



# **The Construction of Digital Food Markets in the Context of the Xique Xique Network, state of the Rio Grande do Norte, Brazil**

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## **Abstract**

The objective is to analyze the social construction of immersed markets from the perspective of family farmers and consumers, considering the dynamics of family farming digital food markets during and after the Covid-19 pandemic in Rede Xique Xique, in Rio Grande do Norte. For practice, we sought to understand how the search for food occurs and the motivations for accessing these markets; which social and cultural values are used by farmers to attribute quality to products, marketing is carried out through digital means and the generation of trust between farmers and consumers. The method adopted was qualitative and the methodological path consisted of a literature review on the social construction of immersed agri-food markets and short chains, to build the analytical framework. Mappings of the Xique Xique Network's agroecological fairs in Rio Grande do Norte municipalities were carried out and digital food marketing platforms were analyzed, in addition to semi-structured interviews with family farmers and consumers, to capture learning, internalized innovations and trust relationships. As a result, multiple causes were found for the construction of motivation and trust with attribution of quality, of the products sold by Rede Xique Xique, especially in digital food markets.

**Keywords:** Short chains, Digital platform, Rural and regional development.

## **A Construção de Mercados Alimentares Digitais no Contexto da Rede Xique Xique, Rio Grande do Norte**

## **Resumo**

O objetivo é analisar a construção social de mercados imersos na perspectiva dos agricultores familiares e consumidores, considerando a dinâmica dos mercados alimentares digitais da agricultura familiar durante e pós-pandemia da Covid-19, na Rede Xique Xique, no Rio Grande do Norte. Para prática, buscou-se compreender, como ocorre a busca pelos alimentos e as motivações para acessar esses mercados; quais valores sociais e culturais são acionados pelos agricultores para atribuir qualidade aos produtos a comercialização é realizada pelos

meios digitais e a geração de confiança entre agricultores e consumidores. O método adotado foi o qualitativo e o percurso metodológico consistiu na revisão de literatura sobre a construção social de mercados imersos agroalimentares e cadeias curtas, para construção do quadro analítico. Foram feitos mapeamentos das feiras agroecológicas da Rede Xique Xique em municípios potiguares e analisado plataformas digitais de comercialização dos alimentos, além de entrevistas semiestruturadas, com agricultores familiares e consumidores, para apreender o aprendizado, as inovações internalizadas e as relações de confiança. Como resultados, foram constatadas múltiplas causas para a construção da motivação e da confiança com atribuição de qualidade, dos produtos comercializados pela Rede Xique Xique, em especial nos mercados alimentares digitais.

**Palavras-chave:** Cadeias curtas, Plataforma digital, Desenvolvimento rural e regional.

***La construcción de mercados digitales de alimentos en el contexto de la Red Xique Xique, estado de Rio Grande do Norte, Brazil***

El objetivo es analizar la construcción social de los mercados inmersos desde la perspectiva de los agricultores y consumidores familiares, considerando la dinámica de los mercados digitales de alimentos de la agricultura familiar durante y después de la pandemia de Covid-19 en la Rede Xique Xique, en Rio Grande do Norte. Para la práctica, buscamos comprender cómo se produce la búsqueda de alimentos y las motivaciones para acceder a estos mercados; qué valores sociales y culturales son utilizados por los agricultores para atribuir calidad a los productos, la comercialización se realiza a través de medios digitales y la generación de confianza entre agricultores y consumidores. El método adoptado fue cualitativo y el camino metodológico consistió en una revisión de la literatura sobre la construcción social de mercados agroalimentarios inmersos y cadenas cortas, para construir el marco analítico. Se realizaron mapeos de las ferias agroecológicas de la Red Xique Xique en municipios de Rio Grande do Norte y se analizaron plataformas digitales de comercialización de alimentos, además de entrevistas semiestruturadas a agricultores familiares y consumidores, para capturar aprendizajes, innovaciones interiorizadas y relaciones de confianza. Como resultado, se encontraron múltiples causas para la construcción de motivación y confianza con atribución de calidad, de los productos comercializados por la Rede Xique Xique, especialmente en los mercados digitales de alimentos.

**Palabras clave:** Cadenas cortas, Plataforma digital, Desarrollo rural y regional.

## **1 Introduction**

Over the decades, particularly since the 1950s, Brazilian family farming has faced significant challenges due to an agricultural model that links the technical production pattern to the global corporate food regime. This structure subjugates family farmers to an overwhelming pricing system. This deficiency in the model marginalizes family farmers, depriving them of the necessary conditions to access both short supply chains (local internal market circuits) and long chains (global export-regulated systems). This historical and perverse commercialization system leads family farmers to an economic disadvantage, leaving them vulnerable to intermediaries who appropriate most of the wealth generated. These intermediaries create barriers and destroy any initiative or possibility for family farmers to organize collectively (into cooperatives), add value to local and regional products through

small-scale agro-industrialization, and access markets, especially digital food markets, which have gained prominence more recently.

