN
10. Heifer and AndeanTech (2016e)	Business Plan Report	Interviews with producers and visits to fairs	Not stated	Paltas	x	x		x		Agroecological Fair Randy Namá Paltas (UCOCP)
11. Heifer and AndeanTech (2016f)	Business Plan Report	Interviews with producers and visits to fairs	Not stated	Pedro Moncayo	x	x		x		Agroecological Fair La Esperanza
12. Heifer and AndeanTech (2016c)	Business Plan Report	Interviews with producers and visits to fairs	Not stated	Cotacachi	x	x		x		Agroecological Fair UNORCAC "La Pachamama nos Alimenta"
13. Heifer and AndeanTech (2016a)	Business Plan Report	Interviews with producers	Not stated	Riobamba	x	x		x		Utopia Community Basket
14. Landázuri (2019)	Master's Thesis	Semi-structured interviews & cross-sectional producer and consumer survey, descriptive statistics	AC=300; P=275	Ibarra	x		x			6 Fairs: Solidarity Fairs Asociacion de Productores Autonomos 19 de Marzo; La Dolorosa del Priorato "ASOPROAGCOP"; Asociación de Productores Agrícolas La Dolorosita "AGROPADOL"; Fco Calderón; Ally Productores-Caranqui; Frutos de la Pacha Mama; Llacta Pura "Pukuchikkuna"
15. Macas and Echarry (2009)	Report	Qualitative: literature review and field observation; Content Analysis	NA	National level					x	Not stated
16. Murillo and Lacroix (2014)	Article Journal: Agronomes & Vétérinaires Sans Frontieres	Qualitative insights from AVSF's five-year support to peasant & indigenous organizations & solidarity fairs	NA	Cotacachi, Montúfar, and (non-specified) cantons from Imbabura and Carchi					x	Various Fairs Grouping Peasant and Indigenous Organizations in the Northern Highlands of Ecuador: El Consejo de Comunas Campesinas de Montúfar (CCM); La Federación de Comunidades y Organizaciones Negras de Imbabura y Carchi (FECONIC); La Federación de los Pueblos Kichwas de la Sierra Norte (Chijallta-FICI); La Unión de Organizaciones Campesinas de Cochapamba (UOCC)
17. Paredes et al. (2019)	Article Journal (?): Sustainable Food System Assessment	Cross-sectional survey on consumers households	total= 3813: (AC CIALCO= Quito: 551, Riobamba: 299, Ibarra: 48); (Control= Ibarra: 1,282, Quito: 775, Riobamba: 858)	Ibarra, Quito, Riobamba		x				Various fairs, markets, stores, and distribution points for agroecological food
18. Paredes et al. (2019)	Article Journal: Revista Verde de Agroecologia e Desenvolvimento Sustentável	Mapping exercises, interviews, focus groups, participatory mapping workshops, socio-spatial analysis with cooperative leaders and farmers; consumer survey	AC=112	Quito					x	Cooperativa Sur Siendo Redes y Sabores
19. Salazar Cosco (2016)	Bachelor's Thesis	Mixed-methods: cross-sectional survey, interviews, and documentary research to evaluate land rent, market interaction, and profitability. Descriptive statistics and qualitative content analysis	AC=211	Ibarra, San Gabriel, Huaca, Otavalo			x			Asociación de Productores Agropecuarios los Andes (APALA). Fairs: El Trueque; Frutos de la Pachamama; Imbabio; Sumak Pacha; Solidarity Fair San Gabriel, Solidarity Fair Huaca
20. Toro and Ulloa (2016)	Article Journal: ECA Sinergia	Cross-sectional survey on producers and consumers, descriptive statistics	AC=217, P=33	Ambato	x		x			Corporación de Asociaciones de Productores Agroecológicos y Comercio Asociativo de Tungurahua (PACAT)
21. Vasco et al. (2018)	Article Journal: Journal of Agriculture and Rural Development in the Tropic and Subtropics (JARTS)	Cross-sectional survey on consumers, multilevel regression, consumer expenditure patterns investigation	AC=245	Quito	x	x	x			Various fairs from Agrupar Project
22. Vásquez (2020)	Bachelor's Thesis	Cross-sectional survey, interviews, documentary research, descriptive & qualitative content	AC=334	Antonio Ante	x		x		x	Solidarity Fair Association "Abriendo Nuevos Surcos San Fco de Natabuela"
23. Zurita (2017)	Master's Thesis	Semi-structured interviews (examining cooperative dynamics, perceptions), consumer survey; descriptive statistics	AC=112	Esmeralda	x		x			Peasant Fair Production and Agricultural 15th May Marketing Association (ASOPROY)

3.2. Demographic and socioeconomic profiling of CIALCO consumers

3.2.1. Gender

CIALCO-fair customers are predominantly female, as shown in 11 out of 12 studies (Figure 3). Specifically, Figure 3a shows that women constitute 67% of the total sample (n=1285) across five of the six studies, which clearly report sample size. Figure 3b, which includes studies with sample size reporting issues, shows an even higher predominance of female customers, exceeding 65% in all cases. Women are the primary decision-makers for household food purchases in Quito, Riobamba, and Ibarra, regardless of the purchasing channel—whether direct agroecological through CIALCO, direct non-agroecological through Non-CIALCO, or conventional methods (2).

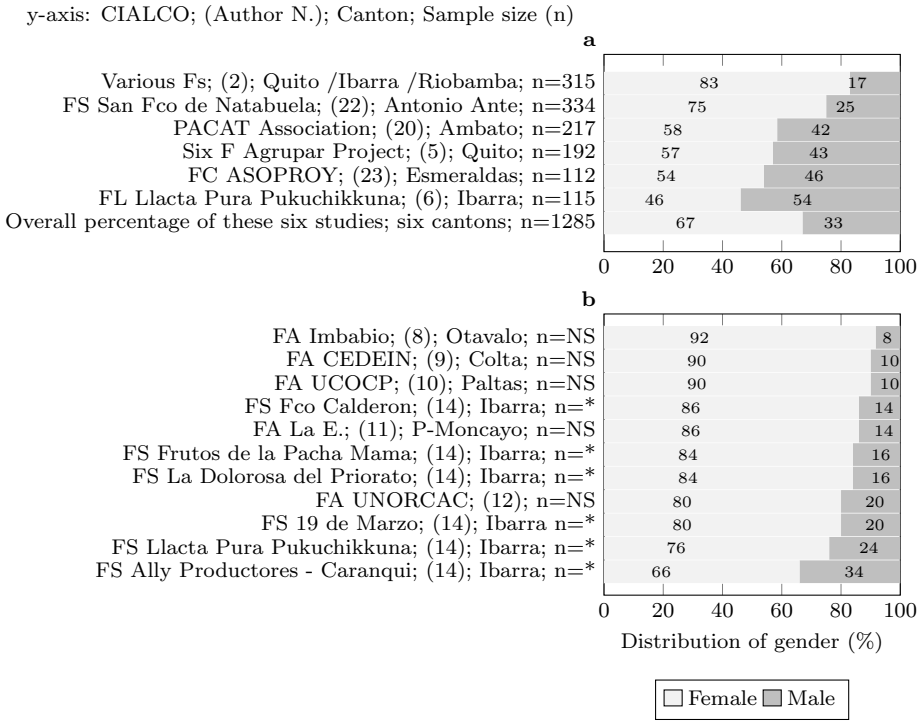

Figure 3: **Gender distribution of CIALCO consumers, stacked bar-plot. a.** Across six studies reporting sample size. **b.** Across two studies with sample size complications. Fs=Fair(s), FS=Solidarity fair; FA= Agrological fair. NS= no-stated. Sum of the sample sizes from fairs marked with an asterisk (*) in (14) totals n=300. **Source(s):** Authors' own elaboration.

3.2.2. Age

Customers of the CIALCO direct agroecological channel are more likely to be over 30 years old compared to those using direct non-agroecological and conventional channels in Quito, Ibarra, and Riobamba (2).This finding aligns with the CIALCO consumer profile observed in the age frequencies and ranges from 10 of the 11 studies (15 CIALCO) summarized in Figure 4. The average age of a CIALCO customer is 43.6 across five studies that report sample size (Figure 4a) and a age range of 33 to 55.8 years among individual CIALCOs is noted in studies with sample size reporting issues (Figure 4b).

3.2.3. Education attainment

From studies reporting sample sizes, most CIALCO fair attendees have completed high school (40%), followed closely by those with undergraduate studies (34%), and a smaller segment with postgraduate education (2%). Although CIALCO-specific-sample sizes were unspecified, in Ibarra, high school graduates also represent a significant portion of attendees (14). Compared to other market channels, CIALCO attendees in Quito, Riobamba, and Ibarra are 3.5 times more likely to have higher education degrees. (2). In Quito, CIALCO shoppers surpass the general population in education, with more holding university (48.9% vs 32.1%) and postgraduate degree (13.3% vs 3%).

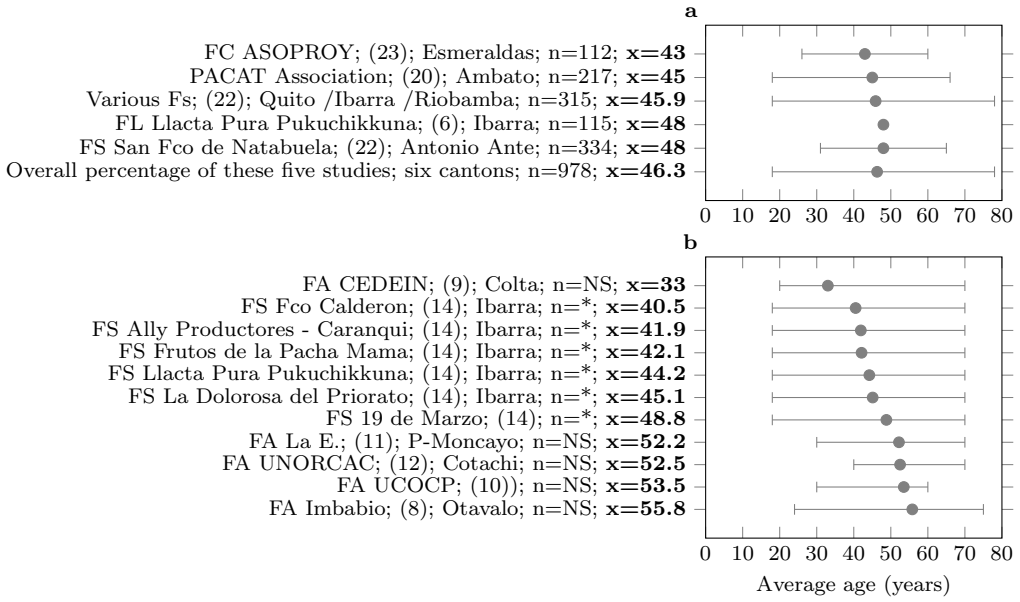

Figure 4: **Average age of CIALCO consumers (years), bar-plot**. **a.** Across five studies with sample size. **b.** Across two studies with sample size reporting issues. Error bars represent the range from minimum to maximum age, thereby delivering an approximation contingent upon the accessible data–some sources communicated age ranges via the 'less than' or 'greater than' format. Fs=Fair(s), FS=Solidarity fair; FA= Agrological fair. NS= no-stated. Sum of the sample sizes from fairs marked with an asterisk (*) in (14) totals n=300. **Source(s):** Authors' own elaboration.

