

FRAUD RISK ASSESSMENT IN ORGANIC CERTIFICATION. A REFLECTION ON THE CAUSES THAT GIVE RISE TO IT

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ABSTRACT

This study analyzes the risk of fraud in a local Participatory Organic Certification market, recognizing that such risk is multi-causal and cannot be reduced solely to economic incentives. It assumes that fraud should not be understood as an isolated act, but rather as the result of a set of structural and contextual conditions. The main objective was to identify the factors that influence the propensity for fraud, paying special attention to the relationship with the government, personal factors, perceptions of performance and trust in the Participatory Organic Certification Committee (POCC), as well as the presence of greenwashing practices and the perception of income adequacy by market players: operators, collaborators, and the POCC itself. The methodology was based on a Rapid Fraud Risk Assessment (RFRA) complemented by a survey of variables associated with its potential occurrence. The results show that while economic incentives play a role, they are not the only factors contributing to fraud risk. Other factors, such as institutional weakness, the competitive environment, and economic constraints, also play a role. Although direct fraud was not detected, the analysis indicates conditions that could lead to fraud, underscoring the importance of managing its prevention. This work proposes a complex interpretation of the phenomenon, which goes beyond the traditional linear view and highlights the need to strengthen cooperation between stakeholders to preserve the integrity of the certification system.

Keywords: Greenwashing, local markets, organic production, risk analysis.

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INTRODUCTION

Organic agriculture has been on a trajectory dating back almost a century. Before World War II, a group of farmers began to express concern about certain observable changes in food production. In 1925, Steiner's Agricultural Notebooks

were published, and in 1946, the first comparative experiment between organic and conventional production was established (Soto, 2020). Its growth continued, and by the end of the 20th century, several European countries, primarily Italy, Austria, Sweden, Germany, Spain, and France, had already converted part of their farms to organic systems (Padel, 2001). The expansion of organic agriculture continued to other countries, including Mexico.

Organic agriculture has different definitions. Zamilpa *et al.* (2015) identify three: i) for the FAO, it is a system that eliminates the use of synthetic inputs and replaces them with management practices that maintain and increase soil fertility; ii) for the USDA, it consists of the use of methods that preserve the environment and avoid most synthetic materials, following a set of standards; and iii) for Mexico, it is the production and processing of food and derived products, with regulated use of external inputs, as well as restrictions or prohibitions on the use of synthetic chemical products. It is therefore a complex system or innovation based on the substitution of synthetic inputs and/or materials for others without regulatory restrictions.

The elimination or restriction of chemical synthesis products in food production has some advantages, such as greater carbon capture in soils, which is usually higher under organic treatments, lower energy consumption per production area, faster recovery from extreme weather events and more nutritious products, according to some meta-analyses (De Schaetzen, 2019). These benefits are often recognized by consumers, and some studies show that general knowledge about them (López, 2019) and, specifically, about health-related benefits (Araya-Pizarro & Rojas-Escobar, 2021) are often decisive in guiding the purchase and payment of premiums for these types of products. This generates some benefits for producers and sellers, among which the premium price stands out.

Due to its conceptual and practical nature, which involves differentiating food products by replacing synthetic chemical inputs, organic agriculture faces several problems, including poor product handling throughout the supply chain and the risk of organic fraud. According to the Agricultural Marketing Service (2023) organic fraud is “the misrepresentation, sale, or labeling of non-organic agricultural products as organic” (p. 3550) and the main causes include the lack of direct control over some links in the supply chain and the overpricing that organic products usually have. Consequently, in addition to representing economic gains for the person who commits fraud, the problem with these practices is that they have negative effects on consumers’ credibility and willingness to purchase (Gil *et al.*, 2000).

Building on the above, in this study, fraud is conceived as the act of presenting organic labeling on products that do not have the corresponding certification. While a traditional approach could lead to its treatment as a dichotomous variable: fraud or non-fraud, the approach adopted here aligns with the concept of fraud risk, which allows us to approach the phenomenon not as an isolated event, but as a process

conditioned by various associated variables and potential causes. This perspective is useful for identifying the structural, organizational, and social factors that contribute to the occurrence of fraud. In this sense, it is justified to adopt a broader definition of risk that allows for a more contextualized analysis of the phenomenon.

Risk, following the theoretical framework proposed by Jerez (2023), can be understood, in a traditional sense, as the “expected frequency of unwanted effects arising from exposure to a contaminant” (p. 623) or specific threat. However, this view is expanded to distinguish between voluntary and involuntary risks, introducing ethical and individual agency dimensions. From the social sciences, particularly sociology, the concept transcends the purely technical diagnosis of hazards to articulate spatial, social, and subjective factors: contemporary analysis considers the location, frequency, intensity, and duration of the threat, but also human exposure, social vulnerability, and subjective perception of risk. This last dimension is crucial for understanding how to assess and address risks (Jerez, 2023).

In this sense, fraud risk is understood as the potential occurrence of fraudulent acts based on certain regulatory or social conditions that favor their occurrence. The interest derived from this concept lies in the identification and characterization of the associated variables that contribute to their occurrence. Applied to the field of organic certification, fraud risk refers to the presence of factors that make it possible to present products that are not certified as organic. Therefore, its study should not focus on the result, the fraud, but on its causes.

Emphasizing the causes of fraud risk can lead to its proper management, insofar as it allows for the identification of the severity of the initial risk, the assessment of the effectiveness of existing controls, the estimation of the current level of risk once these controls have been applied, the anticipation of the effect of additional measures and, finally, the establishment of a risk threshold considered acceptable by the responsible authority (European Commission, 2014). This approach to fraud risk management also complements the regulatory approach focused on control, such as that proposed by the Agricultural Marketing Service (2023), which relies primarily on verification of organizational integrity, the regulatory definition of fraud, the existence of audit trails, and traceability in the supply chain.

While these elements help us achieve regulatory compliance, their focus is on documentary and retrospective fraud detection. In contrast, a risk management approach incorporates a forward-looking perspective: it not only considers existing regulatory and social controls and their effectiveness, but also allows for anticipating vulnerability scenarios, assessing the need for additional measures, and establishing acceptable risk levels based on the context. In this way, fraud risk analysis is not limited to verifying compliance, but actively contributes to fraud prevention.

