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INTERNATIONAL BUSINESS AND MANAGEMENT REVIEW

Internext | e836, 2026 | e-ISSN: 1980-4865 | http://internext.espm.br

SOCIO-TECHNICAL AGENCEMENTS AND THE RECONFIGURATION OF GROWERS IN CERTIFIED COFFEE COOPERATIVES: A STUDY IN SOUTHERN MINAS GERAIS

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ARTICLE DETAILS

Received:
October 30, 2024

Accepted:
June 26, 2025

Available online:
Nov. 17, 2025

Double Blind Review System

Editors
Priscila Rezende da Costa
Mário Ogasavara
Alex Fabianne de Paulo
Diogo Barbosa Leite
José Jassuipe da Silva Morais

ABSTRACT

Objective: The aim of the study was to highlight the socio-technical agencements promoted by Fairtrade certification and their influence on the organizational and market reconfiguration of three coffee cooperatives located in southern Minas Gerais, Brazil. **Method:** A qualitative study was conducted through a multiple case study design, including 30 semi-structured interviews, document analysis, and direct observation. Data analysis was carried out through thematic and interpretative coding, structured around analytical categories derived from empirical recurrence. **Main Results:** The findings reveal a transformation toward sustainability mediated by the performative agencements of certification. The study observed the emergence of technical assistance detached from commercial interests, the strengthening of production qualification practices. and the valorization of coffee quality, as well as the reorganization of commercial practices aimed at the international market. Market devices such as the field notebook, and agencements such as quality contests and field days, act as central elements in the institutional reorganization. Certification also drives normative adaptations based on consumption trends and international regulations, anticipating demands and shaping possible future scenarios. **Relevance/Originality:** The article offers a theoretical contribution by articulating Constructivist Market Studies with Future Studies, demonstrating how institutions such as Fairtrade perform markets that are sensitive to socio-technical transformations and normative anticipations. **Theoretical/Methodological Contributions:** The research advances the understanding of certified agri-food markets as performative constructions, showing how the agencements enacted by certification reconfigure hybrid collectives, the values attributed to products, and organizational strategies. **Social/Managerial Contributions:** The findings can support management strategies in cooperatives seeking to adapt to sustainability requirements and access more demanding markets, contributing to trajectories of institutional strengthening and organizational autonomy in the coffee sector.

Keywords: Constructivist Market Studies, Fair Trade, Certification System.

AGENCIAMENTOS SOCIOTÉCNICOS E A RECONFIGURAÇÃO DOS PRODUTORES EM COOPERATIVAS DE CAFÉ CERTIFICADO: ESTUDO NO SUL DE MINAS GERAIS

DETALHES DO ARTIGO

Recebido:
30 Out, 2024

Aceito:
26 Jun, 2025

Disponível online:
17 Nov., 2025

Sistema de revisão
"Double Blind Review"

Editores
Priscila Rezende da Costa
Mário Ogasavara
Alex Fabianne de Paulo
Diogo Barbosa Leite
José Jassuipe da Silva Morais

RESUMO

Objetivo: Evidenciar os agenciamentos sociotécnicos promovidos pela certificação Fairtrade e sua influência na reconfiguração organizacional e de mercado de três cooperativas cafeeiras localizadas no sul de Minas Gerais. **Método:** Foi desenvolvida uma pesquisa qualitativa envolvendo um estudo de casos múltiplos, com a realização de 30 entrevistas semiestruturadas, análise documental e observação direta. A análise dos dados foi conduzida por meio de codificação temática e interpretativa, estruturada por categorias analíticas derivadas da recorrência empírica. **Principais Resultados:** Os resultados revelaram uma transformação orientada para a sustentabilidade mediada por agenciamentos performativos da certificação. Observaram-se a emergência de uma assistência técnica desvinculada de interesses comerciais, o fortalecimento de práticas de qualificação da produção e valorização da qualidade do café, bem como a reorganização das práticas comerciais voltadas ao mercado internacional. Dispositivos como o caderno de campo, agenciamentos como os concursos de qualidade e os dias de campo atuam como elementos centrais na reorganização institucional. A certificação também impulsiona adaptações normativas baseadas em tendências de consumo e regulações internacionais, antecipando demandas e moldando cenários futuros possíveis. **Relevância / Originalidade:** O artigo oferece uma contribuição teórica ao articular os estudos de mercado construtivistas com os estudos de futuro, demonstrando como instituições como o Fairtrade performam mercados sensíveis a transformações sociotécnicas e antecipações normativas. **Contribuições Teóricas / Metodológicas:** A pesquisa avança na compreensão dos mercados agroalimentares certificados como construções performativas, evidenciando como os agenciamentos performados pela certificação reconfiguram coletivos híbridos, valores atribuídos aos produtos e estratégias organizacionais. **Contribuições Sociais / para a Gestão:** Os achados podem subsidiar estratégias de gestão em cooperativas que buscam se adaptar a exigências de sustentabilidade e acessar mercados mais exigentes, contribuindo para trajetórias de fortalecimento institucional e autonomia organizacional no setor cafeeiro.

Palavras-chave: Estudos de Mercado Construtivistas, Comércio Justo, Sistema de Certificação.

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https://doi.org/10.18568/internext.836

INTRODUCTION

Transformations in the agri-food market do not stem only from spontaneous processes or economic adjustments, but frequently from socio-technical arrangements that shape the conditions of production, commercialization, and consumption. In times marked by socio-environmental and institutional uncertainties, understanding such arrangements helps to think about more sustainable future possibilities, especially in markets dominated by small producer organizations.