Table 3: **Distribution of educational attainment among CIALCO consumers**. The percentages are color-coded for easy visualization, with darker shades representing higher percentages. Note: The categories 'Complete primary', 'Incomplete primary' from (6), and 'Primary', 'Literate' from (14) are consolidated into 'Primary' education. **Source(s):** Authors' own elaboration.

CIALCO; Author; Canton; Sample size (n)	Education attainment (%)				
	None	Primary	High School	Undergraduate	Postgraduate
FC ASOPROY; (23); Esmeraldas; n=112	12	22	32	31	3
FL Llacta Pura Pukuchikkuna; (6); Ibarra; n=115	1	32	60	7	0
Six Fs Agrupar Project; (5); Quito; n=192	0	13	44	39	4
Various F; (2); Quito /Ibarra /Riobamba; n=315	17	0	25	58	0
Overall percentage of these four studies; four cantons; n=734	7	17	40	34	2
FS Llacta Pura Pukuchikkuna; (14); Ibarra; n=*	0	27	38	35	0
FS 19 de Marzo; (14); Ibarra n=*	0	33	60	7	0
FS Ally Productores - Caranqui; (14); Ibarra; n=*	6	29	54	11	0
FS Fco Calderon; (14); Ibarra; n=*	0	10	63	27	0
FS Frutos de la Pacha Mama; (14); Ibarra; n=*	2	24	59	15	0
FS La Dolorosa del Priorato; (14); Ibarra; n=*	2	34	54	10	0

3.2.4. Household size

A typical CIALCO consumer lives in a household of 3.2 to 6 members. In Quito, the average is 3.2 members (21), while in Ambato it is four members (range= 2 to 9) (20). 90% of 315 surveyed CIALCO consumers from agroecological channels live in households with more than two adults and are more prone to belong to a household with two or more adults compared to counterparts sourcing from other channels (2). Studies (8; 9; 10; 11; 12; 13) suggest CIALCO consumer households have 4 to 6 members. In Ibarra, most households at CIALCO fairs have four members (14).

3.2.5. Number of children per household

No clear trend emerges from three studies on the number of children among CIALCO customers. In Quito, CIALCO fair shoppers average 0.6 children under 15, double the typical household (21). The average CIALCO consumer at the Llacta Pura Pukuchikkuna in Ibarra has two children, (6) but 56% of 192 consumers at Quito's Agrupar fairs have no children (5).

3.2.6. Employment status

Based on four studies, most CIALCO consumers are employed or retired (2; 8; 10; 13).

3.2.7. Source of Awareness for CIALCO, agroecology, and nutrition

Only two studies explicitly address the source of awareness from CIALCO. In Quito, 82% of 334 respondents learned through word of mouth (22). In the RESAK Association, 93% cited bulk emails (51%), friends (21%), and work colleagues (18%), with 8% from online social networks (7). For agroecology, 34% of 475 families in Quito learned from friends, followed by email (16%), newspapers (12%), direct visits to fairs (11%), radio (10%), and TV (8%) (4). CIALCO consumers get health and nutrition information from the internet and TV (29% each) and print media (12%) (5).

3.2.8. Household proximity to CIALCO

CIALCOs, though rooted in local communities, can cater to diverse customer segments depending on their location. Figure 5 shows three clusters: 'Very close', 'Close', and 'Far'. 'Very close' includes CIALCOs with customers from urban areas within the same canton, like those in Cotacachi, Paltas, Otavalo, and Riobamba. 'Close' encompasses CIALCOs with attendees from both urban and rural areas within the same canton or nearby parishes, as seen in Esmeraldas and Ibarra. 'Far' includes CIALCOs in Pedro Moncayo and Colta, attracting local to global audiences.

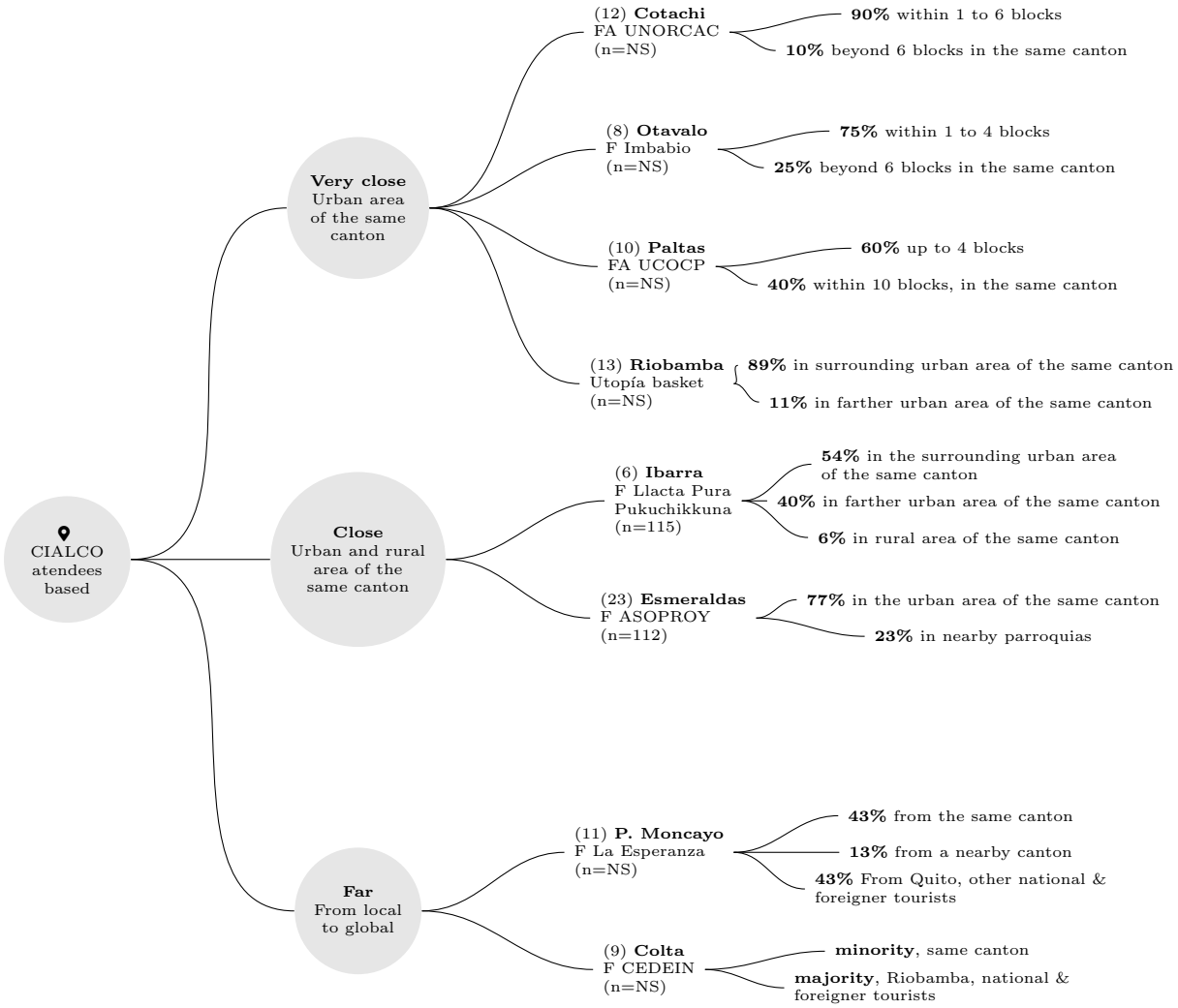

Figure 5: **Clustering proximity of households to CIALCO locations.** (Author N.); Canton; n=Sample size; NS= no-stated. **Source(s):** Authors' own elaboration.

3.2.9. Income

Despite variations in reporting, the key finding is that CIALCO consumers in seven cantons outside Quito typically earn between USD$350 to USD$700, while those in Quito average over USD$1000. Additionally, no significant income disparities exist between CIALCO and non-CIALCO consumers in Quito, Riobamba, and Ibarra. In detail, Figures 6a,b show the income

distribution among CIALCO-fair attendees in Ibarra. It highlights a majority monthly income bracket around the minimum wage (USD$350 to over $600). Figure 6c reveals that for five out of six studies by Heifer Foundation and AndeanTech (2016), the prevalent income range for CIALCO consumers is between USD$0 and USD$500 monthly. The outlier is Fair UNORCAC in Cotachi, where USD$500 to USD$1000 is dominant. Examining the income through an estimated mean for these six studies, the data suggests that the average income for surveyed CIALCO-fair consumers lies between USD$415 to USD$670, whereas for Utopia CIALCO-basket consumers, it is approximately USD$350. In contrast, (21)–not included in the figures above given–reports a higher average monthly income of USD$1,081 for consumers at CIALCO-fairs in Quito. This value is three times greater than the average income of a working-age citizen in Quito (USD$381). Furthermore, no income disparity between CIALCO users and other channel consumers in Quito, Riobamba, and Ibarra was found (2), showing that CIALCO products cater to a broad economic spectrum, not just niche markets.