In Mexico, the risk of fraud has not been addressed in depth. The term is not included in the Organic Products Law (2006), nor in the criteria for authorizing the

use of the term “organic” (National Health Service, 2017), nor in the guide for the certification of producer groups (National Health Service, 2024), which are the main regulatory and technical documents for organic agriculture in the country.

In fact, these institutions’ monitoring of this issue has been limited. The identified cases of fraud in Mexico correspond to a list of 20 certificates that were falsified by different companies between 2012 and 2024 (Figure 1) and published by the Agricultural Marketing Service (2025).

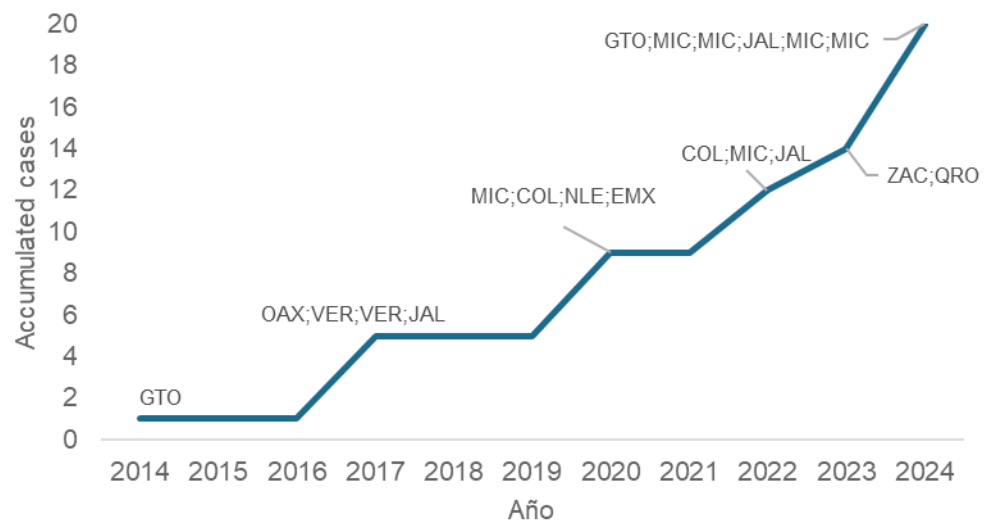


Figure 1. Cases of organic product fraud identified in Mexico

Source: Agricultural Marketing Service (2025).

The role of the Organic Products Act (2006) is, among other things, to ensure that products labeled as organic comply with its provisions. According to this legislation, organic is defined as:

“Labeling term referring to a product of agricultural activities obtained in accordance with this Law and the provisions derived from it. The terms “organic,” “ecological,” “biological,” and the names with prefixes “bio” and “eco” used on product labels are considered synonyms and are equivalent terms for national and international trade purposes (p.3)”.

Unlike the causes of fraud in organic agriculture in the United States, and the examples suggested by the Agricultural Marketing Service (2023), the problem in Mexico may have other attributes. For example, the informal sector in Mexico is primarily composed of trade (33.3%) and agricultural (10.8%) activities (Center for Public Finance Studies, 2018), so supply chain control and monitoring may not be effective tools. Furthermore, the problem has other nuances if only operators of the

participatory organic certification scheme are considered (National Health Service, 2021), whose production volumes are usually lower than those of the traditional certification scheme.

Therefore, the objective of this contribution is to analyze the risk of fraud in a local market, using participatory certifications, as a multifactorial process, leading to a broader understanding of the causes of fraud and fraud risk. The relevance of this objective lies in the possibility of influencing this issue at different levels: individual, organizational, political, and consumer, in addition to control and monitoring.

Organic agriculture is a production system that integrates ecological processes, the responsible use of biodiversity, and the closure of local cycles, with the goal of preserving the health of the soil, ecosystems, and people. This approach, promoted globally by organizations such as the International Federation of Organic Agriculture Movements (IFOAM, 2008), seeks to reduce dependence on external inputs, eliminate the use of synthetic agrochemicals, and promote sustainable agricultural practices based on productive diversification. In Mexico, the regulatory framework is established in the Organic Products Law (LPO) and its Regulations, which defines criteria for the production, processing, labeling and marketing of organic products, prohibiting the use of genetically modified organisms (GMOs) and regulating the use of the National Distinction for those products that comply with established standards (SENASICA, 2022).

In this context, participatory organic certification (SCOP) emerges as a mechanism formally recognized by the LPO for small, organized producers who market directly to consumers. While it shares principles with Participatory Guarantee Systems (PGS), such as mutual trust, transparency, and collective learning, SCOP is distinguished by its legal basis in Mexican regulations and by its operation through a Participatory Organic Certification Committee (CCOP), responsible for issuing opinions and monitoring compliance with standards (Nelson *et al.*, 2016).

PGS, as defined by IFOAM (2008), are local verification systems that combine field visits, self-assessments, training workshops, and collective decision-making. They operate successfully in countries such as Brazil, India, New Zealand, and France. In Mexico, although PGS do not have full legal recognition, experiences such as the Chapingo Organic Market, the Alternative Market of Oaxaca, and the Mexican Network of Organic Markets and Markets have consolidated social legitimacy and a relevant role in agroecological networks.

The existence of organic markets is not without risks associated with non-compliance with regulations. Fraud in this context occurs when a product is marketed as organic without complying with guidelines at any stage of the production chain, whether in production, collection, processing, storage, or sale. The “Circle of Fraud” model identifies factors that, either individually or in combination, favor the emergence of these practices, including complex legislation, imbalances between

supply and demand, pressures on economic income, lack of government oversight, “greenwashing” practices, market opportunities without sufficient controls, personal characteristics of the actors, disorganized market expansion, and interest combined with technical ignorance.

The Ethical Fraud Theory, developed by Payan and Stanley (2019), provides an explanatory framework on how individuals can justify fraudulent behaviors when they perceive them as consistent with their values or as a legitimate response to economic or social needs.

In the field of organic production, this approach provides insight into how contexts of economic pressure or institutional weakness can lead to tolerance or even acceptance of non-compliant practices. Tools such as the Rapid Fraud Risk Survey (RFRS), used by audit and risk management specialists, are useful for identifying structural and operational vulnerabilities in community organizations and markets, and enable preventive measures to be implemented before critical risks materialize.