Future Studies propose that forms of anticipation, such as projections, diagnoses, and interventions, are essential for dealing with emerging threats and opportunities (Poli, 2019). In the field of agri-food systems, these anticipations are manifested through institutional practices that project new patterns of consumption and productive organization. An example of this is the Fairtrade movement, which reconfigures the links between growers and markets through certification devices.

Fairtrade certification is configured as an instrument that not only responds to present demands, but also anticipates future expectations, regulating practices, values, and criteria oriented toward sustainability. With roots in social and humanitarian movements, Fairtrade has come to act as a normative and performative mechanism in the agri-food market, articulating commercial practices with ethical, environmental, and social justice principles (Kolk, 2013; Raynolds et al., 2007). In this way, Fairtrade acts on the present with the purpose of shaping the future, promoting institutional and cultural changes that favor a fairer economic system.

Through the lens of Constructivist Market Studies (CMS), it is understood that markets are formed by socio-technical agencements, that is, hybrid arrangements among humans, devices, norms, and materials that perform markets and organize collective action (Çalışkan & Callon, 2010; Cochoy et al., 2016). These agencements are constitutive of consumption practices, of the value attributed to products, and of the configuration of commercial ties. Such practices are articulated with Future Studies insofar as they shape possible trajectories and reorganize actors in the face of projected scenarios (Onyas et al., 2018).

In Brazil, coffee is the main product certified by Fairtrade, with a strong presence of cooperatives in Minas Gerais. These organizations act as hybrid collectives that operate the certification criteria, modify their internal structures, and build links with international markets, processes that reveal central aspects of agencement in the agri-food market.

Despite advances in research on certifications and market dynamics, studies that analyze how Fairtrade certification reconfigures organizational contexts based on a constructivist approach are still scarce. In this line, this article sought to fill this gap, adopting a CMS perspective to investigate the performative effects of Fairtrade certification on three coffee cooperatives in southern Minas Gerais.

The aim of this research, therefore, was to highlight the heterogeneous arrangements shaped for the coffee market after Fairtrade certification, presenting how the initiatives promoted by this certification performed in organizational and market contexts. By analyzing such rearrangements through the CMS lens, the study contributes to understanding how institutional practices and socio-technical devices project and format new possibilities for small growers and their organizations.

1. THEORETICAL FRAMEWORK

1.1. Socio-technical *Agencements* and the Dynamics of the Agri-food Market

The CMS approach proposes that markets are not preexisting structures, but socio-technical constructions shaped by practices, devices, and heterogeneous relationships between humans and nonhumans (Çalışkan & Callon, 2010; Cochoy et al., 2016). These hybrid arrangements, referred to as socio-technical agencements, are responsible for performing markets, organizing flows, values, and modes of interaction among agents.

In the agri-food domain, such agencements are at the core of processes that seek to qualify products, legitimize practices, and establish relations of trust among growers, certifiers, and consumers (Le Velly & Dufeu, 2016; Onyas et al., 2018). Through the performativity of norms, technical instruments, classifications, and audits, alternative markets are constructed

that coexist with conventional commercial structures (Dalmoro & Fell, 2020).

The notion of market agencements, as highlighted by Cochoy et al. (2016), emphasizes the capacity of actors and devices to organize markets through their practices, networks, and narratives. This concept aligns with approaches in Future Studies by suggesting that certain institutional devices, such as certifications, can reorganize organizational trajectories and induce new market configurations by anticipating normative demands and social trends.

In this sense, CMS contributes to understanding how the emergence of new markets, such as certified coffee markets, is enabled by marketization processes (Çalışkan & Callon, 2010). These processes form the empirical and conceptual basis for investigating how specific norms and practices operate within local organizational contexts.

More specifically, according to Çalışkan and Callon (2010), the marketization process is composed of five interconnected framings:

- Pacifying goods: the moment in which products are defined by specific attributes that make them qualifiable in the market;
- Marketization agencies: the capacity of actors to influence the definition and valuation of goods;
- Market encounters: organized interactions between producers and consumers;
- Price-setting: devices that assign monetary value to goods;
- Market design and maintenance: the set of institutional and organizational practices that sustain or reconfigure market functioning.

These stages are useful for identifying the performative devices involved in the construction of certified coffee markets, including the role of cooperatives, certifiers, and support networks.

1.2. Certifications, Devices, and Organizational Reconfiguration in the Agri-food Field

Socio-environmental certifications have been analyzed as instruments that operate between regulation and the market, reorganizing productive and commercial practices through institutionalized norms and devices (Donovan et al., 2020; Raynolds et al., 2007). By establishing criteria that articulate ethical, environmental, and economic principles, these certifications influence the governance of agri-food chains, affecting the structure and functioning of producer organizations, especially in developing countries.

From the CMS perspective, certifications such as Fairtrade are understood as socio-technical devices that perform markets by enabling the qualification of goods, the formation of networks, and the stabilization of exchanges (Callon & Muniesa, 2005; Muniesa et al., 2007). These devices not only establish formal criteria, but also organize documentary practices, information flows, and forms of engagement among diverse actors, including certifiers, non-governmental organizations, growers, and consumers.

The literature on Fairtrade certification has highlighted its role in integrating small producers into global markets through technical requirements, auditing mechanisms, and economic incentives (Reinecke et al., 2012; Smith, 2009). These mechanisms function as mediators that alter production standards, encourage compliance with good agricultural practices, and introduce logics of traceability and control that are, by nature, performative.