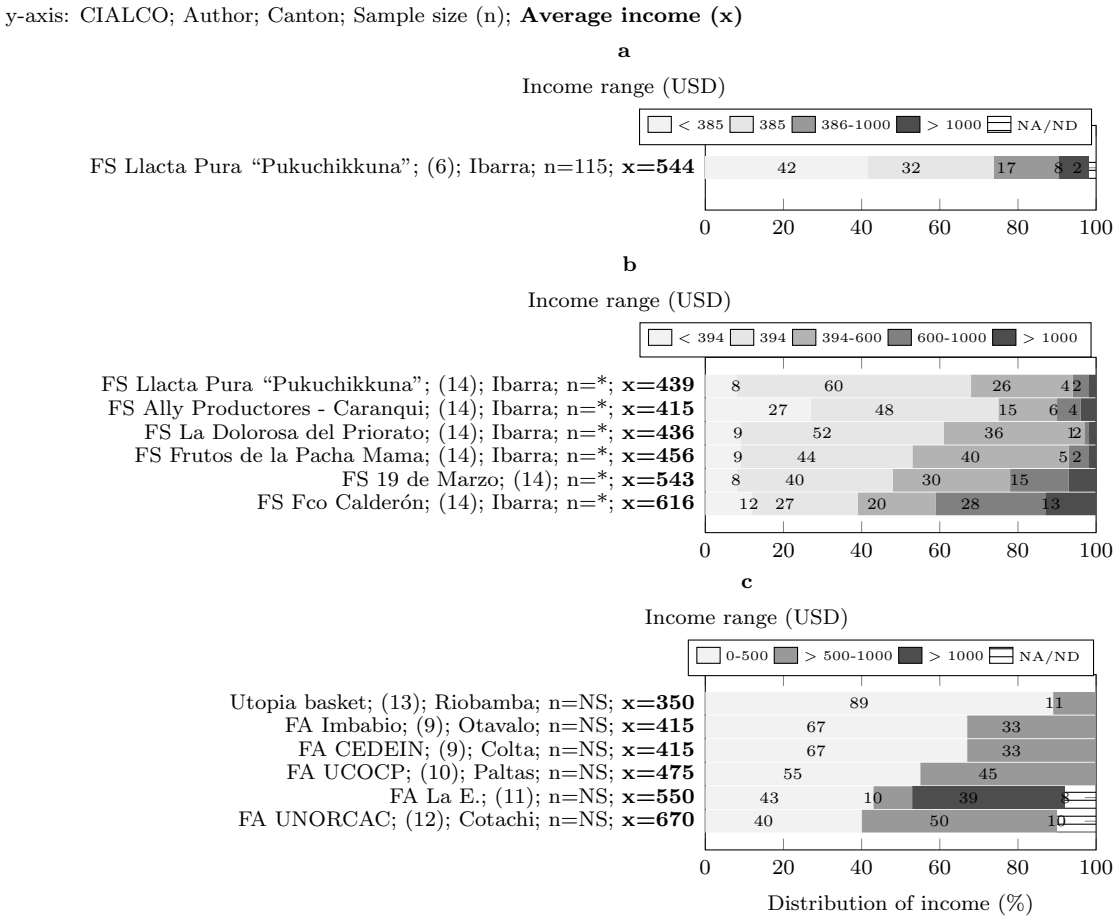

Figure 6: **Income of CIALCO consumers**. **a.** Study reported sample size. **b.** and **c.** Studies with sample size issues. The average income (x) for each CIALCO was determined from study-reported frequencies. Income ranges were established using assumed limits of USD$1 and USD$1,500, catering to openly reported intervals. FS=Solidarity fair; FA= Agrological fair. NA/ND=No answer/No data, NS= no-stated. Sum of the sample sizes from all fairs marked with an asterisk (*) in (14), totals n=300. **Source(s):** Authors' own elaboration.

3.2.10. Spending patterns of CIALCO consumers

CIALCO customers spend between USD$6 and USD$38 per visit, though amounts range from USD$1 to over USD$60. Specifically, Figure 7a illustrates an average spend of $14.3, based on a sample of 660 customers from three studies. Figure 7b, which includes studies with unspecified sample sizes, indicates typical spending between USD$6 and USD$38 but underscores the wider range from USD$1 to over USD$60.

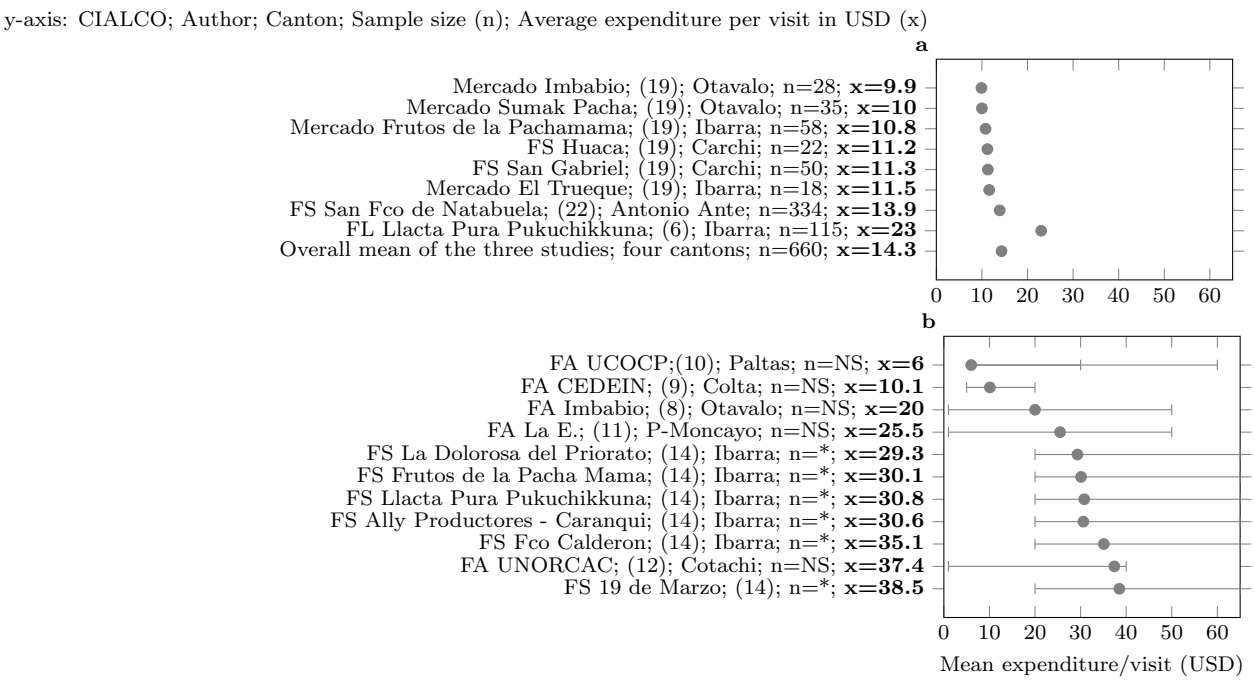

Figure 7: **Average expenditure per CIALCO consumers visit (USD)**. **a.** Across studies with sample size. **b.** Across studies with sample size reporting issues. Error bars, when reported, represent the range from minimum to maximum expenditure, thereby delivering an approximation contingent upon the accessible data–some sources communicated age ranges via the 'less than' or 'greater than' format. Fs=Fair(s), FS=Solidarity fair; FA= Agrological fair. NS= no-stated. Sum of the sample sizes from fairs marked with an asterisk (*) in (14) totals n=300. **Source(s):** Authors' own elaboration.

3.2.11. Purchase frequency

Across four studies, a trend emerges: consumers typically visit fair-CIALCOs three times a month (Figure 8a,b). In contrast, while the RESAK Association in Quito provides CIALCO baskets once a month, 68% of the 93 surveyed consumers report unmet demand (7). After analyzing trends for income, spending, and purchase frequency of CIALCO consumers, Figure 9 presents a concise summary of these variables.

3.2.12. Factors influencing a CIALCO customer's monthly expenditure on CIALCO products

Table 4 presents determinants of spending in CIALCO products based on (21) from the CIALCO-fair Agrupar in Quito. Gender, income, marital status, education, and number of children have a noticeable influence, while age, household size, vegetarianism, and environmental motivations are statistically insignificant.

Table 4: Factors influencing a CIALCO customer's monthly expenditure on CIALCO products. Source: (21). Sample size 254 customers from the CIALCO-fair typology by Agrupar in Quito. Differences are statistically significant at $\alpha = 0.05$. Significant outcomes follow the *ceteris paribus* principle. **Source(s):** Authors' own elaboration.

Variable	Does it influence spending on CIALCO products?	Finding detail
Gender	Yes	Men spend 27% more on monthly CIALCO purchases than women (P-value=0.046)
Age	No	Age does not significantly influence monthly CIALCO spending
Income	Yes	Higher customer income correlates with increased CIALCO spending (P-value=0.044)
Marital Status	Yes	Single individuals outspend married counterparts in CIALCO product purchases by 43% monthly (P-value=0.004)
Education	Yes	Each additional year of education increases agroecological product spending by 4.9% (P-value=0.001)
Household Size	No	Household size does not significantly influence monthly CIALCO spending
Number of Children	Yes	Each additional child increases a customer's monthly CIALCO expenditure by 2.6% (P-value=0.000)
Vegetarian Diet	No	Vegetarianism does not affect monthly CIALCO spending
Motivations for shopping in CIALCO	Yes, partially	Buyers primarily supporting small producers spend 60% more on agroecological food than health-motivated ones. Supporting small producers is more significant for high-income buyers income (< $2000 per month) than low-income ones (> $1000 per month). Environmental motivations do not significantly effect spending.

3.3. Comparative analysis of consumption habits and lifestyles

Table 5 compares CIALCO-consumers with non-CIALCO regarding dietary habits and lifestyle, with observations of three studies confined to Quito, Riobamba, and Ibarra. In short, surveyed

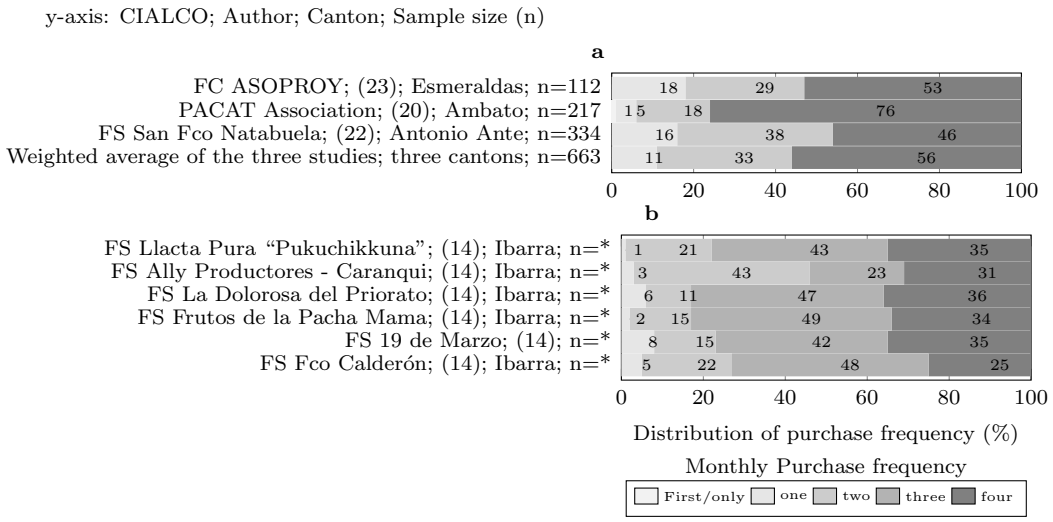

Figure 8: **Purchase frequency of CIALCO consumers**. **a.** Study reporting sample size. **b.** Study with sample size reporting issues. The data from (22) that appears in the graph as twice per month, is faithfully reported in the author's text as two or three times per month. FS=Solidarity fair; FA= Agrological fair. Sum of the sample sizes from all fairs marked with an asterisk (*) in (14) totals n=300. **Source(s):** Authors' own elaboration.