Understanding the functioning of the SPG and SCOP is enriched by considering the moral economy models proposed by Scott (1976) and Thompson (1991), who argue that economic relations in rural communities are guided by principles of reciprocity, equity and subsistence guarantee. These values, while strengthening social cohesion and community resilience, can become fertile ground for justifying fraudulent practices when economic or market conditions deteriorate. In such scenarios, violating formal norms can be interpreted as a livelihood defense strategy, rather than a purely illicit act.

In community markets, governance and legitimacy are key elements to ensuring the ethical sustainability of certification systems. Effective governance requires clear rules, accountability mechanisms, and active participation of stakeholders in decision-making, while legitimacy is reinforced by transparent processes and social oversight exercised by the community itself. Anticipating and managing fraud risks, through tools such as the RFRA and community policing strategies, is essential to sustaining consumer confidence and protecting the long-term integrity of organic systems.

METHODOLOGY

To analyze the risk of fraud, in line with the stated objectives, this research develops a case study of the Chapingo Organic Market (TOCh). This project, sponsored by the Autonomous University of Chapingo, is being carried out within its facilities. TOCh was founded in November 2003 as an initiative to connect local producers with organic operations and promote local consumption. Since its founding, it has operated consistently on Saturdays, and in recent years also on Sundays.

The TOCh is a space that offers organic products certified through participatory organic means, in accordance with Article 24 of the Organic Products Law (Ley de

Productos Oránicos, 2006). Its objective is to promote the direct sale of organic products from producers to consumers, through short supply chains. In line with its creation, this space ensures that the products purchased by consumers meet organic production criteria (Rindermann *et al.*, 2019). TOCh was founded in November 2003 as an initiative to connect local producers with organic operations and promote local consumption. Since its founding, it has operated consistently on Saturdays, and in recent years also on Sundays.

In short, TOCh is a space that offers organic products, which have participatory organic certification, in accordance with the provisions of article 24 of the Organic Products Law (2006). Fraud risk detection analysis is particularly interesting in this case because it has a framework that combines elements of scientific research and training since its inception, providing a certain level of confidence to consumers regarding the authenticity of the products' origin. These elements are not available to consumers in other retail spaces.

It is important to note that the analyzed market should not be interpreted as a case of fraud, but rather as a unit of observation used to examine risk conditions associated with the phenomenon, with the aim of meeting the objectives of this research to influence fraud prevention at various levels. The approach adopted is not intended to assign blame, but rather to identify structural and operational factors that, as in any system, can create vulnerabilities if not addressed promptly.

Collection and analysis of information

The information was obtained through interviews with active operators (individuals or groups of people who carry out organic operations) and their collaborators. Active operators are those TOCh users who have a Participatory Organic Certification certificate and a physical sales space within the market facilities. Collaborators, for their part, are individuals or businesses that complement the market's offerings by providing inputs or products, and who are also subject to verification monitoring.

The operators and collaborators completed two data collection instruments, which we describe in the following section. The instruments were administered during the following time periods:

Accompanying visits by the Participatory Organic Certification Committee to each member at least once

Workshops, talks and integration activities

Days of sale.

Instruments for collecting and analyzing information

The Rapid Fraud Risk Assessment (RFRA) and a survey with closed, binary, and ordinal questions were used as data collection instruments to analyze the determinants of fraud risk. The RFRA was applied to various analysis groups related to organic operations: production, processing, sales, training, and technology adoption. The indicators analyzed using the RFRA are presented in Table 1.

Table 1. Indicators analyzed in the RFRA.

Analysis group	Indicators
Production	Production unit transition; production unit management; use of GMOs; post-harvest production.
Transformation	Product processing; cleaning the processing area.
Marketing	Marketing; sale of conventional products; labeling; product transportation; producer-consumer relationship.
Training and technology adoption	Training; replication of organic production in the locality.
Coexistence	Compliance with internal regulations; attendance and punctuality; committee calls; teamwork.

Source: self-elaborated.

This assessment consists of a series of indicators, which vary for each analysis group, in which criteria are established and a score is assigned on a range of 1 to 4, where 1 is the highest degree of fraud risk and 4 is the lowest. Table 2 shows two indicators broken down into their criteria and respective scores:

The analysis of the RFRA indicators allows us to establish a threshold between compliance and fraud risk. These results provide an initial insight into how fraud risk is perceived and experienced within the case studied. Further details about the instrument are available in Chapa-Ignacio (2022).

This instrument was applied to operators. During the study period, the market consisted of fifteen operators, but the ERRF was only applied to the nine that produced, processed, and/or sold food. The other operators not consulted through this instrument sold non-food products or already had third-party certification.

On the other hand, the fraud determinants analysis survey was conducted at the TOCh physical location. The questions were designed to gather specific information aimed at detecting knowledge of organic production legislation, personal characteristics, the performance of the Certification Committee, the environment of greenwashing, and income (Table 3).

Table 2. Detailed evaluation. Two examples of RFRA indicators.

Dimension	Indicator	Criterion	Scale
Production	Transition of the production unit	It has not undergone transition and offers its products immediately as organic	1
		It's been a year since the transition, and it offers its products as organic	2
		It's been two years since the transition, and they offer their products as organic	3
		It's been three years since the transition, and it offers its products as organic	4
Marketing	Labeled	Does not perform any product labeling	1
		It has a general information sheet of its products	2
		It has labeling, but not according to the standard	3
		It has labeling according to the standard	4

Source: Prepared by the authors using data from the interview design.

Table 3. Potential causes of fraud analyzed by survey.

Potential cause	Potential cause
Government Aspects	He values the lack of knowledge of sanctions, the absence of the government, and the lack of understanding of the LPO.
Elements of a personal nature	Analyzes the propensity for anger, conflict involvement and resolution, and defense of points of view.
Perception of CCOP performance and confidence	Measures perception on a scale from poor to excellent.
Elements of greenwashing	Evaluate the perception of greenwashing practices in the environment: advertising, product offerings, and the increase in alternative spaces.
Perception of income	Assesses income as sufficient or insufficient, according to perceptions.

Source: ource: self-elaborated based.

The information in this survey assesses the interaction of several fraud risk factors as dimensions. This survey was administered to fifteen TOCh operators, five collaborators, and six members of the participatory organic certification committee. Data were collected and organized for analysis using descriptive statistical methods and contextualized through direct observations.