Raynolds et al. (2007) argue that certification not only ensures compliance with standards but also constructs differentiated markets through narratives and symbols that re-signify the value of the product. This process involves the articulation between technical devices (such as labels and records), control mechanisms (external audits), and institutional relations, creating a normative field that coexists with conventional market structures. These changing patterns align with Future Studies by incorporating diverse forms of knowledge that challenge the hegemonic industrial paradigm, recognizing different ways of inhabiting and projecting the world in the construction of plural futures (Demaria et al., 2023).

Ortiz-Miranda and Moragues-Faus (2015) emphasize that the impact of these devices varies according to the organizational context, as they can either strengthen the institutional capacity of cooperatives or generate tensions between commercial objectives and social commitments. This variation reinforces the need to understand certifications as part of agencements that do not act uniformly, but are appropriated, reinterpreted, and negotiated within local contexts.

The constructivist approach thus allows interpreting certifications not as mere verification instruments,

but as central elements in institutional reconfiguration and the formation of new market logics. Their effectiveness and performativity depend on how they are articulated with organizational practices, technical support networks, and sustainability narratives.

2. METHOD

This study adopts a qualitative and interpretivist approach, based on the assumption that markets are socio-technical constructions resulting from the interaction among norms, devices, institutions, and organizational practices. This approach aligns with CMS, which understand markets as heterogeneous arrangements in constant performativity.

The research design follows a multiple case study format, aiming to analyze how Fairtrade certification reconfigures organizational practices and structures in different cooperative contexts. The selection of three coffee cooperatives located in southern Minas Gerais is grounded in their consolidated participation in international markets as well as in their trajectories of engagement with socio-environmental certification systems.

The cooperatives were intentionally selected according to three main criteria:

- Continuous participation in the Fairtrade system for at least 5 years;
- Existence of a formalized organizational structure with international commercial engagement;
- Availability and access to documentary sources and members with historical knowledge of the organization.

The time-based criterion allowed the observation of the certification's effects over time, a relevant aspect for understanding processes of institutional reorganization.

The main data collection techniques included semi-structured interviews, internal document analysis, and direct observation during field visits. Thirty interviews were conducted (Table 1) with managers, growers, and other professionals, selected through referral based on their involvement with the cooperatives and Fairtrade-related organizations—BRFAIR (Association of Fairtrade Producers Organizations of Brazil) and CLAC (Latin American and Caribbean Coordinator of Fair Trade Small Producers and Workers). In total, the interviews amounted to 15 h, all recorded and subsequently transcribed. The documentary corpus included 1,026 pages of materials such as activity reports made available by the cooperatives, newspaper articles, newsletters, specialized magazines, and outreach materials.

Although the initial methodology foresaw systematic triangulation among interviews, documents, and observations, interviews were prioritized as the main analytical source, given the level of depth and saturation achieved through participants' narratives. The remaining sources were used as complementary elements for contextualization and validation.

The definition of theoretical saturation followed the principles proposed by Saunders et al. (2018), that is, when additional interviews ceased to bring new analytical categories or relevant contributions to the defined theoretical axes. Saturation was reached after the 26th interview, with the subsequent ones serving to deepen specific issues.

Data analysis followed thematic coding grounded in the literature and informed by the empirical material, allowing the construction of three analytical categories that structure the presentation of results:

- Technical assistance and diffusion of practices;
- Coffee quality valorization and product qualification;
- Market access and reorganization of commercialization.

These categories emerged recurrently throughout the interviews and were later refined in light of CMS concepts, particularly regarding the role of socio-technical devices, the performativity of practices, and organizational transformations.

The exploratory nature of the research and its constructivist orientation imply a situated and processual interpretation of data, in which theory operates as an analytical lens rather than as a closed explanatory scheme. The final interpretation considers both the

Table 1. Distribution of Interviewees by Institution.

Interviewees	Number of Interviewees
Cooperative 1	9
Cooperative 2	10
Cooperative 3	6
BRFAIR/CLAC	5

Source: Authors (2023).

organizational singularities and the recurring patterns observed across the cases.

3. RESULTS AND DISCUSSION

In the period prior to Fairtrade certification, the coffee growers at the center of this study faced exploitation by intermediaries who undervalued their products and lacked knowledge about production practices, coffee quality, and commercialization. With the adoption of certification, each cooperative had to readjust by implementing changes in the structure of its markets. This transformation was mediated by sociotechnical agencements that performed the cooperatives' markets, with three key contexts emerging in this analysis:

- Technical assistance and dissemination of practices;
- Quality enhancement and product qualification;
- Market access and reorganization of commercialization.

3.1. Technical Assistance and Dissemination of Practices

Before Fairtrade certification, growers had to deal with "sales-driven agronomists" who prioritized sales targets over the actual needs of the producers, as highlighted in the account of interviewee (E4):

> *An agronomist would come by and prescribe something, but we mostly followed our instincts, you know? Because we could tell it didn't really add up. One would prescribe one thing, another would prescribe something else... a salesman, right? They're salesmen, they have to sell. Not even what we needed, because, for example, they have to sell what they've got [...] they have sales targets to meet. (E4).*

The situation was further aggravated by the fact that "*the technicians who came to the region were there to sell, not to inform you*" (E2). Situations like this led the coffee grower to purchase excessive amounts of agricultural inputs, which in turn resulted in a gradual decline in productivity, as reported by the interviewee (E19). Interviewee E9 adds: "*In the other* [cooperatives]*, it's a company that sells you the product and buys your coffee. [...] Because of the amount of product used on the crops, there were coffee fields that didn't produce due to overuse*."