How much does a loyal CIALCO fair customer spend annually at these sales venues?			
USD$**6** to USD$**38** Average purchase amount per visit to a CIALCO venue	* **3** Average monthly visits to a CIALCO venue	= USD$**18** to USD$**114** Average monthly CIALCO purchase amount for a CIALCO customer	=USD$**216** to USD$**1,368** Average annual purchase amount for a CIALCO customer
What percentage of their monthly salary does a loyal CIALCO fair customer spend on average at these sales venues?			
USD$**350** to USD$**1,081** Average monthly income of a loyal CIALCO fair customer.		USD$**18** to USD$**114** Average monthly CIALCO purchase amount for a CIALCO customer	**5**% to **33**% **2**% to **11**% Percentage of a CIALCO customer's monthly salary allocated to CIALCO purchases.

Figure 9: Simplified overview of loyal CIALCO consumer income and expenditure. **Source(s):** Authors' own elaboration.

CIALCO consumers from Quito, Ibarra, and Riobamba tend to have healthier eating habits, including more fruit and vegetable consumption, less intake of processed foods, mindful salt consumption, and a better understanding of nutritional labels, with a preference for traditional foods. In addition, a higher proportion of CIALCO-consumers exercise more and are more socially involved than the Quito population average.

Table 5: Comparing CIALCO-consumers with non-CIALCO in terms of dietary habits and lifestyle. **Source(s):** Authors' own elaboration.

	A CIALCO consumer:	Author
	is more likely to **consume daily fruit and vegetables**	[2, 17]
	is less likely to have consumed **industrially processed foods**	[2]
	3.9 times more likely to **monitoring salt intake** and to implement practices to **reduce table salt consumption**	[2, 17]
	is less likely to have a **history of diet-related chronic disease** (only correlation)	[2]
	is more likely to have **understanding of nutritional labeling**	[2]
	is 2.5 times more likely to consume frequently **traditional foods**	[2]
	higher proportion of CIALCO-consumers **regularly exercise** (29%) in contrast to Quito population average (16.5%)	[21]
	higher proportion of CIALCO-consumers **to be part of a social organization** (19%) in contrast to Quito population average (1%)	[21]

3.4. Consumer purchasing motivations and decision-making in CIALCO

Drawing on Zoll et al. (2018)'s consumer shopping motivation categories, Ecuadorian CIALCO consumers' purchasing behaviors can be segmented into self-interest, sociopolitical, and community-driven. Our descriptive statistics, word frequency analysis, and study rankings show that self-interested motivations are more prevalent among CIALCO consumers, indicating a strong focus on individual preferences over altruistic ones. We amplify such a finding in the subsequent subheadings.

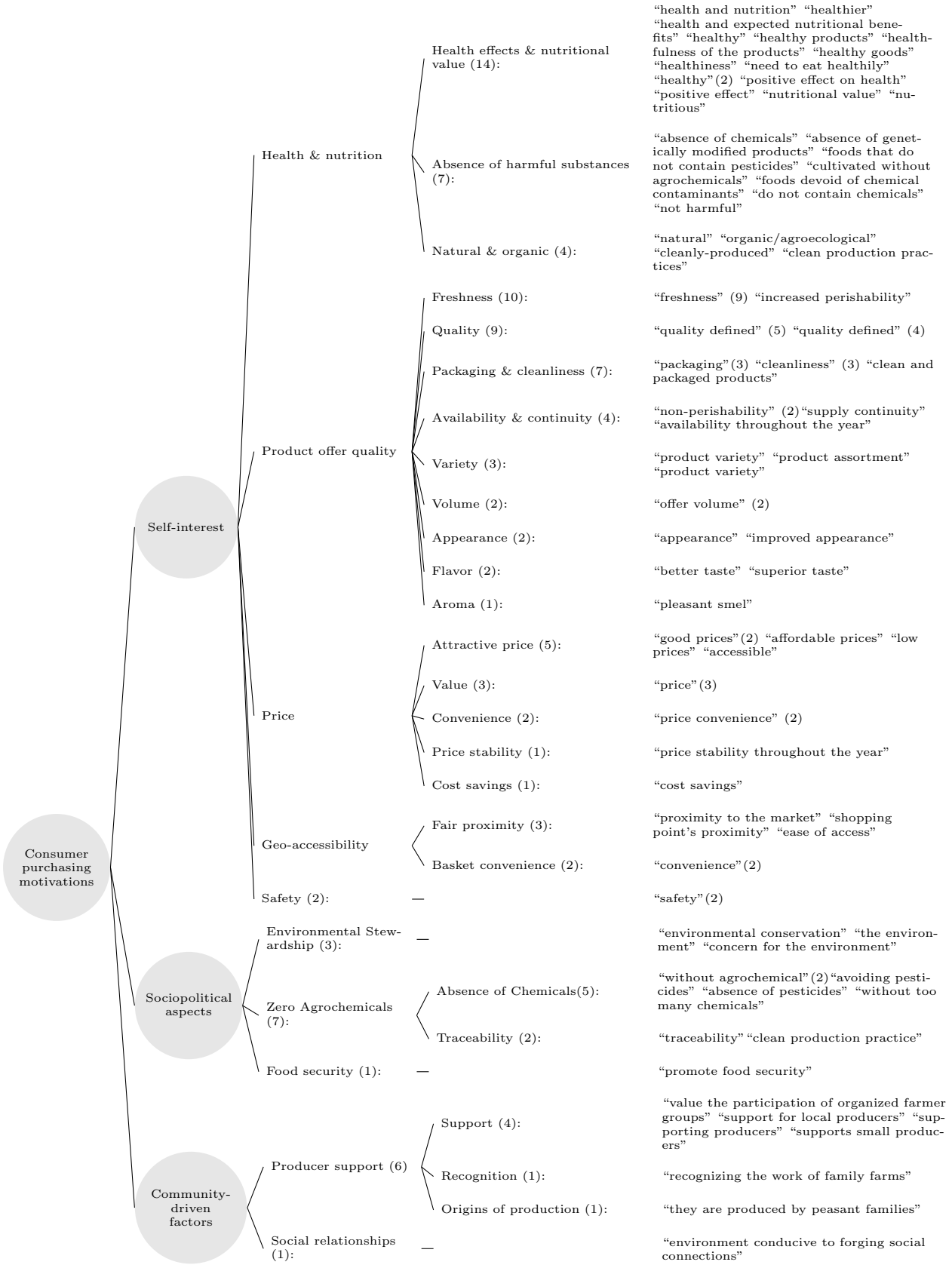

Figure 10: A hierarchical breakdown of Ecuadorian CIALCO consumer purchasing motivations, illustrating both primary and specific driving factors. Each leaf node represents a motivation or concern, with the number of occurrences, if provided, in parentheses. The thematic groupings, especially in the fourth tier, have been established based on semantic relationships and proximity among the terms located to the right. **Source(s):** Authors' own elaboration.

3.4.1. Motivations anchored in personal wellness and self-interests

Our tokenization divides self-interest driven motivations into five subcategories: health and nutrition, perceived product quality, price, accessibility and geographical convenience, and safety during purchasing.

Health and nutrition: The prevailing sentiment among CIALCO consumers CIALCO consumers is the positive health effects and nutritional content of products, followed by devoid of harmful chemicals, and an inclination towards natural or organic offerings (Figure 10). In most studies, health and nutrition are ranked as the primary or secondary motivation for CIALCO shopping, evident in 15 out of 16 studies analyzed (Table 6). About 51% of 1881 consumers prioritize health and nutrition in their purchasing decisions–the weighted average percentage of consumers citing health and nutrition as a motivation for CIALCO shopping, based on the studies provided and excluding those with unspecified sample sizes. Some studies explicitly highlight "health and nutrition", "nutritional value" as the primary motivation for shopping, while others suggest similarly by documenting the descriptors consumers use for these products. Consumers commonly characterize these products as "healthy", "clean", "natural", "free from chemicals/agrochemicals/pesticides", "absence of genetically modified products" or cite "the need to eat healthily". These descriptors reflect consumers' expectations for improved well-being and a healthier lifestyle.

Table 6: Motivations behind CIALCO purchasing: health & nutrition. n= Sample size; NS= Not-stated; E= Explicit; I= Implicit. **Source(s):** Authors' own elaboration.

Author	Findings details	Raking within the study	Expression of the motivation	% out of (n) Consumers
(7)	"health and nutrition"	2	E	97 (73)
(21)	"healthier"	1	I	90 (245)
(3)	"health and expected nutritional benefits" "positive effect on health"	1	I	80 (30)
(4)	"healthy and natural" "nutritional value" "absence of chemicals" "absence of GMO"	1	E; I	67-86 (475)
(1)	"healthy products"	1	I	38 (NS)
(2)	"health concerns" "to stay healthy" "foods that do not contain pesticides"	1	E; I	33.2 (315)
(8;9;10; 11;12;13)	"healthfulness of the products" "product quality" "cleanly-produced" "healthy goods" "cultivated without agrochemicals" "foods devoid of chemical contaminants" "healthiness" "clean production practices" "healthy product consumption"	1	E; I	31-34 (NS)
(20)	"absence of pesticides" "positive effect" "not harmful"	2	I	30 (217)
(5)	"organic/agroecological" "healthy" "do not contain chemicals" "are nutritious"	1	E; I	21.2 (192)
(22)	"healthy and natural"	2	I	19 (334)

Sensory attributes, presentation, and quality of the product range: In 15 of 16 studies, consumers prioritize freshness, cleanliness, packaging, consistent availability, variety, and to a lesser extent, volume, appearance, taste, and aroma of the products at CIALCOs (Table 7 and Figure 10). "Quality", a term that can be linked to various sensory and non-sensory aspects (e.g., cultivated without agrochemicals), is also included here. Note that "quality" is explicitly defined only in the studies (8; 9; 11; 12; 13). We encourage researchers to consistently include respondents' interpretation of 'quality' for objective comparisons.