Researchers at universities, policy makers in public administration, and political leaders have sought ways to overcome these challenges. This effort has aimed at convergence towards advanced production techniques and practices, promoting collective organizational strategies and value-adding initiatives. Thus, this structuring aims for a mobilizing articulation between the State and the collective organizations of family farmers to create and expand access to markets. The COVID-19 pandemic has exposed and highlighted the weaknesses of the Brazilian agricultural model, which for decades has favored large global food corporations, limiting local family farmers' initiatives to add value and access commercialization chains. This has forced family farmers to the margins of the model, making them more vulnerable to intermediaries who often claim the largest share of their production, reinforcing the urgent need for adjustments and testing the capacity for reinvention within family farming. The pandemic has challenged collective organizations to expand market access and connect with consumers, especially urban ones. Since then, cooperatives have played the economic arm of family farming and have challenged the deficiencies of the agricultural model by coordinating the creation of short chains, reducing the role of intermediaries, and empowering family farmers through value-adding initiatives and market access.

This entire action has demanded greater qualification of the productive apparatus of family farming, better use of credit, technical assistance and rural extension services (ATER), and the involvement of universities in the construction of digital markets to ensure that rural-produced foods reach urban households successfully and promptly. This has been an opportunity for family farmers to organize increasingly collectively, aiming at the social construction of agri-food markets, particularly within the domain of digital food markets. It is essential for them to ensure food supply despite the prior dismantling and recent resurgence of policies supporting family farming. In addition to short chains, the existence of demand from institutional markets through government procurement has contributed to the formation of even more family farmer cooperatives.

Given the above, and considering the perspective of the social construction of immersed markets by family farmers and consumers, this research is guided by the following question: How do the dynamics of agroecological open markets unfold, and what is the scope of digital food markets for family farming during and after the COVID-19 pandemic within the Xique Xique Network in Rio Grande do Norte?

The assumption is that food commercialization by the Xique Xique Network occurs on both the supply and demand sides. On the supply side, through the creation of immersed markets via open markets, solidarity delivery, etc.; and on the demand side, by serving consumers through institutional and conventional markets, leading to the emergence of digital food markets via platforms like the Northeast Family Agriculture Regional Information System (SIRAF Nordeste) for public procurement. Other tools, such as websites, WhatsApp, and others, involve cooperatives (notably the Cooperativa de Comercialização Solidária Xique Xique - COOPERXIQUE), associations, and consumer groups. This is the scenario, despite the challenges and barriers of the agricultural model, where family farmers and their collective organizations within the Xique Xique Network find themselves. They are

reinventing themselves and pushing for adjustments to produce food and access commercialization chains in food supply and distribution processes.

The goal of this article is to analyze the strategies of the social construction of immersed markets from the perspective of family farmers' supply and consumer demand, considering the construction of digital food markets for family agriculture during and after the COVID-19 pandemic within the context of the Xique Xique Solidarity Commercialization Association in Rio Grande do Norte.

The structure of this article is divided into sections. Section 2 presents the approach that guides the study, emphasizing the social nature of economic exchanges and the embeddedness approach; Section 3 outlines the methodological path; Section 4 discusses the results; and Section 5 provides brief conclusions on the themes of immersed markets and digital food markets within the context of the Xique Xique Network in Rio Grande do Norte.

## **2. Theoretical Framework**

### **2.1 *The Social Nature of Economic Exchanges and the Embeddedness Perspective***

Studies on agri-food systems adopt the perspective of the social construction of new markets, which arises from the fact that economic relationships are embedded in locally shared social and cultural values. These relationships are contextual, conferring quality attributes to food, and they emphasize that the emergence of immersed agri-food markets stems from the establishment of social ties and relationships between agents, particularly farmers and consumers. This emergence manifests in differentiated forms of food production and commercialization, such as agroecological markets and, more recently, virtual marketing channels (Marsden *et al.*, 2000; Cassol, 2013, 2018).

Wilkinson (2008) highlights the importance of the new economic sociology in analyzing and understanding the world of farmers. Particularly when farmers cease being mere suppliers to hegemonic actors in agri-food markets and seek their own insertion into markets to achieve a degree of relative autonomy, especially in new markets. At the same time, he emphasizes how the concepts of new economic sociology provide analytical tools that help identify the dynamic factors of markets that farmers access and the conditions for family farming to integrate into new markets. This includes institutional aspects related to the social construction of markets, which argues that economic institutions arise from social relationships and processes that unfold over time, thus subject to social and cultural influences. Therefore, it is not the rationality of a methodological subject that dictates the transaction pattern. Economic sociology emerged in the late 19th and early 20th centuries, aiming to bridge sociological and economic analysis to provide a better explanation for socio-economic phenomena compared to what is offered by economic theory (Steiner, 2006).

The new economic sociology is influenced by Granovetter's studies from the 1970s, in which he explored market dynamics as extensions of social networks—for instance, his work *Getting a Job* (1974). Moreover, three articles from Granovetter influenced this approach: "Economic Action and Social Structure: The Problem of Embeddedness" (1985), "Economic Institutions as Social Constructions" (1992), and

"The Strength of Weak Ties" (1973). However, his 1985 article is considered the "founding manifesto" of the new economic sociology (Beckert, 2007).

Granovetter's (2007) definition of embeddedness captures the mediation of economic actions by social relationships, demonstrating how economic behavior is filtered through social ties. Economic action is embedded in the social networks of actors (Wilkinson, 2008; Beckert, 2007).