With the adoption of Fairtrade, and through the resources obtained from the price premium, the cooperatives were able to offer genuine technical assistance to coffee growers. In other words, agronomists began to provide what the growers actually needed, moving away from the practices of "sales-driven agronomists." This reflects a reframing of the professional practices carried out by the technicians and agronomists affiliated with the cooperatives.

> *None of our technicians are allowed to sell products to the grower, they're not! They must prescribe what is truly good for the grower. If there's a product we don't sell, they have to prescribe it anyway, and the grower buys it elsewhere. They have to prescribe what's right... and they don't work on commission. No one working in the cooperative's commercial team is commissioned, because they're not supposed to push products, they have to sell what offers a real solution. [...] When you set a sales target, the person thinks about their commission, not about who's buying or whether that's actually good or bad for them. So, we take a completely different approach. (E11).*

> *In the contract with the agronomic company, it states clearly that if there's any link with product sales, the contract is immediately terminated. No, absolutely not, there can't be any. So, the agronomist visits the property specifically to assess the grower's needs. They don't go there to sell (E1).*

The work carried out by the cooperatives enabled the emergence of a new model of technical assistance, performed according to Fairtrade criteria. This new form of assistance, focused on the actual needs of the coffee grower, fostered trust and cost savings, as well as access to high-quality information that, in turn, translated into knowledge generation.

For the interviewees, access to information and the developmental work with coffee growers are considered key differentiating factors of the cooperatives. The technicians and agronomists who follow the growers' day-to-day activities come to be seen as consultants and knowledge disseminators, being recognized as "sustainable agronomists" for

seeking sustainable alternatives that align with the Fairtrade purpose.

> *What's great about this cooperative... first of all, it provides technical support, agronomic support. Actually, it's more like agronomic consulting, and it's very good, right? They follow the grower closely, out in the field, monitoring what products can't be used, the banned substances. They truly accompany the grower, every month they have to go there, write a report, check things, see if there are pests, check plant health (E8).*

> *It's a certification criterion, training for the grower. And we've always insisted that, beyond external training, the agronomic technical team, during every visit, provides training. They explain to the grower how to carry out the monitoring, how to identify the coffee borer, how to recognize every detail. The agronomist could just show up and say: "you've got 5% rust incidence, 10% borer, here's the recommendation." But no, they actually train (E1).*

> *I notice that a cooperative with a Fairtrade agronomist, this agronomist has a completely different mindset. Because we have all these prohibitions and restrictions, this agronomist is what I call a sustainable agronomist. He looks for alternatives using biologicals, different types of crop management to help the grower comply with the certification (E27).*

The price premium offered through certification allows for various follow-up actions to be provided to coffee growers free of charge, such as soil sample collection. This activity enables more effective technical monitoring of the growers throughout the year, generating both economic and productivity impacts.

In the relationship between coffee growers and technicians, the "field notebook" emerges as an essential tool for recording production practices and meeting certification criteria, becoming a market device capable of making the properties of goods or services calculable (Callon & Muniesa, 2005). It is a type of booklet composed of both normative information related to the certification and records made by the grower about all activities carried out in the coffee production process. This object is used during certification inspections and audits on the farms to assess whether Fairtrade criteria are being met by the growers, thereby streamlining the regulation of their practices, as illustrated in the account below:

> *In this notebook we have everything, the instructional pages, what's allowed, the list of non-prohibited products, what we're allowed to use [...] I write down the products I purchase using the name of the active ingredient, the prescription, we're not allowed to buy anything without an invoice and prescription. Then we go on to note, plot by plot, [...] the date the task was done, the type of work carried out, the amount of time it took, and the product used in that foliar application (E6).*

In the field notebook, the cooperatives share information with the coffee grower regarding updates to certification criteria, lists of prohibited products, labor legislation, among other topics. Moreover, based on the records maintained, the field notebook allows the grower to access information about the production costs of their crop, as illustrated in the following excerpts:

> *Since you have to record everything you do, it ends up creating a routine for the grower. "Oh, I'm going to do this, I'm going to apply [...] some fungicide for something that's recommended under the certification", I write it down there; "I bought some fertilizer, it cost this much", I write it down too. So in the end, for us [...] to calculate the production cost, that's really important. (E13).*

> *Everything is recorded, and you can calculate costs based on that. Because from the amount I write down, I already enter the price per liter, I already get an idea, because later I do my cost calculation. [...] all the way to harvest, how many bags per hectare I got. So what happens? It automatically taught us how to manage things, because we didn't know how to before (E06).*

> *Working in the dark is really bad. It's so good to finish the year and see what you did in each plot, right? That's something all this technical assistance, this support, teaches you. Not all plots are*

> *treated the same way, right? Because we do soil analysis, leaf analysis, it gives us... like there, not all the plots got rock powder. So it was different, right? So with the field notebook, I have a history, I know what happened with my crop, right? So it's an important record for me (E21).*

It was observed that the field notebook extends beyond its primary functionality, a production control requirement, to become a management tool and a mechanism for transmitting norms, since "*whenever something changes, they* [the certification] *issue an addendum, make a list, paste it in the notebook, and send it to the growers*" (E2).

> *We know the certifier's regulations. We know. Anyone who says they don't is lying, they just weren't interested, because it's all there in our field notebook. If you read the first pages of the notebook, the entire legislation is there, what's allowed, what's not, what our rights are, what aren't (E6).*

The cooperatives studied also carry out developmental work with coffee growers, based on Fairtrade criteria, involving awareness-raising activities, various training sessions, and field days, here understood as market encounters (Çalışkan & Callon, 2010). The awareness-raising activities aim to clarify and inform growers about the adjustments that need to be implemented in production and farm management practices. To that end, the cooperatives make use of different resources to transmit this knowledge. These devices, together with other elements such as people and knowledge, form collective agencies or hybrid collectives (Callon & Muniesa, 2005). In the context investigated, particular emphasis is placed on the agencements formed by certification rules and the efforts of technicians, agronomists, managers, and partners from research and extension institutions, who act as marketization agencies or pacifiers (Çalışkan & Callon, 2010).