Price: Table 8 shows that 1% to 59% of CIALCO consumers consider price a primary factor in their buying decisions. Fourteen out of 15 studies highlighted price as a significant determinant, with about 11.1% of participants (n=1501) citing it as a reason for choosing CIALCO. Price often ranks among the top three purchasing motivations. Consumers frequently mention affordable and good prices, value, convenience, price stability, and cost savings (Figure 10). They also favor consistent price stability and the broader notion of cost savings in their purchasing experiences.

Proximity and convenience of the CIALCO channel: this motivation is cited in five out of 14 studies, revealing that for a range of 4% to 27% of n=761 CIALCO consumers, it is about easy access (Table 9). Specifically, for studies that report their sample size (an aggregated total of n=761 CIALCO consumers), 13% emphasize proximity and convenience as a primary motivation. Typically, when mentioned, this motivation ranks as the fourth most relevant reason for purchasing.

Shopping safety: Mentioned in only two of 14 studies, shopping safety is important for 4% and 12% of consumers (8; 13).

3.4.2. Social/community driven motivations

Community-based motivations encapsulate aspects tied to social connections, unity, and mutual support among the actors within alternative food networks, particularly local producers. These

Table 7: Motivations behind CIALCO purchasing: sensory and presentation qualities of the product. NA = Not applicable. **Source(s):** Authors' own elaboration.

Author	Findings details	Quality definition
(11)	"quality" "packaging, "supply continuity" "freshness"	Wholesome, hygienic products, cultivated without agrochemicals and well-packaged.
(7)	"freshness"	NA
(21)	"flavor and presentation/appearance"	NA
(13)	"freshness and product variety" "quality"	Wholesome, hygienic products, cultivated without agrochemicals.
(8)	"cleanliness" "product assortment"	Wholesome, hygienic products, cultivated without agrochemicals.
(12)	"cleanliness" "packaging" "volume" "non-perishability"	NA
(10)	"quality" "presentation (cleanliness and packaging)" "volume" "non-perishability"	Wholesome, hygienic, less perishable products.
(9)	"product quality and cleanliness" "availability throughout the year" "product size"	Wholesome, hygienic products, cultivated without agrochemicals.
(5)	"superior taste" "higher freshness" "improved appearance" "increased perishability"	NA
(1)	"quality and freshness"	Unspecified
(23)	"quality of the products"	Unspecified
(20)	"product quality" "better taste" "freshness of the products" "pleasant smell"	Unspecified
(3)	"quality and freshness"	Unspecified
(22)	"freshness of the products"	NA
(2)	"freshness"	NA
(4)	"variety"	NA

Table 8: Motivations behind CIALCO purchasing: price. n= Sample size; NS= Not-stated. **Source(s):** Authors' own elaboration.

Author	Findings details	Ranking within the study	% out of (n) Consumers
(7)	"price"	9	59 (73)
(13)	"low prices" "price stability throughout the year"	3	29 (NS)
(23)	"convenience of price"	1	28 (112)
(9)	"price"	2	25 (NS)
(10)	"good prices"	2	24 (NS)
(11)	"good prices"	2	24 (NS)
(2)	"good prices"	-	13.5 (315)
(12)	"price"	1	13 (n=NS)
(22)	"price convenience"	3	12 (334)
(1)	"prices are convenient"	4	12 (NS)
(8)	"price"	4	9 (NS)
(5)	"affordable prices"	8	2.4 (192)
(4)	"price"	7	1 (475)
(3)	"cost savings"	2.5	- (NS)

Table 9: Motivations behind CIALCO shopping: proximity and convenience (in the case of basket to point geographical convenience) of the CIALCO channel. n= Sample size; NS= Not-stated. **Source(s):** Authors' own elaboration.

Author	Findings details	Ranking within the study	% out of (n) Consumers
(23)	"proximity to the market"	2	27 (112)
(22)	"shopping point's proximity"	4	11 (334)
(2)	"convenience"	-	9.9 (315)
(8)	"convenience"	6	6 (NS)
(13)	"convenience" "ease of access"	4	4 (NS)

motivations are less frequently recorded, including expressions such as "direct producer support", "socializing", "social interaction", and "social capital".

Support for local producers: Highlighted in six of 14 studies on CIALCO consumer motivations (Table 10), ssupport for local producers is a recurrent theme. About 9.5% of 1330 respondents identified this as their primary motivation. These sentiments can be categorized into three areas: recognizing the efforts of producer families, a desire to support small/local/peasant/family farming, and knowing who produces the goods (Figure 10). Notably, higher-income consumers often shop at CIALCO to support these producers, showing a strong community commitment (21).

Building of social relationships: Only one out of 14 studies identified social relationships as a primary buying motive, particularly for customers in the upper quartile of monthly CIALCO expenditure. 67% of the most active CIALCO shoppers—those getting over a third of their monthly supplies from CIALCO—cite its socially conducive environment as their main reason for shopping

Table 10: Motivations behind CIALCO shopping: support for local producers. **Source(s):** Authors' own elaboration.

Author	Findings details	Ranking within the study	% out of (n) Consumers
(3)	"appreciate the participation of organized farmers as suppliers of agricultural products"	-	100 (30)
(7)	"recognizing the work of family farms"	-	90 (73)
(2)	"support for local producers"	-	4.1 (315)
(21)	"supporting producers"	-	3 (245)
(4)	"they are produced by peasant families"	6	2 (475)
(5)	"supports small producers"	9	0.7 (192)

there (3). This motive holds precedence and is ranked first by this specific demographic of shoppers. However, among shoppers with less frequent engagement, the motivation held a tertiary position in their ranking (3). While social motivations are not often articulated, they emerge in the CIALCO shopping experience, highlighting trust, loyalty, and community ties. For instance, in the context of La Esperanza Fair, it was found that 22% of CIALCO producers have a steady base of loyal customers (11). Another study indicated that 56% of consumers demonstrated brand loyalty, with 59% of these loyal consumers enjoyed the benefits of loyalty, often negotiating prices or receiving occasional gifts as a token of appreciation (23). Additionally, 28% knew their preferred producer's agricultural sites, and a fourth had personal relationships with the producers, illustrating the depth of connections beyond commercial transactions.

3.4.3. Socio-political motivations

These motivations embody the consumer's desire to contribute positively towards the environmental, social, and political aspects of the food supply chain.

Environmental Stewardship: This is a key motivation for CIALCO consumers, according to three of 16 studies (Table 11). On average, about 6.4% of 777 respondents cited environmental stewardship as their primary reason for purchasing CIALCO products. In two studies, this motivation ranked fourth among primary purchasing motivations.

Table 11: Motivations behind CIALCO shopping: environmental stewardship. n= Sample size. **Source(s):** Authors' own elaboration.

Author	Findings details	Ranking within the study	% out of (n) Consumers
(20)	"environmental conservation"	4	14.7 (217)
(2)	"environmental factors"	-	4.4 (315)
(21)	"concern for the environment"	4	1.6 (245)

Zero Agrochemicals: Seven of 16 studies highlight consumers' concerns over chemical traceability and cleaner food as reasons for choosing CIALCO (9; 13; 8; 12; 2; 20; 5)

Food security: a niche but vital motive, one study (5) reveals that 0.5% of consumers choose CIALCO to "promote food security".

3.5. Consumer satisfaction CIALCO

Figure 12 consolidates findings from three studies focused on consumer satisfaction at various CIALCOs. Overall, the price and customer service were satisfactory, while waste management and infrastructure were often disappointing, with mixed reviews for product quality and variety.

A study of the RESAK basket in Quito (n=93) assessed customer service, product variety, quality (freshness), and price (7). Another study of the Llacta Pura fair in Ibarra (n=115) evaluated satisfaction with customer service, infrastructure, product quality, variety, and price (6). A third study surveyed 300 consumers across six CIALCO fairs in Ibarra, including Llacta Pura, adding waste management to the satisfaction metrics (14). For a unified interpretation of (6; 14), we merged the categories 'very satisfied' and 'satisfied' into a single 'satisfied' category. Similarly, in the three studies, the terms 'less satisfied' and 'dissatisfied' were combined under 'dissatisfied'. Using Figure 12, we illustrated this data in stacked bar plots, enabling a more precise visualization of the dominant sentiment across metrics. Key findings include higher satisfaction with price and

customer service but common dissatisfaction with waste management and infrastructure. Product quality and variety received mixed reviews. The RESAK box scheme customers showed satisfaction with service, price, and product quality but dissatisfaction with product variety. The studies on Llacta Pura fair aligned on infrastructure, customer service, and product quality but differed on price satisfaction (6; 14).

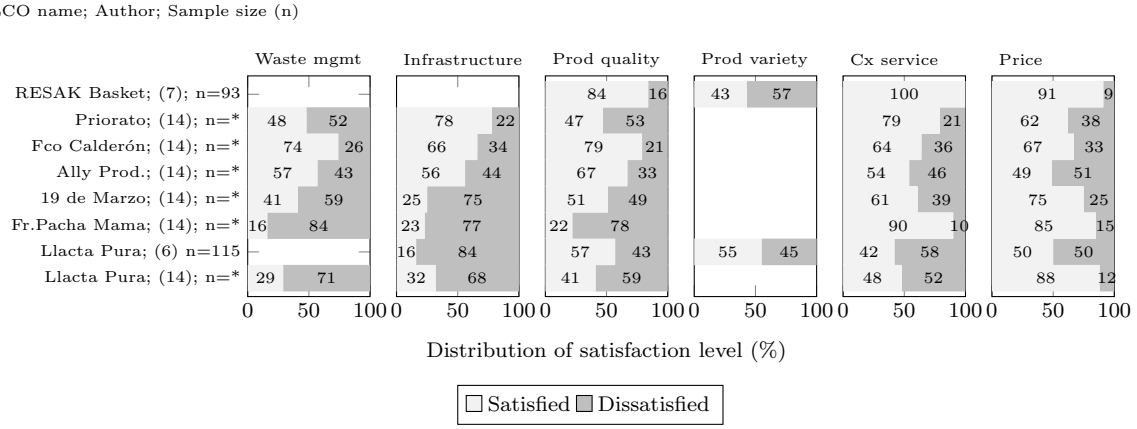

Figure 11: **CIALCO Consumer satisfaction**. Cx=Customer; Prod=Product; mgmt=management. **Source(s):** Authors' own elaboration.