When Granovetter (2007) qualifies his definition of embeddedness, he highlights that it refers to how economic action is immersed in social relationships, which in turn shape the behavior of economic actors. The concept of embeddedness was originally formulated by Polanyi (2000, p. 65), who stated: "The most important discovery in recent historical and anthropological research is that man's economy, as a rule, is submerged in his social relationships."

From this perspective, individuals act to protect their social standing, social demands, and heritage. In this process, every action is tied to a set of social interests, meaning economic motivations arise from the context of one's social life. Economics is embedded in both economic and non-economic institutions. Granovetter (2007) recognized the significance and reach of his theoretical formulation on embeddedness. At the same time, he acknowledged the limitations.<sup>1</sup> of his 1985 publication, noting that the analysis should include institutions, culture, politics, among other factors (Krippner et al., 2004, p. 114).

Granovetter's emphasis on social network analysis presents a limited perspective since an exclusive focus on the structure of social relationships neglects the underlying social content of the structure under analysis (Beckert, 2007). This omission is significant because "by disregarding the attributes of actors and institutional rules, network analysis fails to explain how the social structure of markets emerges and why networks are structured as they are" (p. 87). Thus, focusing solely on social networks does not reveal how social embeddedness is constructed within markets and how it connects to institutions (Cassol, Salvate, Schneider, 2016; Nunes, Silva, 2022).

The embeddedness advocated by Granovetter (2007), classified as structural, does not consider its multidimensional aspects—cultural, political, or cognitive. However, each form of embeddedness may be more suitable for certain aspects of the market than others (Steiner, 2006). Beckert (2007) also highlights the need for embeddedness to consider the political, cultural, and cognitive contexts in which economic action occurs. Steiner (2006) points out that economic sociology is interested in the origins of market phenomena. Consequently, the analysis focuses on the institutions within which market relations are embedded:

[...] markets are simultaneously systems of cooperation and competition, systems of acquisition and replacement, but regardless of their form, they are social systems based on the reproduction/disruption of customs and conventions. They are not the a-social and a-historical markets assumed by neoclassical economics" (Krippner et al., 2004, p. 126 *apud* Steiner, 2006).

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<sup>1</sup> The embedding of economic actions within networks is considered structural embeddedness, but there are other forms—cultural, political, etc. These forms reach different dimensions of economic action and are complementary (Grisa, 2010).



Here, we aim to go beyond the notion of social networks advocated by Granovetter (2007) as a pathway to constructing the embeddedness of economic activity. Therefore, we agree with Cassol's (2018) position, which asserts that networks do not generate trust. Social and cultural values—i.e., institutions shared by actors—bring them together and facilitate their interaction. Trust is a social value. "Actors trust each other because they share worldviews, practices, and representations, which connect them through social networks" (Cassol, 2018, p. 79).

Thus, we adopt the notion of embeddedness as a social process constructed through the mobilization of social and cultural values, which attribute meaning and significance to economic practices and actions. In this study, this notion is used to analyze and understand the social construction of immersed markets.

## 2.2 Agri-food Immersed Markets

Markets imply a systematic and institutionalized process for the buying and selling of goods and services. They are not governed solely by the price mechanism, as established by neoclassical economics, but by a set of conventions, values, rules, norms, and procedures. The historical and social context in which the market is embedded influences its origin, nature, and operational dynamics. According to Nunes, Lima, and Freitas (2023), the neoclassical approach views markets as mechanisms for price formation, where prices are determined by the balance between supply and demand for commodities. Consequently, resource allocation is performed to maximize individual utility—optimization.

According to Nunes *et al.* (2015), the market is also seen as a neutral mechanism of interaction between buyers and sellers, where institutions do not play a crucial role in economic life. This view stems from understanding the market as "[...] a kind of natural state, a natural environment in which individual traders interact, existing before and independently of social institutions" (Hodgson, 1994, p. 180). For this reason, studies adopting the neoclassical approach focus on the objective dimension of economic action.

Bourdieu (2005, p. 22) critiques aspects of this approach, stating: "the logic of the market has never completely supplanted non-economic factors in production or consumption." Abramovay (2004, p. 48) adds: "For markets to exist, social and behavioral conditions that go beyond the actors' self-interest are necessary." Similarly, Fligstein and Dauter (2012, p. 485) emphasize that: "atomized agents oriented solely by price, with perfect and symmetrical information, as assumed by neoclassical theory, do not empirically exist," while social relations in various forms appear predominant "in the functioning of markets and their agents."

Cangiani (2012, p. 35) affirms that "[...] neoclassical rationality can never fully capture real human behavior. Moreover, the market could not function without a complex institutional structure." Hodgson (1994, p. 175) further emphasizes that the market cannot be regarded as the supreme means of expressing individual choices:

[...] pure and extreme individualism has no direct reflection in the market," as "pure individualism and defense of the market are not entirely consistent with each other.

In this sense, it is worth highlighting that the definition of a market is linked to a broad set of social institutions. For instance, Hodgson (1994, p. 175) defines it as:

a set of social institutions in which a large number of commodity exchanges of a specific type take place, with these exchanges facilitated and structured by these institutions. Exchange, as we mentioned, implies a contractual agreement and an exchange of property rights, and the market consists partly of mechanisms to structure, organize, and legitimize these activities. In summary, markets are organized and institutionalized exchanges.