The cooperatives organize "field days," which are gatherings aimed at exchanging knowledge and discussing sustainable practices, market trends (particularly international ones, as they represent the main market for Fairtrade coffee), and updates to certification standards. These events include a variety of activities designed to facilitate effective knowledge and experience sharing. To attract coffee growers, field days feature talks by individuals who are influential among the producers, such as cooperative managers, who act as pacifiers by framing certification criteria in relation to market trends (Çalışkan & Callon, 2010).

As a strategy to prepare coffee growers for future projects or to introduce new concepts that will later be developed by the cooperative, field days are held on model farms, that is, farms owned by growers who agreed to participate in pilot projects and have become a point of reference for the cooperative and its members. "*There are those who are the pilots, right? The ones who go ahead, the ones who are more open, and then there are others who want to see if it works or not before they get started*" (E23). In this way, the event is understood as a market encounter designed to make goods calculable (Callon & Muniesa, 2005), in this case, a new initiative introduced to the growers.

During these events, the cooperatives may focus on a specific theme and organize talks and other activities aligned with the topic. The following excerpts from the interviews detail how the dynamics of the event unfold:

> *It happens in the groups, and we also organize some field days. And during the training sessions, too, this exchange of knowledge takes place... we hold an assembly now between April and May, this one is focused on organics. It's a full day of knowledge sharing. We spend the day talking with the farmers about what worked this year, what didn't (E23).*

> *In this field day of ours [...] there was a talk about the coffee market. I gave that talk, by the way. For example, I told the growers that glyphosate is already something that's being phased out abroad, right? I showed them the importance of being concerned with sustainability. They take the opportunity to ask things like "how's the market? price trends? is it going up, going down?" (E10).*

Based on the account, the versatility of the field day as a sociotechnical agencement becomes evident. First, due to the fact that the speaker is a specialist in the commercialization sector and is already

recognized by the rural producers. Second, because he presents arguments that lead to a process of persuasion regarding adjustments in production, in this case, the removal of glyphosate from the production process. It is important to note that glyphosate had long been considered an ally by growers in crop management and was one of the last products to be excluded from the list of inputs permitted by Fairtrade certification. Thus, a considerable effort has been made by the cooperative to convince growers of this change, as illustrated in the following excerpt:

> *Florcert banned the use of glyphosate, and there are others that are banned too. So, we still have some that are allowed. This happened before glyphosate was officially banned. Even before the ban, we were already working to remove it. So there's been a reduction in the use of pesticides and herbicides. This reduction, besides being appreciated and desirable in the Fair Trade market, also lowers the cost per bag (E5).*

This ongoing developmental work with coffee growers, through the support of technicians and agronomists, as well as field days, training sessions, and awareness-raising events, demands increasingly higher levels of quality from the professionals who assist them. Moreover, it enables growers to internalize and apply the knowledge acquired, improving their processes, complying with certification standards, and enhancing the quality of their products.

3.2. Enhancing Coffee Quality and Product Qualification

The interviews revealed that, prior to Fairtrade certification, coffee growers faced significant obstacles related to the lack of technical knowledge on sustainable production and improving coffee quality. These difficulties were further exacerbated by structural factors such as soil conditions and altitude, as well as the lack of information on harvesting, drying, and storage techniques, which resulted in quality losses.

With Fairtrade certification, the cooperatives began investing part of the price premium in actions aimed at improving coffee quality, as recommended by the certification system itself, which advises allocating 25% of the resources to productivity and quality. According to interviewee E5, this requirement aims "*to force cooperatives to have their own classification system and an agronomist. There were people, cooperative managers, who wouldn't even spend on an agronomist. They would just take the money and use the city agronomist.*"

One of the strategies adopted was the strengthening of partnerships with institutions such as *Serviço Nacional de Aprendizagem Rural* (Senar), universities, and research centers, which began to play an important role in disseminating good practices, especially in post-harvest processes. These actions, articulated with technical assistance, allowed cooperative members to incorporate new knowledge:

> *We took several courses with Senar—Senar is also a major partner here in this area of knowledge—and they taught us that in post-harvest, coffee can't stay piled up in sacks for more than six hours, because the fermentation process starts. That harms the quality. You have to take it to the drying patio the same day you pick it. If you harvest in the morning, by noon you need to spread it out. And back then, we already saw an improvement in quality because of that (E23).*

> *UFLA [Universidade Federal de Lavras] (...) helped me a lot in this area. I took a training course with Flávio Borém in 2011 or 2012, about post-harvest. It was a partnership between Café Bom Dia, Walmart and [United States Agency for International Development] USAID. So I took part in that course. It was me and another agronomist from Nova Resende. We went there, I stayed a long time, and later I helped disseminate that knowledge along with Borém in the local communities here. That had a really big impact (E5).*

These courses aim to identify flaws in harvesting and storage processes and to transfer knowledge and guidance that lead to changes in production practices. It is observed that the qualification of the cooperative members' coffee was shaped by the experiences and expertise provided by specialists from partner institutions.

In addition to working on post-harvest improvements, the cooperatives also began offering training in coffee grading and cupping. These initiatives en-

abled growers to understand the sensory attributes of coffee and recognize the added value of their production. This learning process helped reduce their dependence on intermediaries and increased the bargaining power of cooperative members.