3.6. CIALCO Consumers willingness to pay

Consolidating WTP figures among CIALCO customers is challenging due to sample size issues, but trends emerge. Data from seven studies suggest that 50-100% of CIALCO participants are willing to pay a premium (Figure 12a). Both (3;9) report similar figures from the Utopia basket. Six studies quantify this premium (Figure 12b), with most CIALCO-fair respondents willing to pay 5% to 10% over the price and 62% of Utopia basket respondents willing to pay up to 50% more.

Factors influencing consumers' readiness to pay more are shown in Figure 13. Key drivers include improvements in organization, shopping experience, product offerings, and sustainability. Specific conditions include better hygiene, product quality and variety, and promoting sustainability by certifying chemical-free products and reducing plastic bag usage. Different strategies are suggested for 'Fair' and 'Basket' shopping modalities.

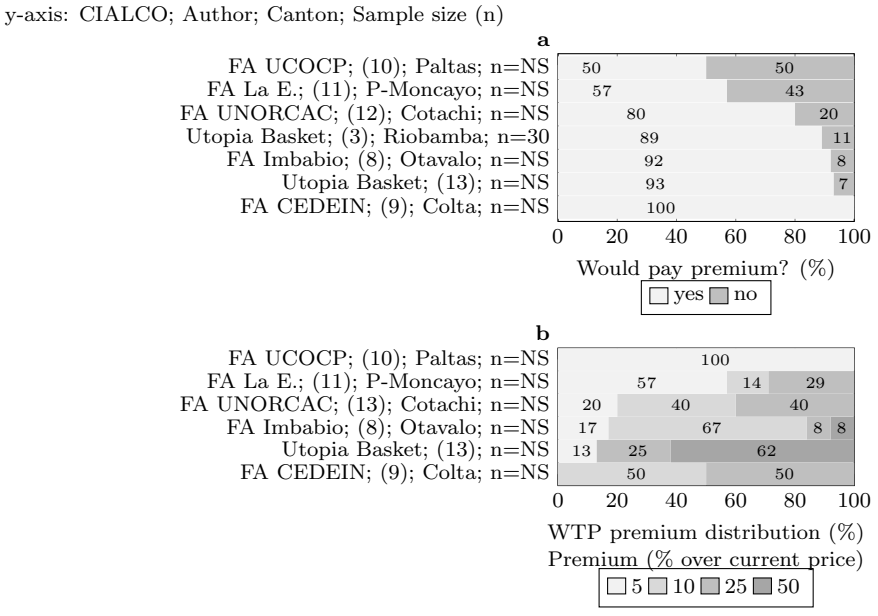

Figure 12: **CIALCO Consumer Value Perception. a.** Consumer inclination to pay a premium for CIALCO offerings. **b.** Percentage over the current price they are willing to pay. FA= Agrological fair. NS= no-stated. **Source(s):** Authors' own elaboration.

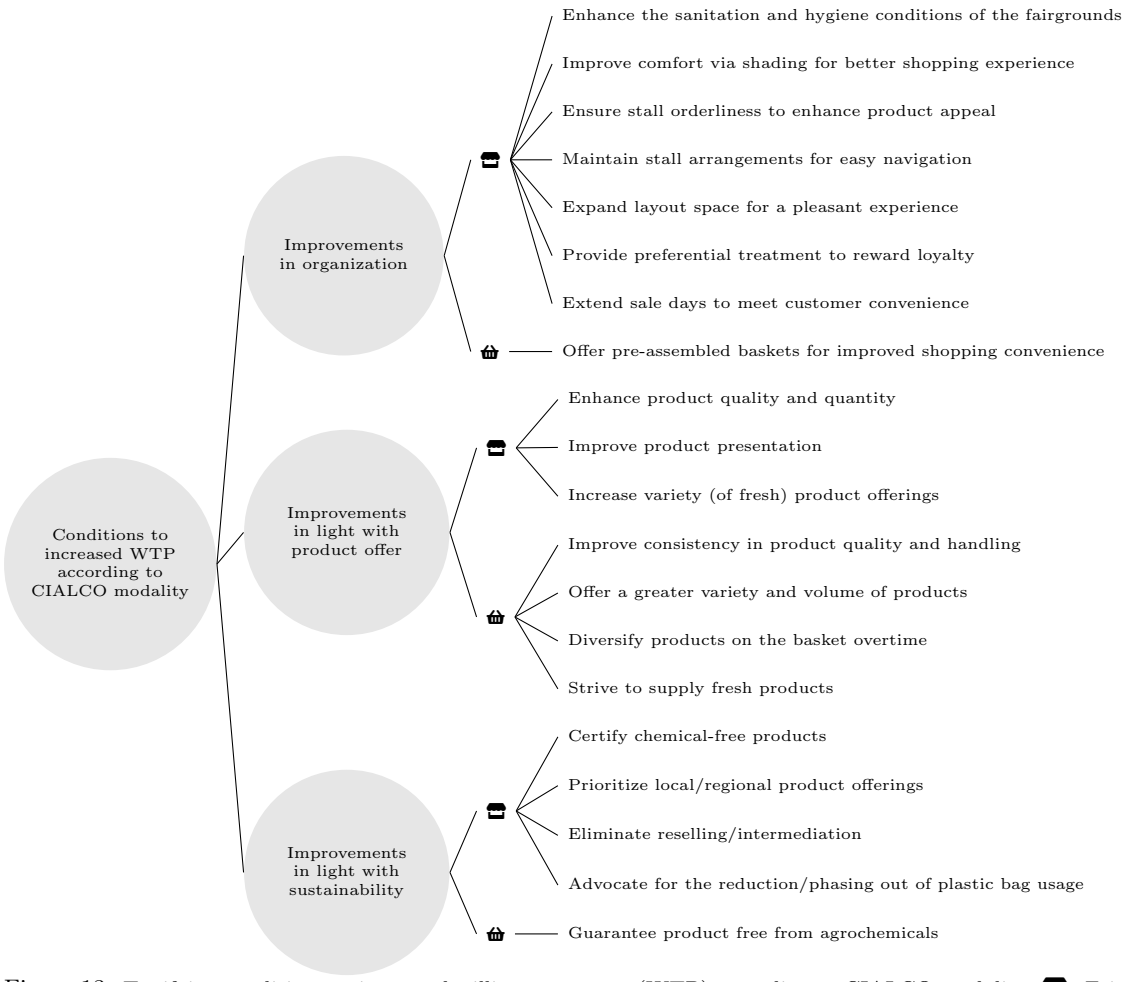

Figure 13: Typifying conditions to increased willingness to pay (WTP) according to CIALCO modality. =Fair; =Basket. Sources: (8; 9; 10; 11; 12; 13). **Source(s):** Authors' own elaboration.

3.7. Barriers to preserving and expanding the CIALCO customer segment in Ecuador

Our review identifies key barriers and challenges to preserve and expand CIALCOs in Ecuador (Figure 14). Critical factors include unsatisfactory purchasing experiences, limited accessibility, low market penetration, organizational issues, and lack of traceability in agricultural practices.

Spatial elements partly dictate consumer behavior in SFSCs. The concentration of CIALCO fairs in select urban areas limits accessibility for those farther away of focal points (2). Basket schemes face dropouts due to transport issues (7). High theft rates in certain urban areas deter potential buyers (2). Poorly planned open-air CIALCO fairs expose consumers to weather, affecting the shopping experience (14; 16). Government-organized fairs in Quito exclude the southern region, home to many middle- and low-income residents (18).

Pricing, basket size, and delivery issues drive consumer dropouts. High costs and small basket sizes deter larger families (7). Delivery times also pose a significant issue, as many consumers stopped using the CIALCO basket service due to missed delivery deadlines (2). Consumer dissatisfaction also stems from a stagnant product variety within these baskets, contrasting sharply with more innovative conventional channels (7). Poor order processing and after-sales service have caused customer alienation (7). Organizational challenges, such as effective management, deteriorate producer-consumer relations. Additionally, the sustainable vision of CIALCO fairs often clashes with its practical waste management, warranting attention (7).

Consumer demand for product traceability and quality assurance is growing. Sanitary certification remains a challenge for processed food producers, requiring targeted support (20). Consumers struggle to distinguish organic from large-scale products (15). Consumer education is essential to elucidate fair pricing, health benefits, and environmental effects (17;15;2). Lastly, weak promotion further limits CIALCO's appeal against mainstream markets (2).