Considering the economy as an activity and social actions as part of economic activity, institutions can also be considered economic elements (Polanyi, 2015). Therefore, markets are understood as arising from specific, socially determined, and immersed forms of social interaction. They are not abstract theoretical constructs but historically constituted institutional complexes (Abramovay, 2004).

From a sociological perspective, markets are characterized as a process of social interaction that facilitates the exchange of goods and/or services by mobilizing actors and agents. They are part of "the social processes of production and reproduction of economic activities and family units, influencing people's lives, values, and culture, and shaping and modifying institutions" (Schneider *et al.*, 2016, p. 95).

We align with the view that exchange relations "are immersed in specific local contexts related to family trajectories, cultural traits and traditions, interpersonal relationships, as well as the interest in selling. In this sense, markets are social creations" (Rozendo, Bastos, Molina, 2013, p. 27).

Immersed markets are socially constructed, thus constituting social constructs with a strong institutional component. They represent a response to the needs of farmers and consumers. The initiatives aimed at their formation seek to meet demands characterized by social and cultural proximity. As pointed out by Nunes, Silva, and Sá (2020a) and Nunes, Cruz, and Silva (2020b), these markets are founded on learning processes and systematic experimentation arising from the relationships between farmers and consumers. They are based on new products and new markets or existing markets that begin to meet new needs (Milone, Ventura, 2016).

The emergence of immersed markets results from the establishment of social ties and relationships between agents, particularly farmers and consumers. This emergence is evident in differentiated forms of food production and commercialization, such as agroecological fairs. These markets reproduce and even strengthen because the economic transactions carried out by the agents—farmers and consumers—are immersed in social and cultural values. Moreover, these values are shared by these agents (the evaluative dimension). It is these shared values (which define social norms and rules that construct different types of interactions and markets) that regulate food production and commercialization practices, attribute quality to foods, and foster the development of trust relationships (Marsden *et al.*, 2000; Cassol, 2013; Azevedo, Nunes, 2013).

In this context, initiatives for the social construction of new markets and diversified forms of agriculture have expanded in Brazil. However, the motivations

behind these initiatives vary. In Europe and North America, they are mainly reactions by farmers to crises such as the squeeze and food crises, as well as counter-movements for food reconnection (Ploeg, 2000; Renting, Marsden, Banks, 2017; Abramovay, 2004).

In Brazil, some studies show relative proximity to these causes, but local context-specific features differentiate them. Most of the research is focused on the southern region (Darolt, 2000; Radomsky, 2010; Perez-Cassarino, 2012; Cruz, 2012; Gurgel, Nunes, Silva, 2022). From the perspective of immersed markets, the approach used in this article, studies conducted in Brazil are fewer in number (Cassol, Salvate, Schneider, 2016; Cassol, 2018).

In Rio Grande do Norte, according to Silva and Nunes (2022) and Alves da Silva and Nunes (2023), there are experiences developed by family farmers aimed at structuring more diversified and sustainable agri-food systems. These are linked to strategies that integrate family farming with small-scale agro-industries and cooperative coordination for the social construction of markets. In this context, as highlighted by Nunes *et al.* (2017), examples include the Xique Xique Network, active in 14 municipalities; the Association of Agroecological Farmers of Mossoró (APROFAM), active in Mossoró; and the Family Agriculture and Solidarity Economy Commercialization Center (CECAFES), active in the state capital, Natal. The first organization was established in 2004, the second in 2007, and the third was inaugurated in 2016 (Araújo, Maia, 2012; Maia, 2018; Nunes, Schneider, 2012; Oliveira, 2019).

However, this article focuses on the social construction of agri-food immersed markets from the perspective of farmers and consumers within the Xique Xique Network, where transactions are carried out through a virtual channel—WhatsApp.

### 3. Methodological Procedures

For this article, we present and analyze the data collected during the research conducted in Mossoró, where commercialization occurs through a virtual sales channel—<sup>2</sup>, via *WhatsApp*, as well as the Agroecological Bodega (Mossoró), organized by the Network. The commercialization is carried out through the virtual sales channel—WhatsApp—with deliveries made either at the Bodega or via courier services provided by motorbike couriers. The research aimed to understand the demand and access to agro-food products, the primary motivations for entering this market, and how and which values are mobilized by family farmers and consumers to attribute quality to the products marketed by the Xique Xique Network.

The purpose is to present and analyze the values that assign meaning, significance, modes of action, and economic transactions through virtual commerce via WhatsApp from Mossoró. The cultural values embedded in the social relations between farmers and consumers shape modes of action, norms, and rules, which define practices and interaction modes, maintaining and strengthening digital markets, especially via WhatsApp (Cassol, 2018). Therefore,

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<sup>2</sup> This sales channel is used by the Xique Xique Network for consumers in Mossoró.



The rules and norms (institutions) that guide economic practices and preferences are constructed within the social interaction process between actors. This is, therefore, clear evidence that institutions are social mechanisms, built through the mobilization of certain values and the interaction between actors (p. 112).