RESULTS

Rapid Fraud Risk Assessment

Among the TOCh operators in force in 2022, at the time of the study, compliance was 15% and the risk of fraud 85% (Figure 2). These results could be influenced by the COVID-19 pandemic, as some operators decided to abandon the project due to the temporary closure of the TOCh during the lockdown, while others joined.



Figure 2. Fraud risk.

Source: self-elaborated based on RFRA.

These results could be explained, as mentioned above, by the restructuring of the TOCh regarding the incorporation of new operators. In addition, the isolation measures associated with the COVID-19 pandemic also played a role. In compliance with official and lockdown regulations, operators received less support, oversight, and monitoring of their activities, as well as limited guidance regarding regulations. This assertion, as we will see later, is supported by the survey results.

Figure 3 shows how the ERRF performs in relation to the nine operators active in 2022. The results indicate that, while only one of them fully complies with the evaluated indicators, the others only show partial noncompliance, demonstrating progress and a favorable margin for achieving full compliance.

These findings not only identify specific improvement opportunities for each operator, but also provide a basis for guiding targeted actions based on the indicators evaluated. However, beyond identifying the areas that need to be addressed, this paper

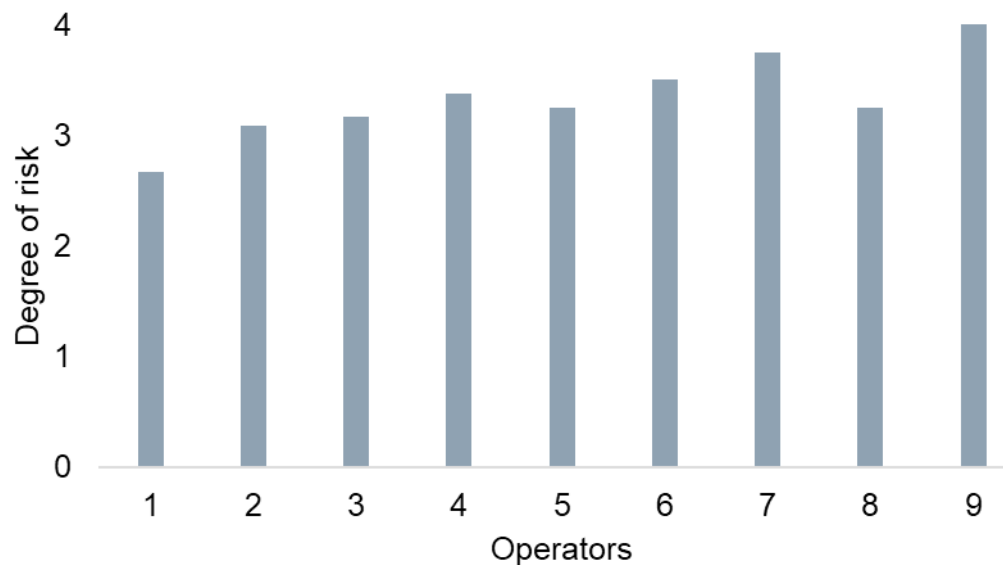


Figure 3. Fraud risk distribution among operators.

Source: self-elaborated based on RFRA.

seeks to delve deeper into the structural and contextual causes that shape the risk of fraud. The following section addresses these multiple causes, supported by empirical evidence, to better understand the factors that cause fraud and explain its prevalence over time.

Determinants of fraud risk

The survey to identify fraud risk determinants was administered to 26 stakeholders: operators, collaborators, and members of the participatory certification committee. The government was asked whether it could be considered absent, based on the number of workshops, talks, or actual training on organic production topics, as well as the monitoring and sanctioning of spaces it carries out, all of which is represented in Figure 4.

It is worth mentioning that 61% understand the law and its documents. This understanding can be related to the various training sessions offered within the TOCh to its active operators. Likewise, the lack of attendance explains why some operators claim to be unfamiliar with the law. On the other hand, 64% point out that there is an absent government due to the difficult access to training related to organic production due to its high cost and the fact that those that are available to the public do not address issues related to local production.

Likewise, 67% of respondents report being unaware of any sanctions imposed by regulatory bodies such as SENASICA on those who violate organic regulations. This data provides a first insight into the representation of each element of the fraud cycle and how they may interact with each other.



Figure 4. Government aspects as a potential cause of fraud.

Source: self-elaborated with data from the survey.

To comply with certification, operators are subject to an organic products law, regulations for organic production, and guidelines for the operation of organic products. This can be problematic due to contradictions, omissions, and the lack of access to the legislation for users who, even if familiar with it, are unable to access it. Regarding personal character, it was evaluated whether the respondents consider that they get upset easily, how they participate in conflicts, in their resolution within the group and if they defend their points of view during meetings (Figure 5).

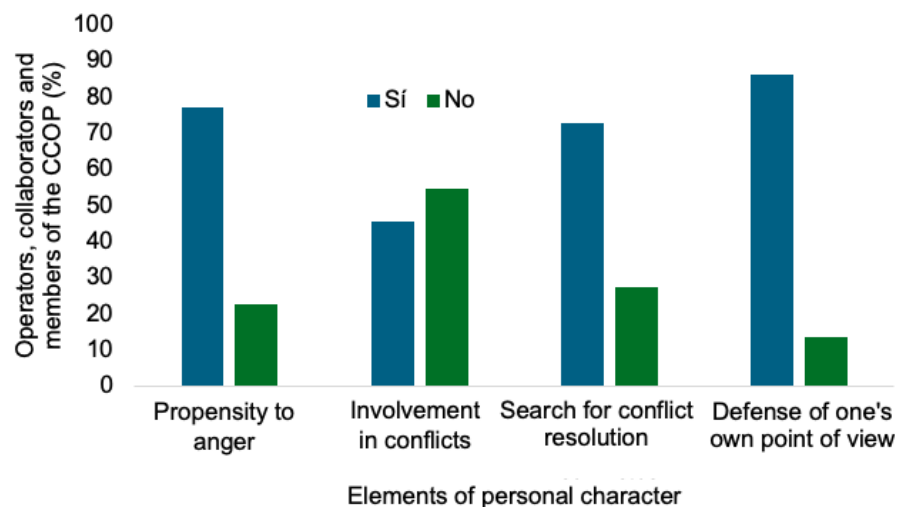


Figure 5. Personal factors as a potential cause of fraud.