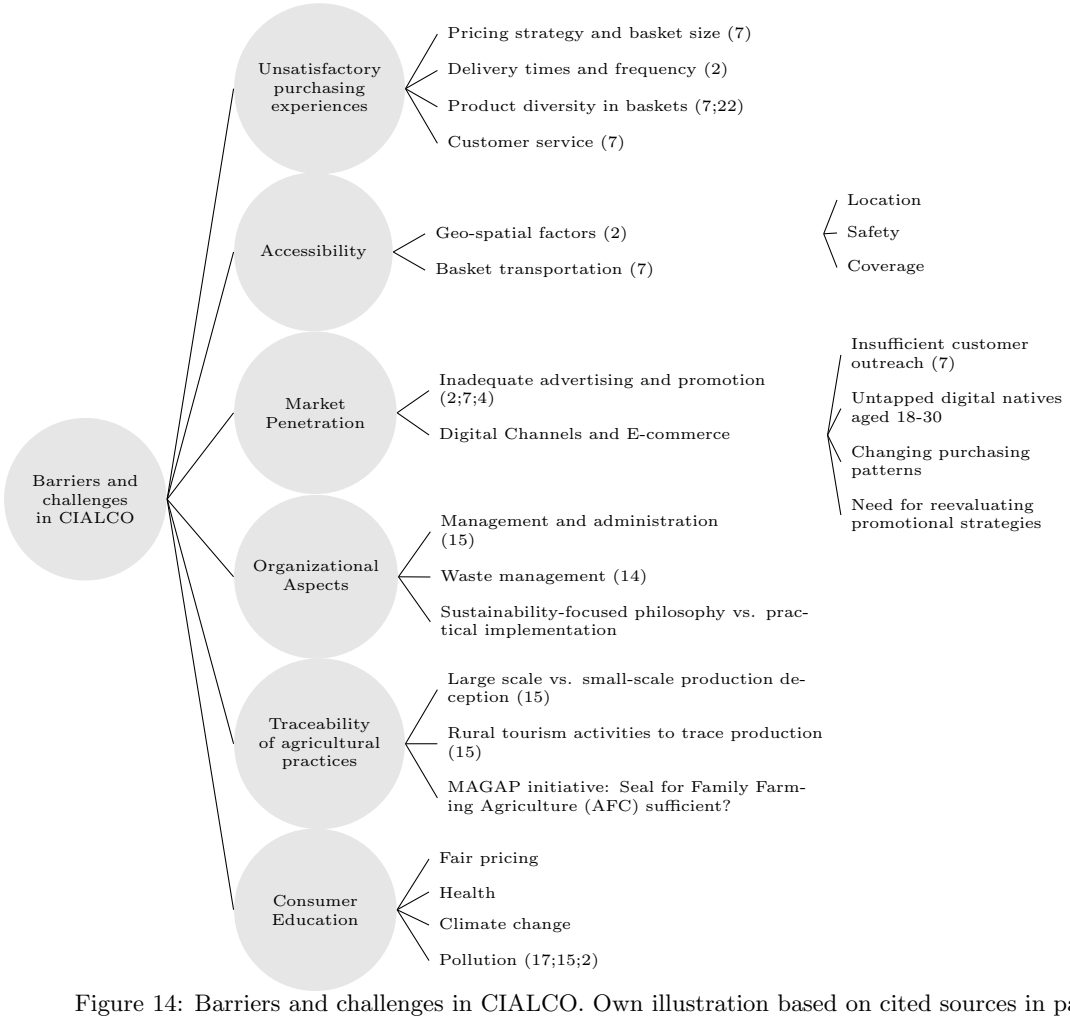

Figure 14: Barriers and challenges in CIALCO. Own illustration based on cited sources in parenthesis.

4. Discussion

Our review identified and analyzed 23 documents from 2009 to 2020, focusing on six key themes related to CIALCO consumer profiles and barriers to expansion. Rather than treating profiling variables as standalone descriptors or barriers as a mere list, we structure the discussion into three blocks: (1) Consumer profile as an access and affordability issue, highlighting how price sensitivity and access constraints shape SFSC participation; (2) Institutional framework and certification systems, examining the role of PGS policy in enabling or limiting SFSC growth; and (3) Logistics and market accessibility, discussing infrastructure, distribution, and digital engagement challenges affecting scalability.

4.1. Consumer profile as an access and affordability issue

Maró et al. (2023) identified a homogeneous consumer profile in Global North farmers' markets i.e., middle-aged, highly educated women with high purchasing power, primarily driven by ethical and sustainability concerns. In contrast, we depict the CIALCO consumer in Ecuador as also predominantly middle-aged women with secondary education but with moderate purchasing power, prioritizing health and affordability over ethics or sustainability. While Global North consumers are willing to pay a premium for local and organic food, CIALCO consumers are highly price-sensitive, with their loyalty contingent on convenience and affordability rather than ethical considerations.

SFSC transformation models have been shaped by Global North narratives, assuming that consumers enter SFSCs due to sustainability values. However, in Ecuador, the evidence we synthesized suggests that CIALCO expansion has not been primarily driven by ethical or community-driven consumer choices. Instead, price constraints, infrastructure limitations, and health-related motivations play a central role in shaping participation. After conducting a survey of 201 participants using convenience sampling across three Latin American countries—Mexico, Chile, and Bolivia—Juri

et al. (2024) critiques how food system transformation strategies fail to adapt to Global South realities, reinforcing the need for alternative models beyond ethical consumerism.

Thus, expanding Ecuadorian CIALCOs requires affordability strategies, improved accessibility, and targeted consumer research to better align offerings with local purchasing behaviors.

4.2. Institutional framework and certification systems

Since 2020, Ecuador has worked on formalizing short food supply chains (SFSCs) through Participatory Guarantee Systems (PGS). In 2021, the MAGAP trained personnel to promote agroecological certification and strengthen producer-consumer trust. However, publicly available data on long-term implementation remains limited. Unlike in Europe, where PGS frameworks are institutionally integrated, Ecuador's experience with PGS reflects broader Latin American challenges in institutional standardization, consumer awareness, and affordability barriers. Similar to Mexico, Chile, and Bolivia, PGS in Ecuador remains decentralized, limiting its effectiveness as a market-trusted certification (Kaufmann et al., 2023).

Strengthening institutional support, enhancing consumer education, and developing affordable pricing strategies are essential for PGS to effectively promote sustainable food systems in Ecuador. Also, adapting lessons from Brazil (Rodrigues Hirata et al., 2021), India (Gill and Johal, 2023), and Ghana (https://pgsghana.org/), PGS could enhance adoption in Ecuador

4.3. Logistics and market accessibility

Now focusing on CIALCO fairs, which constitute the most documented model, we examine their logistical and market accessibility challenges. While fairs serve as key SFSC platforms, their urban concentration limits access for peri-urban and rural consumers. This could either reflect a true geographic concentration of CIALCOs or a research bias where other CIACO typologies—are under-documented despite potentially different logistical constraints. Further research is needed to determine whether this urban concentration reflects an actual geographic limitation or an under-representation of alternative CIALCO models in documentation.

When comparing Ecuador's SFSC logistics with similar contexts in the Global South, parallels emerge. In Brazil and India, informal markets and decentralized supply chains hinder rural producers' access to urban demand (Baptista et al., 2022). Similarly, Ghana's poor transport infrastructure and security concerns (Bannor et al., 2025) reflect Ecuador's challenges, where high dropout rates, weather-exposed fairs, and theft risks impact consumer retention.

Unlike in developed countries, where digital platforms expand SFSC reach, Ecuadorian CIALCOs rely on in-person transactions, limiting scalability and excluding younger, tech-driven consumers. CIALCO's primary consumers, mostly over 30, prefer physical markets, but younger demographics (18–30) are increasingly digital-first and are not yet fully integrated. Bridging this digital divide is imperative. Similar digital exclusion trends are evident in India and Mexico, where small-scale producers face difficulties integrating into online markets due to limited technological infrastructure and digital literacy gaps. Strengthen marketing and digital outreach, leveraging local media and influencers, as preliminary assessments indicate limited CIALCO online engagement. Train organizers in digital literacy and effective promotion, taking cues from IFAD Innovatech and CGIAR's digital training initiatives.

Another major challenge is cold chain management and supply consistency, which directly affect product diversity and consumer trust. In Mexico's SFSCs, inadequate refrigeration leads to higher perishability rates (Romero-López and Manzo Ramos, 2017), a challenge that also affects Ecuadorian CIALCOs, where supply coordination issues cause missed delivery deadlines, limited basket variety, and inconsistent product quality.

Affordability alone is insufficient for SFSC sustainability. In Europe, institutional funding and infrastructure investment complement consumer accessibility. In Ecuador, strengthening government-backed financial programs would enhance producer participation and market integration. The EU's SMARTCHAIN project, with a 6-million EUR investment in SFSC innovation, reflects how structured financial support to strengthen sustainability and producer viability (https://www.smartchain-h2020.eu/). In Ecuador, the absence of structured financial programs for CIALCOs exacerbates barriers to entry and limits long-term resilience. Developing a financial framework that includes

subsidies, credit access for small-scale producers, and investment in logistical infrastructure is necessary to ensure the scalability and stability of Ecuadorian SFSCs.

These comparisons indicate that Ecuador's CIALCO expansion is shaped by common logistical barriers found in other Global South SFSCs. Addressing these challenges requires further research on mapping the full scope of CIALCO typologies beyond fairs and baskets, while investment, strategies for improving distribution efficiency, digital integration, and consumer trust in supply reliability are essential for scalability.

5. Conclusion

Our profiling of Ecuadorian CIALCOs and synthesis of barriers reveal how consumer access, institutional frameworks, and logistical challenges shape their maintenance and scalability. While affordability remains a key concern, financial backing is equally essential for ensuring market stability. Ultimately, these findings highlight the need to remove structural barriers to better support small agricultural producers, given the central role of CIALCOs in promoting sustainable food systems.

Unlike SFSCs in developed economies, where premium pricing and ethical concerns shape consumer behavior, Ecuadorian CIALCOs remain anchored in accessibility, affordability, and food security goals. Additionally, while certification systems such as PGS aim to formalize SFSCs, their decentralized implementation raises concerns regarding trust, standardization, and market adoption. These findings reinforce the need for strategies that acknowledge local economic realities rather than replicating Global North assumptions.

More research is needed into the SFSC of the Latin American context, and future studies in Ecuador should explore under-documented CIALCO typologies beyond fairs to gain a more comprehensive understanding of the country's SFSC landscape. Representative samples, consistent data collection, and peer-reviewed studies are essential. Addressing gaps in market integration, digital accessibility, and distribution networks will be essential for strengthening CIALCO resilience and expanding consumer reach. Policymakers should prioritize regulatory integration for PGS, infrastructure investment in decentralized distribution networks, and digital market inclusion to foster more inclusive and sustainable food systems.

Acknowledgements

K.A. thanks the Research Training Group on Sustainable Food Systems (RTG 2654), funded by the German Research Foundation (DFG), the Chair of Agricultural Policy at Georg-August-Universität Göttingen, and the Colombian Minciencias scholarship 885 - 2020 for its financial support. Special thanks to the Carlo-Schmid-Programm, DAAD, and the World Food Program (WFP) in Ecuador for supporting K.A.'s internship in Quito in 2020.

References

April-Lalonde, G., Latorre, S., Paredes, M., Hurtado, M.F., Mu noz, F., Deaconu, A., ..., Batal, M., 2020. Characteristics and motivations of consumers of direct purchasing channels and the perceived barriers to alternative food purchase: A cross-sectional study in the ecuadorian andes. Sustainability 12, 6923. doi:10.3390/su12176923.

Bannor, R.K., Oppong-Kyeremeh, H., Boateng, A.O., Bold, E., Gruzah, B., 2025. Short supply chain choice and impact amongst rice processors in rural ghana. Journal of Agribusiness in Developing and Emerging Economies 15, 150–172.

Baptista, N., Alves, H., Matos, N., 2022. Scoping challenges and opportunities presented by covid-19 for the development of sustainable short food supply chains. Sustainability 14, 14475.