These values, adopted by farmers and consumers, allow the economy to become embedded in patterns of relationships and transactions that make the motivations for purchasing food products marketed by the Xique Xique Network, as well as the value dimensions, unique. These dimensions assign meaning and significance to the transactions. In this context, the commercialization spaces organized by the Xique Xique Network are defined by habits, customs, and values rooted in the local economy. They are constructed, reproduced, or readapted through this network of transactions. Therefore, the value dimension—which assigns meaning and significance to the transactions—is constantly being updated and generating meanings (Azevedo, Nunes, 2013; Cassol, 2018).

Interviews were conducted with 22 farmers and 15 consumers between April 2021 and February 2022, a period marked by restrictions on public markets and direct contact with farmers and consumers due to the Covid-19 pandemic. The research covered family farmers and consumers from the municipalities of Mossoró, Apodi, São Miguel, and São Miguel do Gostoso, whose purchases are made at public markets organized by the Xique Xique Network, as well as those who make their purchases through the social network—WhatsApp (Mossoró), both organized by the Xique Xique Network. In addition, interviews were conducted with six family farmers participating in markets (over one year or 52 weeks) in 2020, or who engaged in commercialization for at least nine weeks through the WhatsApp group, also organized by the Xique Xique Network.

It is worth noting that the economic actions of the Xique Xique Network occur within the scope of three categories of short supply chains: i) "face-to-face," in which the direct purchase from the farmer takes place, and authenticity and trust are mediated by the personal relationship. Examples from the Network include agroecological markets and virtual commerce via WhatsApp; ii) the "proximity" chain, in which food acquisition occurs through the agroecological Bodega, located in the city of Mossoró (RN); and iii) the spatially extended chain, referring to supply for the State Government Purchasing Program (PECAFES), as well as the National School Feeding Program (PNAE), through which products are marketed outside the food's territory of origin. This article emphasizes the face-to-face short supply chain, where transactions are carried out virtually via WhatsApp.

## **4. Results And Discussion**

### **4.1 Values that justify the motivations of family farmers to offer food virtually to meet urban consumer demand.**

The fieldwork highlights a variety of aspects that justify consumers' motivation to purchase agri-food products sold by the network through a virtual sales channel—via WhatsApp. Even considering the variety of options available for such purchases, such as supermarkets, which often provide more comfortable, safer,

practical, and convenient facilities. Additionally, the option to make purchases on any day of the week and with extended hours is available. Furthermore, there is the possibility of accessing discounts, albeit occasionally, on some fresh produce items. This is coupled with the farmers' motivation to produce healthy food and participate in this strategy.

According to some interviewed consumers, they came to know about the Xique Xique Network through various means. In the interviews, it was commonly mentioned that the main way consumers learned about the products sold by the network was through friends, usually from the workplace

“I found out through a friend. A coworker who is also a consumer. I would always talk about it, you know. I would say: people, here in Mossoró, we want to buy some organic greens... In the supermarket here in Mossoró, there's one that every now and then offers them. But it's mostly lettuce, green leaves, spinach. But they don't always have everything. And the quality too, right? She introduced me to the Xique Xique Network, and that's when I got in touch. They added me to the WhatsApp group.” (E8, verbal communication).<sup>3</sup>

There are also testimonies about how people came to know about the network, for example, through relationships with farmers via involvement in university extension projects in agrarian reform settlements:

“I'm a mentor for a social management project, and this PET project works with management in family farming. So, when we went to the settlements to give workshops, I learned about the network through the farmers. And I started buying from them. The WhatsApp group is one of the ways I place my orders.” (E17, verbal communication).<sup>4</sup>

Another consumer from Mossoró reported that they learned about the network and the sale of organic products through a WhatsApp group formed by friends. The group was named “Doctor Health.” This collective mainly focused on content about health and quality of life, including advice on healthy eating, supplementation, etc. The group consisted of people from Mossoró, Fortaleza, São Paulo, among other cities. Through this group, a participant mentioned that the network was selling organic products in Mossoró.

Contextualizing my search for the network, It wasn't simply that I went there because it was a place that sold vegetables and fruits. There was the issue of organic products, which came from the awareness raised in the WhatsApp group. Additionally, I had this political consciousness regarding rural workers, this social aspect. So it all came together, as we say here, “the honey and the gourd.” [...] The network was exactly what I thought it

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<sup>3</sup> E8 Consumer. Interview VIII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (25 min.).

<sup>4</sup> E17 Consumer. Interview XVII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (16 min.)

would be; it had organic products and a philosophy behind it. (E16, verbal information).<sup>5</sup>

The dynamics of purchasing products from the network through a WhatsApp group are largely perceived by consumers as a mechanism that provides access to healthy foods. This is seen as a significant reason for using this channel for purchases. In fact, regarding the motivation to frequent these spaces, healthy foods are the most emphasized aspect, as highlighted in field research:

The primary reason is that they sell organic products. Quality organic products are crucial, given the current situation of extensive pesticide use in agriculture." (E7, verbal information).<sup>6</sup>

I have always been concerned about healthy eating, particularly concerning pesticide use. Since the network sells products without pesticides, I became interested in acquiring these products [...] The network was fundamental in reorganizing my consumption." (E12, verbal information).<sup>7</sup>

The reference to healthy products is identified as an institution valued by consumers and used to justify their choice to purchase agro-food products from the network. This reference is also linked to the justification of the quality of the foods sold. Beyond consumers' interest in supporting farmers and the local economy, the motivations are related to valuing foods whose origin is rural and produced by local farmers. This also emphasizes the importance of a contextualized location, for example, a place that produces healthy foods and improves the living conditions of those who produce them. In other words, "it is very important to know that we are contributing to the income of these families." It is noteworthy that the motivation establishes a direction wherein it is not enough to offer a healthy food item; it is essential to observe who produces it and ensure fair compensation. Without a fair price, for instance, it is impossible to contribute to the income of these families. These aspects constitute a synthesis of the notion of social justice.