Source: Prepared by the authors based on RFRA.

As shown in the graph above, most respondents (72%) expressed interest in participating in conflict resolution, which represents a positive aspect for the operation. According to testimonies and observations, the lack of agreements resulting from conflicts has, on occasion, led to the delay and cancellation of projects intended for collective benefit. On the other hand, 22% stated that they get angry easily, which causes conflict and creates fractures in their living environments. This, coupled with the fact that 13% of respondents stated they do not defend their point of view, fuels the rise in disagreements. This demonstrates that personal character is an important factor in achieving organic production.

Cohesion among respondents favors the de-individualization of organizational operations. In a context characterized by a perceived remoteness from the government and its statutes, social cohesion facilitates communication aimed at understanding norms, which can lead to the adoption of certain behaviors (Valente, 2012). Cohesion among respondents favors the de-individualization of organizational operations. In a context characterized by a perceived remoteness from the government and its statutes, social cohesion facilitates communication aimed at understanding norms, which can lead to the adoption of certain behaviors (Valente, 2012).

One of the potential causes of fraud risk is the perception of the performance of and trust in the Participatory Organic Certification Committee (POCC). In this area, aspects related to the respondents' evaluation of committee members were assessed. This dimension is especially relevant for certified organic agriculture under the participatory scheme, since the committee acts as a mediator between the operators and the provisions of the guide for the implementation and establishment of the participatory organic certification system, through training and verification processes (National Health Service, 2021).

As with the analysis of the other potential causes, the perception of performance and trust in the POCC was assessed by all respondents, even if they included committee members. This is supported by the fact that, although it is a single body, it is comprised of six individuals with their own assessments of the committee's functioning. The results of the analysis are shown in Figure 6.

The graph indicates that 18% of respondents consider the Participatory Organic Certification Committee (POCC)'s activities to be excellent. This assessment may be associated with the level of involvement of certain operators, who maintain close involvement with the committee and have detailed knowledge of its functions. Meanwhile, 55% considered the POCC's performance to be good. This suggests that, overall, there was little room for improvement at that time. However, 27% rated the committee's performance as average or poor. Meanwhile, 55% considered the POCC's performance to be good.

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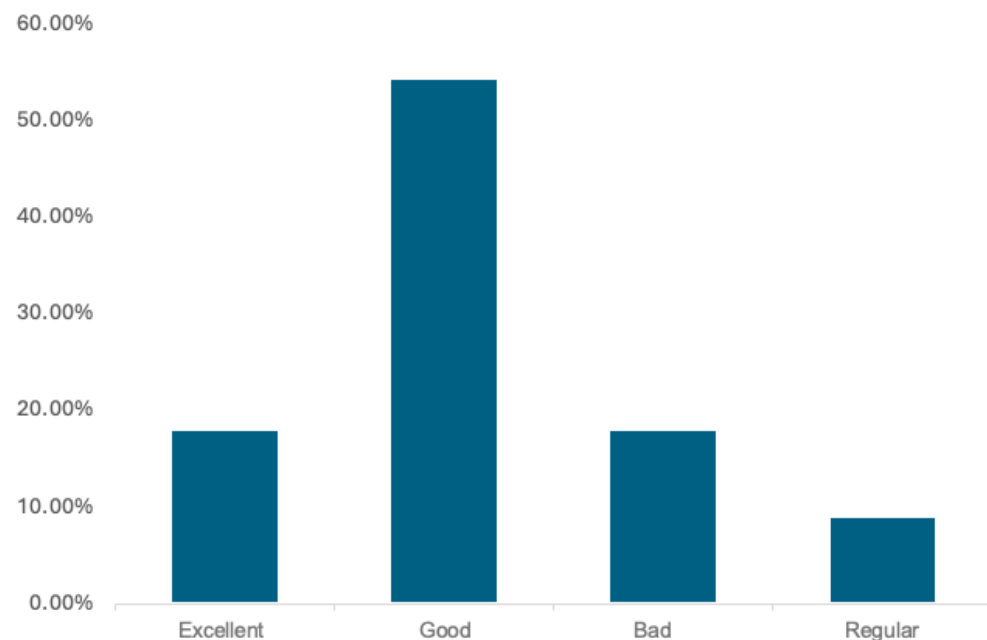


Figure 6. Perceptions of POCC performance and trust as a potential cause of fraud.

Source: Prepared by the authors based on RFRA.

55% considered the POCC's performance to be good. This suggests that, overall, there was little room for improvement at that time. However, 27% rated the committee's performance as average or poor.

A possible explanation for this differential perception emerges from the qualitative analysis of the testimonies and direct observations collected during the study. These identified a tension related to the reinforcement of compliance mechanisms, specifically regarding the request for documentation required for certification processes. Some operators did not have these documents and were not willing to provide them, arguing that "they weren't asked for them before, so why now?" This type of statement suggests resistance to changing procedures, which could be negatively impacting certain members of the group's assessment of the committee.

Up to this point, our analysis has focused on the structure: governance, committee, and operators. This structure shapes the theory of change implicitly established in the official documents cited earlier in this document. However, we studied a variable external to the structure, which relates to the behavior of competitors.

Although competitor behavior has been classically studied within value networks, with an emphasis on its proliferation and intensity due to its effects on prices, advertising, and innovation (Barrera *et al.*, 2013), in the context of organic agriculture, it is also necessary to analyze competition from the perspective of greenwashing. This is defined as:

“A selective amplification of positive environmental information, which produces a distorted and biased image in favor of “green” aspects, interpreted as positive by consumers” (Hallama et al., 2011, pp 1-2).

Based on the observations reported by operators, it was analyzed whether there was a perception of practices related to greenwashing, such as: the offer of organic products without certification, the use of labels such as “eco”, “bio” or “natural” in non-certified spaces, and the perception of an increase in this type of alternative markets.

As shown in Figure 7, respondents indicated that the most frequent manifestation of greenwashing is the sale of uncertified products presented as organic, ecological, or biological (77%), terms that, for legal purposes, are considered synonymous (Organic Products Law, 2006). Furthermore, 73% of respondents perceived an increase in the number of sales spaces for products presented as organic without certification.