Coffee quality contests aim to reward coffee growers for their achievements and promote their development (Maciel et al., 2022). These competitions introduce quality standards, strengthen the connection between growers and buyers, and serve as a marketing strategy for the region. Each cooperative studied organized its own internal competition to recognize growers' work and foster continuous improvement in coffee quality. Once again, the involvement of external partners such as Senar and rural unions stands out.

Based on the difficulties faced prior to certification and the initiatives undertaken by the cooperatives, including the use of the price premium and compliance with Fairtrade certification criteria, it is possible to identify a reconfiguration in the cooperatives' organizational structures. The focus on quality opened new opportunities to improve production processes, resulting in increased market access for growers.

These results reinforce the importance of various agents in the reconfiguration of coffee quality within cooperatives. The price premium, acting as a market device, encouraged changes in coffee quality. Technical development and the support of external institutions were essential to the transformation of the cooperatives, contributing to innovation and the sustainability of the certified coffee market.

These observations within the cooperative context reveal an ongoing process of formatting and standardization, which coexists with unexpected effects produced by overflows and attempts at market reframing (Leme & Rezende, 2018). These processes, mediated by hybrid collectives, aim to qualify and singularize goods (Callon, 2016).

3.3. Organic Production and Access to New Markets

To keep up with consumer market trends for sustainable products, Fairtrade relies on the National Fairtrade Organizations (NFO), also known as market initiatives. These organizations closely monitor consumer behavior and adjust practices to ensure that the certification keeps pace with such changes.

> *The NFO, market initiatives, are attentive to consumer behavior. The idea of keeping a certification alive is that you have to follow consumer behavior. If the consumer doesn't want coffee with glyphosate and you deliver coffee with glyphosate, they won't buy it. So, you have to adapt to the consumer. The market is sovereign, it sets the rules (E25).*

This work of anticipating consumer demands is linked to the social and environmental values advocated by Fairtrade, highlighting the role of these initiatives as market devices that shape rules and practices. As interviewee E25 reports:

> *This consumer is always demanding, they make demands, civil society makes demands, and the certification anticipates them. And here's the thing, when there's already a debate going on, like with glyphosate, they're already phasing it out [...] all these issues, human rights, labor legislation, these come from consumer demand, you know? That European matter, European Union legislation, not buying products from deforested areas after 2010, that's all consumer-driven. And so, the certification anticipates it, right? And then it starts shaping these people (E25).*

The term "shaping" used by interviewee E25 highlights the ongoing process of transformation in normative requirements, such as the prohibition of glyphosate, which directly affected the growers and demanded an institutional response from the cooperatives.

> *In recent years, a lot of things have been banned, really a lot. Many fungicides, many insecticides, and now, more recently, the use of glyphosate. It was a shock! The guy got used to it, he's been with his "friend" Roundup for 30 years. Many didn't even want to hear about alternatives, some even talked about leaving the cooperative. But then, if you provide some proper guidance, over time you start sharing information (E5).*

The use of phytosanitary products influences the organic matter content of the soil, especially in regions where natural conditions already limit the development of organic matter. In the case of one of the

cooperatives, even before the prohibition of glyphosate, there were already initiatives in place to reduce the use of chemical and mineral products in order to reverse the low levels of organic matter, as explained by interviewee E05:

> *Here we have very uneven soil, I think even more so than other regions out there. [...] So the biggest problem at the beginning was the organic matter it was really low! The use of glyphosate was at its peak, people were spraying it everywhere! The mindset was that not a single weed could be allowed! Procafé Foundation, [Empresa de Pesquisa Agropecuária de Minas Gerais] Epamig, they were publishing materials saying weeds were competition. [...] It was sad, really, just soil and gravel, you wouldn't see anything growing. So, naturally, we had low organic matter. [...] Then we started working on it, adding manure, green fertilization (E05).*

These changes were implemented through internal technical control systems that quantify and justify the use of agrochemicals, promoting a managed transition process.

> *In conventional Fairtrade, you have to gradually monitor the levels of agrochemicals and minerals. There has to be a reduction! And the auditor checks that. "What's the impact?" "What did you reduce in chemical fertilizer use this year?" "By how many percent?" "Rust?" "Are you reducing rust sprayings?" So then, in our certification, you have to quantify that. So we developed this program here. Every agronomist working in the field has to record every prescription for chemicals, how much, why, and so on. At the end of the month, they compile everything, and we know exactly which region had that disease, which one didn't, why there was an increase in prescriptions. And with that, we can prevent a lot and spend less on agrochemicals. Today, we are absolutely sure that with diseases and pests [...] there's no such thing as prevention, only knowing the region and acting at the right time. In one area here, rust reached five percent in March, while in another it was zero. So with that, we create a map of the region. And we know when diseases are most aggressive. [...] So we created this system and were able to significantly reduce the use of minerals and chemicals (E5).*

These certification criteria drive change within the cooperative, prompting it to find alternatives through new agencements in order to comply with the requirements. As highlighted by interviewee E05, this includes the transition toward more sustainable practices until reaching organic production: "*In Fairtrade, you have to gradually reduce, until the moment comes when you've become organic*" (E05).