Among the factors justifying consumers' motivations, in addition to the fact that the products are organic and associated with health concerns, there is also a recovery of a memory linked to rural origins or a connection to rural life.

In the context of my search for the network, it wasn't like, I'll go there because it's a place that sells vegetables and fruits. There was the organic aspect, which came from the WhatsApp group, this awareness. And also, this political awareness I had about the rural worker, this social side. So it all came together, as we say here, 'the honey and the gourd' [...] The network was exactly what I thought, exactly what I wanted. It had organic

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<sup>5</sup> E16 Consumer. Interview XVI. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (8 min.).

<sup>6</sup> E7 Consumer. Interview VII. [Jun. 2019]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (33 min.).

<sup>7</sup> E12 Consumer. Interview XII. [Jun. 2019]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (14 min.).

products, and there was a philosophy behind the network.” (E16, verbal communication).<sup>8</sup>

Among the main motivations for acquiring products sold by Rede Xique-Xique, as noted by Nunes *et al.* (2018), the purchase of healthy foods (natural, ecological, organic agroecological, or pesticide-free) produced by local farmers stands out. This stems from concerns about health and expectations for quality of life. The values highlighted above are those in which the economy is rooted in the marketing spaces organized by Rede Xique Xique. These values justify the motivations of consumers to participate in this dynamic.

For the interviewed farmers, the motivation to sell their products through various channels organized by the Rede has diverse origins. For instance, for one farmer who participated in the following interview, the motivation arose from the continuity of a dynamic that had already been established by his father. Additionally, it was a strategy to improve their living conditions, as selling labor to a company in the region had not been a positive experience:

"My father is the founder of the Rede. I continued it. We don't have college degrees or anything like that. We have to find a way to live, to survive. But to truly survive. I spent six years working in a company. I received nothing. It's still in court to this day. So I came here to plant vegetables. I'm not going to work for anyone else again. The one time I worked, I didn't get paid. I'll go back to doing what I used to do. I went back in 2015." (E14, verbal information).<sup>9</sup>

While access to institutional markets, as highlighted by Gomes *et al.* (2021), through initiatives like PNAE is considered important, farmers face challenges during school recesses and vacations when they lose access to a significant marketing channel. Since cultivation is based on natural cycles, as stated by Nunes *et al.* (2018), temporary suspensions in food supply jeopardize their survival strategies, which underscores the importance for farmers to access as diverse a range of marketing channels as possible. These accounts from farmers, captured during the field research, reveal aspects that constitute their motivations to produce food and sell it in the spaces organized by the Rede. In varying degrees, the need to improve their living conditions is present. This aspect significantly differs from research conducted in European, North American (Renting; Marsden; Banks, 2017; Ploeg, 2016), and even Brazilian (Cassol; Salvate; Schneider, 2016; Cassol, 2018) contexts, which identify different primary motivations for seeking alternative market-building strategies.

Farmers emphasize that their main motivations for attending fairs include the continuation of the dynamics established by their fathers, as well as strategies to enhance their living conditions. This also relates to aspects of food and nutritional sovereignty, as the dimension of production for self-consumption is fundamental in improving these conditions. Moreover, there is the opportunity to generate some income, typically used for purchasing essential goods for the household or for

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<sup>8</sup> E8 Consumer. Interview VIII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (25 min.).

<sup>9</sup> E14 Farmer. Interview XIV. [Apr. 2021]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (12 min.).

maintaining and/or investing in the production unit. The values highlighted above are rooted in the marketing spaces organized by Rede Xique Xique. These values justify the motivations of consumers and farmers to participate in this dynamic.

#### 4.2 Values that Attribute Quality to Products

Quality arises from a process of historical and cultural rooting. It is a socially shared definition among the participants in the social network engaged in building new markets, for instance. It is also grounded in consumers' knowledge of how production is organized and who carries it out. For example, the freshness, durability, and flavor of a quality product constitute its intrinsic aspects and are part of a common frame of reference for producers and consumers, enabling them to ascribe distinctive quality.

Quality is also conditioned by a process of artisanal production, exercised by farmers in various forms. The process described by the following farmer aptly expresses the notion of building and maintaining a base of self-controlled resources, as defined by Ploeg (2008). The practices adopted by farmers are essential for achieving coproduction, which refers to the mutual and systematic transformation between humans and living nature. It involves the configuration and reconfiguration of social and material resources that make this possible. The interactions that farmers establish, their experiences, and the dynamics that the Rede fosters—such as the realization of exchanges—contribute to strengthening the resource base and coproduction. Building and maintaining a self-controlled resource base and coproduction are fundamental to defining the freshness, durability, and flavor of a product with distinctive quality.