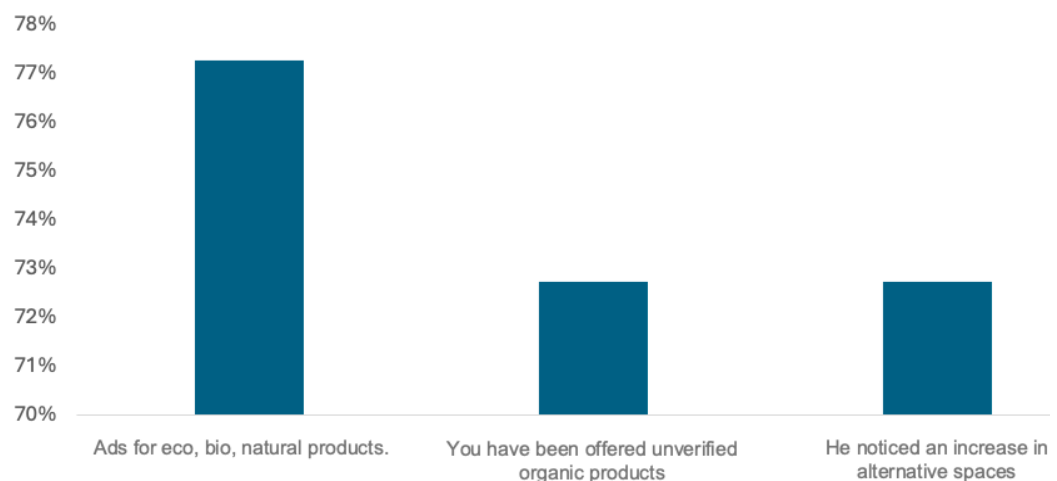


Figure 7. Elements of greenwashing as a potential cause of fraud.

Source: Prepared by the authors based on RFRA.

This expansion, characterized by its lack of regulation, suggests a disorganized growth of the alternative market, which is consistent with the perception of a weak institutional presence. The absence of effective government oversight and control mechanisms seems to facilitate the proliferation of these spaces, contributing to informality and the risk of practices such as greenwashing.

Furthermore, 73% of respondents report having been offered unverified organic products. Three forms of greenwashing stand out: i) the sale of non-certified products, ii) the use of ambiguous labels in unregulated spaces, and iii) direct offers without verification. However, the latter constitutes a new incentive system. This system

encourages informality and the simulation of regulatory compliance, by generating economic benefits for certain competitors without the corresponding assumption of the costs associated with certification (Delmas & Cuere, 2011).

As a result, there is a weakening of trust in formal control mechanisms and an intensification of unfair competition. As Shakhnazarov (2024) points out, the growing consumer preference for sustainable products is not necessarily reflected in an equivalent increase in responsible purchasing, due to the distrust generated by the increasingly common presence of imprecise, ambiguous, or unverifiable environmental claims.

The last variable considered is the perception of income adequacy, understood as the respondents' assessment of the improvement in their economic capacity through increased income from the sale of certified products. Its inclusion allows for an examination of the material conditions that influence the ability to meet the requirements of the organic certification process. Since this process involves an investment of financial resources and time, the perception of insufficient income constitutes a potential structural impediment to sustained participation. It is worth remembering that documented cases of fraud, both in the United States and Mexico, have been linked to the presence of economic incentives that distort regulatory compliance. The results of this analysis are presented in Figure 8.

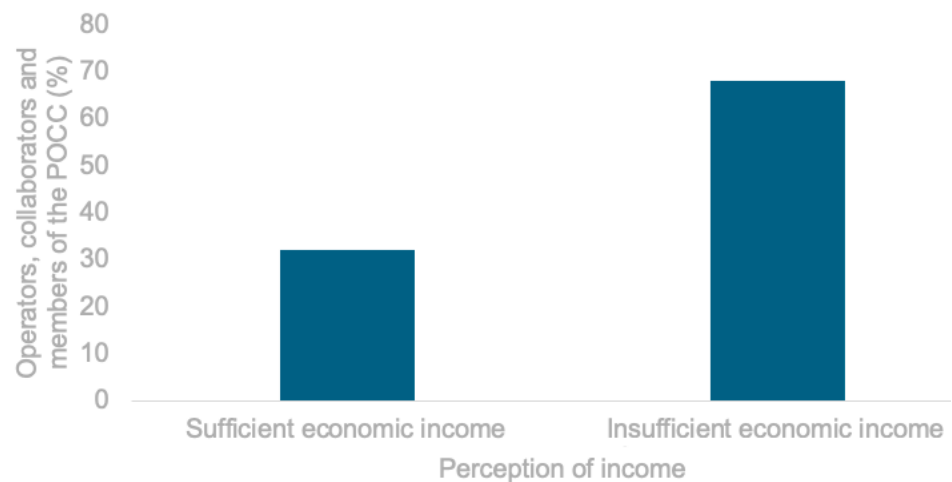


Figure 8. Perception of income as a potential cause of fraud.

Source: Prepared by the authors based on RFRA.

The graph above shows that 68% of active respondents consider their income insufficient, while only 31% of the total report having enough income to cover their needs. This distribution highlights a scenario of economic vulnerability that can impact compliance with certification requirements and, consequently, the propensity

for irregular practices. Even considering differences in scale, an analysis by Zhang (2022) of capital-intensive firms in 47 countries and territories has shown that financial constraints are a determining factor in the adoption of greenwashing strategies, a form of fraud previously analyzed in this study. Therefore, the configuration of the financial environment can exert a direct influence on actors' behavior in relation to regulatory compliance.

The findings led to the identification of multiple risk factors that, if not properly managed, can lead to the development of fraud scenarios. Addressing these factors doesn't require tracking them in the order in which they emerge, but rather prioritizing their impact and their potential to affect regulatory compliance. Likewise, structural conditions beyond the direct control of operators, collaborators, and the Committee were identified, particularly those linked to current legislation and the limited presence or action of government agencies. This requires multilevel intervention that combines community efforts with institutional frameworks appropriate to the circumstances of the stakeholders, to safeguard the integrity and credibility of the participatory organic certification system.

There are various risks that, if not properly managed, can lead to fraud. It is important to note that mitigating these elements does not require following the order in which they arise. Likewise, situations were identified whose resolution is beyond the scope of the implementers, such as those related to legislation or government regulations.