Binimelis, R., Descombes, C., 2010. Comercialització en circuits curts: Identificació i tipologia. Escola Agraria de Manresa i Verloc, Barcelona, Spain.

Borja, R.M., Oyarz'un, P.J., 2018. Strengthening local healthy food systems: An experiment in ecuador's central highlands, in: Innovative markets for sustainable agriculture: How innovations in market institutions encourage sustainable agriculture in developing countries, p. 91.

Cevallos R., H.R., Tufiño J., M.D.C., 2014. Proyecto de factibilidad para la creación de un punto de acopio y comercialización de productos orgánicos, para la corporación ecuatoriana de agricultores biológicos pro–bio, dedicada a la capacitación y difusión de las técnicas de la agricultura orgánica, ubicada en la ciudad de quito.

Chamorro, C.N., 2015. Análisis socioeconómico sobre la apertura del mercado orgánico/agroecológico en el distrito metropolitano de quito, provincia de pichincha durante el periodo 2008-2014.

Chauveau, C., Sol-Doris, 2011. Agroecología y venta directa organizada, una propuesta para valorizar mejor los territorios de la sierra sur del ecuador. https://www.avsf.org/es/posts/657/full/agroecologia-y-venta-directa-organizada-en-ecuador.

Delgado Parra, G.V., 2018. Análisis de los beneficios mutuos entre actores participantes de la feria libre "asociación de productores llacta pura pukuchikkuna" de la ciudad de ibarra, provincia imbabura.

Dragicevic, A.Z., 2021. Emergence and dynamics of short food supply chains. Networks and Spatial Economics 21, 31–55.

Durach, C.F., Kembro, J., Wieland, A., 2017. A new paradigm for systematic literature reviews in supply chain management. Journal of Supply Chain Management 53, 67–85.

Durán, M., 2019. Costos de comercializaci'on de canastas agroecol'ogicas de la asociaci'on regional de soberan'ia alimentaria del territorio kayambi "resak", provincia de pichincha.

E., A.C.J., Molina P., J.B., 2019. An'alisis socioecon'omico del proceso de comercializaci'on vinculado a cialcos en la provincia de pichincha, cant'on mej'ia, en la asociaci'on de productores agropecuarios fuerza y trabajo puichig.

Feinerer, I., Hornik, K., Meyer, D., 2021. tm: Text Mining Package. URL: https://CRAN.R-project.org/package=tm. r package version 0.7-8.

Gill, S., Johal, R.K., 2023. Resurrecting sustainable farming in india's granary: current practices, challenges and solutions. Agroecology and Sustainable Food Systems 47, 1512–1540.

Heifer, F., AndeanTech, 2016a. Plan de negocios canastas comunitarias utopía. http://www.heifer-ecuador.org/wp-content/uploads/2018/03/4.-PLAN-DE-NEGOCIOS-DE-UTOPIAf.pdf. Accessed: 2022-11-29.

Heifer, F., AndeanTech, 2016b. Plan de negocios feria agroecológica centro de desarrollo indigena del cantón colta "cedein". http://www.heifer-ecuador.org/wp-content/uploads/2018/03/3.-PLAN-DE-NEGOCIOS-CEDEINf.pdf. Accessed: 2022-11-29.

Heifer, F., AndeanTech, 2016c. Plan de negocios feria agroecológica de la unorcac "la pachamama nos alimenta". http://www.heifer-ecuador.org/wp-content/uploads/2018/03/9.-PLAN-DE-NEGOCIOS-FERIAS-UNORCAC.pdf. Accessed: 2023-05-07.

Heifer, F., AndeanTech, 2016d. Plan de negocios feria agroecol'ogica imbabio "de la mata a la olla". http://www.heifer-ecuador.org/wp-content/uploads/2018/03/7.-PLAN-DE-NEGOCIOS-FERIAS-IMBABIOf.pdf. Accessed: 2022-11-29.

Heifer, F., AndeanTech, 2016e. Plan de negocios feria agroecológica randy namá paltas (ucocp). http://www.heifer-ecuador.org/wp-content/uploads/2018/03/6.-PLAN-DE-NEGOCIOS-FERIA-PALTASf.pdf. Accessed: 2022-11-29.

Heifer, F., AndeanTech, 2016f. Plan de negocios feria agroecol'ogica "la esperanza". http://www.heifer-ecuador.org/wp-content/uploads/2018/03/8.-PLAN-DE-NEGOCIOS-FERIAS-LA-ESPERANZAf.pdf. Accessed: 2022-11-29.

Juri, S., Terry, N., Pereira, L.M., 2024. Demystifying food systems transformation: a review of the state of the field. Ecology and Society 29.

Kaufmann, S., Hruschka, N., Vildozo, L., Vogl, C.R., 2023. Alternative food networks in latin america—exploring pgs (participatory guarantee systems) markets and their consumers: a cross-country comparison. Agriculture and Human Values 40, 193–216.

Landázuri, O., 2019. Estrategias para el mejoramiento de los ingresos de los socios de las ferias solidarias de la ciudad de ibarra, provincia de imbabura.

Macas, B., Echarry, K., 2009. Caracterización de mercados locales agroecológicos y sistemas participativos de garantía que se construyen en el Ecuador. Quito: Coordinadora Ecuatoriana de Agroecología.

MAGAP, 2020. Informe de rendición de cuentas cpccs planta central; ministerio de agricultura y ganadería del ecuador. URL: https://www.agricultura.gob.ec/wp-content/uploads/2020/10/3.informe-de-rendicion-de-cuentas-cpccs-planta-central.pdf.

Martínez, A., Baca, É.Z., 2020. Los circuitos alternativos de comercialización en el ecuador: política para el acceso a mercados de la agricultura familiar campesina. Cambio climático, biodiversidad y sistemas agroalimentarios .

Maró, Z.M., Maró, G., Jámbor, Z., Czine, P., Török, , 2023. Profiling the consumers of farmers' markets: a systematic review of survey-based empirical evidence. Renewable Agriculture and Food Systems 38, e53, 1–20. doi:10.1017/S1742170523000467.

Murillo, R., Lacroix, P., 2014. Ferias solidarias en ecuador: Alternativa para los pequeños productores locales y para un consumo sano y solidario en los territorios. Ferias y mercados de productores: Hacia nuevas relaciones campo-ciudad 95.

Paredes, M., Cole, D.C., Boada, L., Berti, P.R., 2019. 10 Assessing responsible food consumption in three Ecuadorian city regions. p. 195.

Rodrigues Hirata, A., Rocha, L.C.D., Assis, T.R.d.P., Souza-Esquerdo, V.F.d., Bergamasco, S.M.P.P., 2021. Generating credibility in participatory guarantee system (pgs): A study at pgs sul de minas, brazil. Agroecology and Sustainable Food Systems 45, 225–244.

Romero-López, A.R., Manzo Ramos, F., 2017. Understanding the linkages between small-scale producers and consumers through the analysis of short food supply chains in a local market in nopala de villagrán, hidalgo, mexico. Cuadernos de Desarrollo Rural 14, 52–67.

Salazar Cosco, P.T., 2016. Caracterización de los integrantes de la Asociación de Productores Agropecuarios Los Andes (APALA) y las estrategias para lograr sostenibilidad. Ph.D. thesis. Universidad Politécnica Estatal del Carchi.

Silge, J., Robinson, D., 2021. tidytext: Text Mining and Analysis Using Tidy Data Principles in R. URL: https://CRAN.R-project.org/package=tidytext. r package version 0.3.1.

Toro, J.M., Ulloa, W.F., 2016. Comportamiento del consumidor de productos agroecológicos frente a la aplicación de buenas prácticas agrícolas. ECA Sinergia 7, 33–44.

Vasco, C., Sánchez, C., Limaico, K., Abril, V.H., 2018. Motivations to consume agroecological food: An analysis of farmers' markets in quito, ecuador. Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS) 119, 1–10.

Vásquez, J., 2020. Estudio para la implementación de una feria solidaria agropecuaria en la parroquia de natabuela, provincia de imbabura.

Zoll, F., Specht, K., Opitz, I., Siebert, R., Piorr, A., Zasada, I., 2018. Individual choice or collective action? exploring consumer motives for participating in alternative food networks. Int. J. Consum. Stud. 42, 101–110.

Zurita, S.X., 2017. Los circuitos alternativos de comercialización–cialcos-como fortalecimiento social, económico y de las relaciones productor-consumidor en esmeraldas.

Supplementary Information: Reconstructing the Ecuadorian Short Food Supply Chain consumer profile

---

Contents

1. Keyword Search Strings for Literature Review in Spanish and English

Keywords-Spanish:
(TITLE-ABS-KEY(“consum*” OR “client*” OR “comprador*”)
AND TITLE-ABS-KEY(“circuitos alternativos de comercialización” OR “circuitos de comercialización alternativa” OR “redes de comercialización alternativa” OR “CIALCO” OR “CIALCOs” OR “feria campesina” OR “ferias agroecológicas” OR “canasta” OR “mercados agroecológicos” OR ”venta en finca” OR “tienda campesina” OR “punto de venta agroecológico” OR “abastecimiento HORECA” OR “Circuitos alimentarios de proximidad” OR “agroturismo” OR “mercados agroecológicos” OR “abastecimiento directo”)
AND TITLE-ABS-KEY(“Ecuador” OR “Ecuatoriano” OR “contexto Ecuatoriano”))
keywords-English:
(TITLE-ABS-KEY(“consumer” OR “client” OR “buyer” OR “custom*”)
AND (TITLE-ABS-KEY(“short food supply chain” OR “alternative marketing channel” OR “short commercialization food chain” OR “short*” OR “alternativ*” OR “commerce*” OR “food network” OR “CIALCO” OR “CIALCOs” OR “SFSC” OR “box scheme” OR “basket” OR “agroecological fairs or markets” OR “farm gate sales” OR “farmers’ store” OR “farmers’ shop” OR “farmers’ market” OR “farmers’ point of sale” OR “HORECA supply” OR “local food systems”)
AND TITLE-ABS-KEY(“Ecuador” OR “Ecuadorean context” OR “Ecuadorean”)

2. Selected Websites for Targeted Literature Search

- http://geoportal.agricultura.gob.ec
- http://sipa.agricultura.gob.ec/
- https://www.iniap.gob.ec/
- https://www.quericoes.org/
- https://www.heifer-ecuador.org/
- https://colectivoagroecologicoec.wordpress.com/
- https://utopiariobamba.wixsite.com/canastacomunitaria
- https://www.ppd-ecuador.org/