In the production process of cheeses and fruit pulps, these aspects are evident:

[...] the ricotta I make today follows the normal process; I make it directly from milk. I don't use whey like those other guys do. That's another method. I adapted, right? At first, I used to lose some batches. There are days [...] fermentation relies solely on lemon and vinegar. I learned this from a course conducted by a guy who came from Bahia, brought by the people from World Vision. He is from a vegetarian family, right? And they had these tricks to make substitutions." (E3, verbal information).<sup>10</sup>

Both the particularities of primary production and that of small-scale agribusiness can confer differential quality, allowing for greater sophistication of products. This uniqueness of agro-food products, produced and marketed by farmers participating in the Xique Xique Network, is also part of a sociomaterial<sup>11</sup> infrastructure. It is socially defined and subsequently materialized in the product by

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<sup>10</sup> E3 Farmer. Interview III. [Apr. 2021]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (16 min.).

<sup>11</sup> Embedded markets are created, structured, and sustained through these infrastructures: "It is a set of processes and instruments (the way production, processing, certification, the physical structure of the point of sale, etc. are carried out), as well as specific regulations used to facilitate the circulation of products and services between places and people" (Ploeg, Jingzhong; Schneider, 2012).



the farmer through primary production and/or product processing (Ploeg, 2016). Another testimony from the field research reveals how part of this process unfolds:

We strive to work as naturally as possible. Why? Because in the case of our pulps, we work with them in their natural state. We don't add water, we don't add food coloring, we don't add preservatives. The only chemical process they undergo is sterilization, which is required both by the ministry and health surveillance. The fruit is soaked in chlorinated water to ensure sterilization and post-washing to remove excess chlorine so that it can be processed. This results in a natural product. Whether you make juice with our pulp or with the whole fruit, you'll taste the same flavor. There's no difference. That's why they love buying our pulp. In contrast, industrial pulp, which is not pasteurized and sold by some companies in supermarkets, contains water. Most of the fruits I use in the pulp are produced by me. We've done courses through SENAR. I've also taken a microbiology course at the IF (Federal Institute of RN, Apodi) to better understand the development of bacteria in pulp production." (E15, verbal information).<sup>12</sup>

It is noteworthy that the production of distinctive foods requires a specific type of agriculture, carried out through a cultural repertoire expressed in the form of resources, skills (know-how), and specific social relations, as evidenced in field interviews. These factors enable a differentiated production process compared to the dominant standard adopted by the globalized corporate food regime. In the various accounts from farmers, participation in the Network is crucial for enhancing the social capital of these agents. For instance, it facilitates exchanges between farmers, including those from other states, to share their knowledge. It fosters the construction of bridges and linkages with academic institutions, such as federal institutes, that operate in the territory, as well as with governmental, non-governmental, and para-governmental organizations. These dynamic drives different initiatives from farmers from a productive, economic, and social strategic perspective. The spatial and temporal dimensions enable the production of local, fresh, and seasonal foods. Local ecology can facilitate the production of foods with particular qualities unique to that space. The origin of the food (spatial relocalization) can also help counter its homogenization process, which dominates global hegemonic markets. Food with good provenance allows for longer preservation of color, texture, aroma, and flavor. Therefore, provenance is an attribute that defines the quality of food.

Intangible quality relates to the future consequences of the overall process that creates the product. As a result, consumer valuation of quality can be redirected, shifting their focus away from the product itself. Thus, new constitutive aspects of qualification may become the social and environmental conditions of production (Wilkinson, 2016). The consumer's interview signals this direction.

Quality is about provenance, where it comes from. There isn't always tomato available in the Xique Xique network. I consume a lot of tomatoes at home. When I don't get organic, I consume much less—maybe one or

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<sup>12</sup> E15. Farmer. Interview XV. [Apr. 2021]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (22 min.).

two. We know that tomatoes and bell peppers are among the products that accumulate the most pesticides, right? [...] It's quite common now to see cherry tomatoes in our region. So, I asked the girls. They said these come from a couple in São Miguel. They even showed me a video of where they live. They grow tomatoes, because the climate there is good, right? They cultivate cherry tomatoes, cucumbers, and other things. I was fascinated. A young couple investing in this area." (E8, verbal information).<sup>13</sup>

The consumer's account, highlighted above, regarding the acquisition of cherry tomatoes—previously uncommon in Mossoró—sold by the agroecological store located nearly 200 km away in São Miguel, exemplifies one of the cases of spatially extended short agro-food chains. The use of video to show where, who, and how the product was produced demonstrates how connectivity in economic transactions can be established. Due to food crises and the generally increasing use of pesticides, many consumers have started to adopt a more reflective stance towards food quality. Typically, they view industrialized foods as less safe and nutritious. This manifests in a belief that consuming locally produced foods is healthier, as they are perceived to be of higher quality (Gurgel, Nunes, Silva, 2022).

However, it should be noted that it is not just the fact that production occurs locally that ensures a healthy product free from pesticides, genetically modified seeds, and chemical fertilizers, for instance. It also depends on who performs the production and how, meaning the local product must be contextualized within a dynamic that governs its production process. The diversity of products offered at the fairs organized by the Network is another highlighted aspect that attributes quality to these marketing channels:

"We strive to consume a good variety of vegetables in our daily diet, aiming for healthy eating. We avoid industrialized products and try to maintain a more natural diet, and the foods we buy are rich in nutrients, allowing us to have a healthy daily diet." (June 2018). (E12, verbal information).<sup>14</sup>

The diversity expressed by the consumer refers to the breadth of offerings of fruits, vegetables, and legumes, but it is also anchored in the regular supply and expectation of acquiring healthy foods. The diversity of products provided by farmers at the fairs organized by the Network also results from a long journey they have undertaken. Some carry the legacy left by their parents.