DISCUSSION

The results of this study confirm that, while Participatory Guarantee Systems (PGS) and Participatory Organic Certification Committee (POCC) are effective tools for verifying organic quality in community markets, their effectiveness depends largely on the governance structure and socioeconomic context in which they operate. As reported by Nelson *et al.* (2016), the active participation of producers and consumers in the evaluation process strengthens trust and social legitimacy, but also generates vulnerabilities when supervision is insufficient, or rules are not applied consistently.

In this sense, the presence of factors identified in the Circle of Fraud model, such as lack of technical knowledge, disorganized market expansion, and the absence of state supervision, creates favorable conditions for the violation of regulations (Payan & Stanley, 2019). These authors explain that, under economic pressures or perceptions of injustice, actors can justify fraudulent behavior as morally acceptable, which is consistent with observations in Latin American organic markets, where regulatory compliance is relativized in the face of the need to guarantee subsistence (Scott, 1976; Thompson, 1991).

The Fraud Risk Rapid Survey (FRRS) application has proven to be a useful tool for identifying vulnerabilities before they lead to actual breaches. This finding is consistent with studies on risk management in agrifood chains, where early detection of critical points is essential to preserving system integrity (Spink *et al.*, 2017). However, its effectiveness depends on integrating the results into clear decision-making and community feedback processes.

Comparing with GSP experiences in Brazil, Chile and Argentina, it is observed that in those cases where there is legal recognition and institutional support, such as the Brazilian case under the Ministry of Agriculture, the risk of fraud is reduced thanks to clearer inspection protocols and incentives for compliance (Meirelles, 2019). In contrast, in contexts without a solid legal framework, self-regulation is the primary tool, which increases the dependence on social cohesion and community pressure to ensure compliance.

The moral economy models proposed by Scott (1976) and Thompson (1991) allow us to understand that, in markets where exchange relations are mediated by principles of reciprocity and equity, fraud is not always perceived as an immoral act, but as a strategy to balance structural disadvantages. While this approach helps interpret certain behaviors, it also underscores the need to strengthen agroecological education and producers' technical capacities to prevent community solidarity from becoming a justification for noncompliance.

Taken together, the findings of this study suggest that the ethical sustainability of PGS and SCOP depends not only on transparency and participation, but also on organizations' ability to anticipate risks, strengthen accountability mechanisms, and adapt to the economic and regulatory pressures of the context. The integration of preventive tools such as the RFRA, accompanied by ongoing training and institutional support, is a key strategy to ensure that community markets not only maintain their legitimacy but also strengthen the resilience of the agroecological systems they support.

CONCLUSIONS

The identification of fraud determinants, beyond theoretical approaches, demonstrates that all elements, both in isolation and in interaction, pose a potential risk of fraud. However, when these factors combine, the risk could be amplified, suggesting the need to address them preventively and/or remedially. Based on the data collected, the hypothesis regarding the existence of variations in fraud risks was confirmed, concluding that these changes present a positive trend and can be effectively associated with the elements that make up the fraud cycle.

In this context, the mention of fraud risk should not be understood as a diagnosis of fraud in the analyzed market, but rather as a reflection on how certain

economic, institutional, organizational, and market dynamics can create an environment prone to its emergence, even in systems committed to organic certification. This approach responds to the objective of understanding fraud risk as a multi-causal process encompassing various dimensions (individual, organizational, political, and consumer), allowing for a broader and more in-depth view of its causes. Finally, this analysis serves as a wake-up call to the actors who shape the theory of change in the certification system, especially regarding the relationship between the government, committees, and operators. It is essential that they strengthen collaboration and oversight mechanisms to mitigate risks and safeguard the integrity of the system.

This analysis moved beyond the linear view that attributes fraud exclusively to economic motivations. By considering economic, institutional, and organizational factors in an integrated manner, a more complex and multifaceted understanding of the risks associated with fraud was achieved. This approach recognizes that, although economic incentives are an important element, they are not the only determinants of fraud. Incorporating stakeholder perceptions, identifying potential internal tensions within the certification committee, and assessing the trust placed in governance structures could contribute to a more realistic characterization of the environment. The existence of latent conflicts, insufficient technical resources, or ambiguity in certification processes also represent specific manifestations of risk conditions. Identifying these dynamics implies a structural fragility that requires attention. The coordination of diagnosis, prevention, and strengthening from the organization, but also from the government, is essential to preserve the credibility of the certification system. In this sense, risk management should not be limited to ex post controls, but should include mechanisms for social monitoring, continuous improvement, and participation of the stakeholders involved.

LITERATURE CITED

- Agricultural Marketing Service, U. (2023). *National Organic Program (NOP); Strengthening Organic Enforcement*. <https://www.govinfo.gov/content/pkg/FR-2023-01-19/pdf/2023-00702.pdf>
- Agricultural Marketing Service. (2025). *Fraudulent Organic Certificates*. U.S. Department of Agriculture.
- Araya-Pizarro, S., & Rojas-Escobar, L. (2021). Cuidado de la salud como determinante del consumo de alimentos orgánicos en Chile. *IDESLA*, 39(1), 59–67. <https://revistas.uta.cl/pdf/293/8.pdf>
- Barrera Rodríguez, A. I., Baca del Moral, J., Santoyo Cortés, V. H., & Altamirano Cárdenas, J. R. (2013). Propuesta metodológica para analizar la competitividad de redes de valor agroindustriales. *Revista Mexicana de Agronegocios*, XV(32), 231–244. <http://www.redalyc.org/articulo.oa?id=14125584007>
- Centro de Estudios de las Finanzas Públicas. (2018). *Impacto fiscal de la economía informal en México*. <https://www.cefp.gob.mx/transp/CEFP-70-41-C-Estudio0011-300718.pdf>