This adaptation process is continuously encouraged by the certification, which also maintains a list of restricted, permitted, and prohibited products, as pointed out by interviewee E25:

> *Actually, the certification already starts pushing them, right? With the criteria, it pushes them forward. It pushes them, removes products. It has a list of restricted, permitted and prohibited materials. So it starts removing the products that aren't accepted, right? You can access this list on the FLO Cert website. They remove these products, right? [...] And the grower has to adapt. They start learning how to adapt. And then, going organic becomes just one more step (E25).*

This alignment with international criteria expands access to more demanding markets. As interviewee E27 highlights: "*Fairtrade pushes them to move beyond just producing and become sellers too, to seek out opportunities, to go after things, to want to see what's happening so they can adapt.*" In this sense, the initiatives promoted by Fairtrade certification help cooperatives access new information and improve their market positioning.

These initiatives encourage the strategic investment of the price premium in the promotion of coffee, such as hiring professionals fluent in other languages and participating in international events like coffee trade fairs. This direct contact with buyers through events, webinars, newsletters, and buyer visits to producing regions—referred to here as market encounters—increases the relational independence between cooperatives and their buyers. In some cases, the market encounters enabled by Fairtrade, whether through initiatives organized by CLAC or by

partner institutions such as Apex-Brasil and [*Serviço Brasileiro de Apoio às Micro e Pequenas Empresas*] Sebrae, allow for the development of larger partnerships. One such case occurred with one of the cooperatives, as reported by interviewee E29:

> *They developed a partnership with Tchibo, right? A German buyer... they have a really interesting approach. And they carry out a joint development of a specific quality project. So, it's not like I would say: "Oh, it was Fairtrade directly", but because they are part of the system and have this closer contact with the buyer, they're able to secure that kind of investment from a buyer. And they made a major investment in training cuppers, identifying microlots, and figuring out which regions they could better explore for those microlots (E29).*

This type of partnership facilitates the exchange of knowledge about international market demands and preferences, improving the quality of the products sold by the cooperatives and enabling a collective effort in the qualification of goods to be commercialized.

In addition, market initiatives such as the NFO, CLAC and other producer networks play an important role in connecting cooperatives with buyers seeking certified products tied to social or environmental projects, such as those focused on the protection of degraded areas or the promotion of human rights.

> *Supermarkets that are interested in visiting, or some brands, some companies, right? Then, the one who builds that bridge is the market initiative, the NFO, right? They make that connection, so: "Oh, we have a buyer in Germany who wants to see alternative energy initiatives". Then that information gets to CLAC, and we start saying: "I have one in Brazil, I have one in Colombia, I have one in Guatemala!" (E29).*

With the increasing frequency of these visits, some cooperatives have gained autonomy to manage their relationships with buyers, becoming more independent: "*Since they* [the cooperatives] *are very independent, they no longer contact the CLAC team, because they already have direct contact with the clients and know-how to present the cooperative and everything. They only call us in some cases*" (E29).

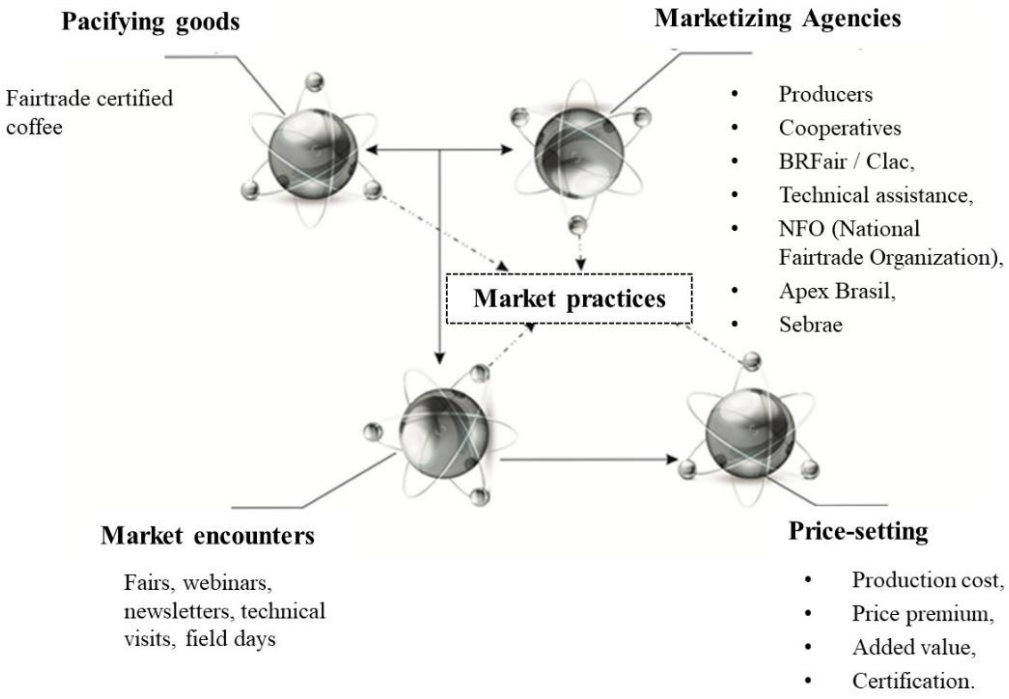
This work, carried out through certification, contributes to the cooperatives' autonomy and encourages their managers to invest in strategies for quality promotion and commercialization. Moreover, such initiatives allow their sustainability projects and unique identities to be recognized in the international market.

The rearrangements within the cooperatives' context manifest themselves in the form of re-signified goods and agencies, and established market encounters (Callon, 2010), resulting in price formation and in the dynamics of the certified coffee market, as shown in Figure 1. In this sense, one can observe the efforts agenced by certification criteria and the price premium, organizing producers for the organic coffee market, encouraging them to adopt more sustainable production practices, and promoting closer relationships between buyers and origins.