- Chapa-Ignacio, C. J. (2022). *Tianguis Orgánico Chapingo: Círculo del fraude y causas sociales que lo originan* [Tesis, Universidad Autónoma Chapingo]. <https://repositorio.chapingo.edu.mx/server/api/core/bitstreams/456ebacb-a662-460f-a41b-0679d729463c/content>
- Comisión Europea. (2014). *Evaluación del riesgo de fraude y medidas efectivas y proporcionadas contra el fraude*. <https://sfc.ec.europa.eu/en/system/files/documents/sfc-files/guidance-fraud-risk-assessment-es.pdf>
- De Schaetzen, S. (2019). *Organic agriculture and the sustainable development goals*. Nature & More. https://www.eosta.com/sites/www.eosta.com/files/documenten/nm19_329_report_nm_lr.pdf
- Delmas, M. A., & Cuere Burbano, V. (2011). *The drivers of Greenwashing*. https://www.vanessaburbano.com/uploads/2/5/0/4/25049117/cmr5401_04_printversion_delmasburbano.pdf#:~:text=This%20article%20examines%20the%20external%20%28both%20institutional%20and,managers%2C%20policymakers%2C%20and%20NGOs%20to%20decrease%20its%20prevalence.
- Gil, J. M., Gracia, A., & Sánchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *International Food and Agrobusiness Management Review*, 3, 207–226. [https://doi.org/https://doi.org/10.1016/S1096-7508\(01\)00040-4](https://doi.org/https://doi.org/10.1016/S1096-7508(01)00040-4)
- Hallama, M.; Montlló Ribo, M.; Rofas Tudela, S. & Ciutat Vendrell, G. (2011). El fenómeno del greenwashing y su impacto sobre los consumidores. Propuesta metodológica para su evaluación. *Aposta. Revista de Ciencias Sociales* 50, 1-38.
- IFOAM. (2008). Participatory Guarantee Systems: Case studies from Brazil, India, New Zealand, USA and France. IFOAM—Organics International.
- Jerez Ramírez, D. O. (2023). Riesgo: Estudio social y sociogénesis del concepto. *LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades*, 4(5), 620–639. <https://doi.org/10.56712/latam.v4i5.1342>
- Ley de Productos Orgánicos, Pub. L. No. DOF-07-02-2006, Diario Oficial de la Federación 1 (2006). <https://www.diputados.gob.mx/LeyesBiblio/pdf/LPO.pdf>
- López Salazar, G. L. (2019). Factores que influyen en la compra de alimentos orgánicos en México. Un análisis mixto. *Small Business International Review*, 3(2), 69–85. <https://doi.org/10.26784/sbir.v3i2.210>
- Meirelles, L. (2019). Participatory Guarantee Systems in Brazil: Evolution, achievements, and challenges. *Ecology & Society*, 24(2), 1–10. <https://doi.org/10.5751/ES-10890-240210>
- Nelson, E., Gómez Tovar, L., Gueguen, E., Humphries, S., Landman, K., & Schwentesius Rindermann, R. (2016). Participatory Guarantee Systems and the re-imagining of Mexico's organic sector. *Agriculture and Human Values*, 33(2), 373–388. <https://doi.org/10.1007/s10460-015-9615-x>
- Padel, S. (2001). Conversion to organic farming: a typical example of the diffusion of an innovation? *Sociologia Ruralis*, 41(1), 40–61. http://www.redgtd.org/CENTRODOC/BD_ARCHIVOS/Padel%20conversion%20to%20organic%20innovation%202001.pdf
- Payan, J., & Stanley, S. M. (2019). A model of ethical fraud justification. *Journal of Business Ethics*, 158(1), 1–17. <https://doi.org/10.1007/s10551-017-3732-6>
- Rindermann, R., Octavio, M., & López, V. (2019, mayo). *TLANGUIS ORGÁNICO CHAPINGO (TOCH): CERTIFICACIÓN ORGÁNICA PARTICIPATIVA*.
- Scott, J. C. (1976). *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. Yale University Press.
- SENASICA. (2022). Lineamientos para la operación orgánica de las actividades agropecuarias. Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria.

- Servicio Nacional de Sanidad, I. y C. A. (2017). *Criterios para la autorización del uso del término orgánico y uso del distintivo nacional en el etiquetado de productos orgánicos*. https://www.gob.mx/cms/uploads/attachment/file/233711/CRITERIOS_USO_ORGANICO_Y_DISTINTIVO.pdf
- Servicio Nacional de Sanidad, I. y C. A. (2021). *Guía para la implementación y establecimiento del Sistema de Certificación Orgánica Participativa*. https://www.gob.mx/cms/uploads/attachment/file/644511/2.-_Gu_a_para_obtener_el_Reconocimiento_del_Sistema_de_Certificaci_n_Org_nica_Participativa_.pdf
- Servicio Nacional de Sanidad, I. y C. A. (2024). *Guía para la certificación de grupos de productores orgánicos 2024*. https://www.gob.mx/cms/uploads/attachment/file/917576/4._Gu_a_para_la_Certificaci_n_de_Grupos_de_Productores_org_nicos__2024.pdf
- Shakhnazarov, B. A. (2024). Greenwashing, greenwishing and greenhushing in the context of unfair competition, intellectual property protection and consumer rights. *Lex Russica*, 77(11), 63–73. <https://doi.org/10.17803/1729-5920.2024.216.11.063-073>
- Soto, G. (2020). El continuo crecimiento de la agricultura orgánica: Orgánico 3.0. *Revista de Ciencias Ambientales*, 54(1), 215–226. <https://doi.org/10.15359/rca.54-1.13>
- Spink, J., Ortega, D. L., Chen, C., & Wu, F. (2017). Food fraud prevention shifts the food risk focus to vulnerability. *Trends in Food Science & Technology*, 62, 215–220. <https://doi.org/10.1016/j.tifs.2017.02.012>
- Taylor, J., & Davis, A. (2018). Social Cohesion. En H. Callan (Ed.), *The International Encyclopedia of Anthropology* (pp. 1–7). Wiley. <https://doi.org/10.1002/9781118924396.wbiea2297>
- Thompson, E. P. (1991). The moral economy reviewed. In *Customs in Common*. Penguin Books.
- Valente, T. W. (2012). Network interventions. *Science*, 336(6090), 49–53. <https://doi.org/10.1126/science.1217330>
- Zamilpa Paredes, J., Ayala Ortiz, D., & Schwentesius Rindermann, R. (2015). *Desafíos y prioridades de la agricultura orgánica en México, mirando a la Unión Europea*. http://biblioteca.diputados.gob.mx/janium/bv/cedrssa/lxii/des_priagr_orgme_mue.pdf
- Zhang, D. (2022). Are firms motivated to greenwash by financial constraints? Evidence from global firms' data. *Journal of International Financial Management & Accounting*, 33(3), 459–479. <https://doi.org/10.1111/jifm.12153>