The results presented so far revealed a reconfiguration within the organizational context of the studied cooperatives, mediated by socio-technical agencements originating from Fairtrade certification. Such transformations involved not only adaptation to norms, but also the emergence of new modes of collective action, knowledge circulation, and product revalorization. By being inserted into a network that articulates growers, certifiers, consumers, and supporting institutions, the cooperatives began to operate in markets performed by ethical, environmental, and technical criteria, giving rise to new agencements.

In this sense, the agency performed by Fairtrade certification stabilized exchanges and reorganized practices. More than complying with norms, producers and their organizations began to act within an environment configured by audits, registration instruments, and awareness practices that function as mediators between global consumption demands and local productive capacities. These devices within the network do not operate in isolation, but articulate in hybrid collectives, combining technical knowledge, institutional engagement, and field practices, as exemplified by field days, field notebooks, and internal quality contests.

The analysis further reveals that the performativity of certification promotes an organizational



Sebrae: *Serviço Brasileiro de Apoio às Micro e Pequenas Empresas*.
Source: Authors, based on Çalışkan & Callon (2010) and Paiva and Leme (2018).
Figure 1. The Marketization Program in the Context of the Fairtrade Certified Coffee Market

transition guided by values of sustainability, quality, and justice, which aligns with the proposition of Future Studies in considering the capacity of certain institutions to project desirable scenarios and intervene in the present to shape possible futures (Poli, 2019). The NFOs and CLAC itself, for instance, act as anticipators of trends, implementing normative adjustments before institutional pressures fully materialize, thus highlighting the strategic role of these devices in the formation of markets that are responsive to future demands.

By aligning with the expectations of international consumers, particularly those from the European Union, Fairtrade, and certified cooperatives anticipate regulatory and environmental requirements, contributing to the market's adaptability and plasticity. The growing rejection of glyphosate, for example, served as a signal of change, prompting a proactive response from cooperatives, who mobilized technical knowledge and adjusted their production practices.

Furthermore, the development of commercialization strategies and the establishment of direct relationships with international buyers reinforce the notion that Fairtrade fosters not only compliance but also organizational learning. Participation in trade fairs, direct contact with buyers, and investments in quality promotion reveal a process of institutional strengthening that expands the autonomy of cooperatives.

In conclusion, the discussion highlights that Fairtrade certified coffee markets are performed through a combination of technical, institutional, and symbolic factors, which come together in complex marketization processes. In this regard, the theoretical framework of CMS proved to be a valuable lens for analyzing how norms, devices, and practices construct markets oriented toward sustainability and equipped to navigate uncertain futures.

FINAL CONSIDERATIONS

This study highlighted the arrangements shaped for the coffee market following Fairtrade certification, emphasizing how its initiatives performed in the organizational and market contexts of three cooperatives in southern Minas Gerais. The results point to a transformation oriented toward sustainability, addressing challenges such as exploitation by intermediaries and the lack of knowledge about sustainable practices and commercialization. Certifica-

tion fostered structural changes in the cooperatives, mediated by hybrid collectives.

Technical assistance became oriented toward sustainability, with technicians committed to providing guidance free from commercial interests, supporting grower development. The price premium financed this technical support, reducing costs and increasing productivity. The field notebook regulated production practices during audits, becoming an effective tool for management and communication of certification rules. Market encounters such as field days and training sessions also stood out, contributing to information dissemination and to building trust between cooperatives and growers. The development of growers was observed through knowledge sharing and the promotion of sustainable farming practices.

The emphasis on coffee quality led to partnerships and capacity-building efforts, reconfiguring the cooperatives' internal dynamics. This reconfiguration was expressed through quality-enhancing initiatives, such as training in grading and cupping, as well as internal competitions.

Certification also facilitated access to organic coffee markets, while trade fairs and webinars enabled the acquisition of strategic information. The sustainability criteria, which are pillars of Fairtrade, guide attention to consumer demands and drive adjustments in production processes.

Moreover, the certification criteria, combined with cooperative initiatives and the price premium, supported growers in transitioning to organic production. International market opportunities began to be explored following certification. Participation in trade fairs, promotional efforts, buyer visits, and online events contributed to reshaping both growers' mindsets and the cooperatives' strategic approaches.

The findings can support new management approaches, particularly in cooperatives at earlier stages of development or those seeking innovative strategies. However, a limitation of the study is that it focuses on only three cooperatives from southern Minas Gerais with established operations in the international market. Future research could explore other contexts and examine the role of key factors such as traders, whose strategic position in the market makes them relevant mediators between growers and buyers. It is also suggested that Fairtrade certification be analyzed through other lenses within CMS, which offer conceptual tools for understanding the plastic, complex, and dynamic nature of markets, especially in the agri-food sector.

ACKNOWLEDGMENTS

This study was carried out with the support of the following agencies: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior—Brasil (Capes)—Funding Code 001; Fundação de Amparo à Pesquisa do Estado de Minas Gerais (Fapemig) (project number: CSA APQ 02264/22); Fundação de Amparo à Pesquisa do Estado de São Paulo (Fapesp) (grant numbers: 2022/09319-9 and 2023/18453-3); and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

Acknowledgments are also due to UFLA and Agritech UFLA for their technical and academic support.

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How to cite this article:

Maciel, G. N., Paiva, C. M. N., Leme, P. H. M. V., & Cozadi, E. G. (2025). Agenciamentos sociotécnicos e a reconfiguração dos produtores em cooperativas de café certificado: estudo no sul de Minas Gerais. *Internext*, 21(1), e836. https://doi.org/10.18568/internext.836