The greater the product diversity, the richer the overall nutritional composition. This leads to a more balanced diet for consumers. Since 1985, I believe, my father has been practicing without pesticides [...] and today we cultivate 25 different types of fruits and vegetables. That's quite a lot, isn't it? (E14, verbal information).<sup>15</sup>

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<sup>13</sup> E8 Consumer. Interview VIII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (25 min.).

<sup>14</sup> E12 Consumer. Interview XII. [Jun. 2019]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 .mp3 file (14 min.).

<sup>15</sup> E14 Farmer. Interview XIV. [Apr. 2021]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 .mp3 file (12 min.).

Flavor is another aspect that confers quality on marketed foods. This results from the processes of improvement and maintenance of self-controlled resources and co-production carried out by farmers. These are recurrent initiatives adopted within the dynamics of the Network, already highlighted in the artisanal processes of producing ricotta cheese and fruit pulp. They provide distinctive characteristics to the agro-food products marketed. The concern of consumers and farmers for health and the pursuit of quality of life is expressed through interviews, revealing a search for healthy and pesticide-free foods—values activated to ensure the quality of food.

When speaking of quality, I believe we immediately think of health. That is what comes to my mind. When I consume something of quality that balances my diet, health is the first thing that comes to mind. (E5, verbal information).<sup>16</sup>

Interviewed consumers associate their rural origins or ties to rural life with the quality of marketed products. In this case, the reference to a recent past [...] seemed very familiar, reminiscent of the products from my parents' backyard. The taste and smell felt very much the same, which attributes quality to the agro-food products acquired. Another reference is: "I also come from an agricultural background [...] I have an understanding. We are aware of many things." This statement implies a prior knowledge concerning the attribution of quality to marketed products. These aspects reinforce and reproduce the marketing spaces organized by the Network.

When I started consuming, it felt very familiar with products from my parents' backyard. The flavor and smell were very similar. Where you source it from is almost 100% trustworthy. (E8, verbal information).<sup>17</sup>

The field formed by transactions (the circulation of products, the specificities of these products, the characteristics of the circuits through which they circulate, and the consumers) is fundamental in the construction of immersed markets. For the differentiation embedded in the product to be transferred to the consumer, the existence of this actor is essential. The consumer must have the capacity to understand, appreciate, legitimize, and value the distinctive attributes embedded in the product, as well as the willingness to purchase and consume it with these characteristics.

In summary, quality is associated with distinct values and related to multiple aspects. Therefore, these aspects act as values and are activated by consumers and farmers to confer quality to the products marketed by Network Xique Xique: the origin of agro-food products, sustainable agriculture (ecological, natural, organic, agroecological, or pesticide-free), family farmers, local production, the origin or ties of consumers with rural life, diversity, freshness, durability, and flavor. These are values deeply rooted in the marketing spaces organized by Network Xique Xique. They attribute quality to food and guide economic transactions.

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<sup>16</sup> E5 Consumer. Interview V. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 .mp3 file (45 min.).

<sup>17</sup> E8 Consumer. Interview VIII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (25 min.).

Interviewed consumers generally believe that the agro-food products marketed in spaces organized by Network Xique Xique possess health benefits when compared to those sold through supermarkets. This indicates that they trust that the products sold through the Network were produced without the use of pesticides, and thus, can be considered ecological and healthier.

[...] What leads me to buy from there is the trust that the products are organic and of high quality. They come from good sources. I purchase via WhatsApp, but I trust the process. For example, if the family farmer does not have something, the Network does not have it either. It is often the case that we ask when tomatoes will arrive, and they respond that the farmer has given a specific deadline. We know this is not a fabricated story; it is a serious matter. (E8, verbal information).<sup>18</sup>

The trust in farmers and the Network also stems from years of ongoing relationships between these agents, along with the establishment of transparent practices. This trust is built upon a shared representation among consumers regarding the agro-food products marketed in the spaces organized by Network Xique Xique. The research demonstrates that the market for agro-food products from Network Xique Xique is a social construction immersed in a normative framework, where social and cultural values justify consumer motivations for purchasing agro-food products from the Network and are activated to confer quality attributes to these products. Consequently, this initiative can be characterized as an immersed agro-food market.

It is constructed by farmers and consumers through social struggles that manifest in the development of a specific agricultural style, product diversity, high quality, food processing, the creation of markets, and the inclusion of new consumers. These are all examples of these struggles. On one hand, it aims to improve the living conditions of farmers; on the other, it offers consumers healthy food. The emerging spaces facilitate the circulation of products and services, but do not fully conform to the rules, norms, and conventions of the globalized corporate agro-food system.

Regarding the initiatives for operationalizing the marketing of family farming and the creation and management of digital platforms, the experience of Network Xique Xique stands out due to its increasingly broad digitalization processes underway in rural areas. Its trajectory in the social construction of immersed markets, particularly digital food markets, brings an innovative principle, as it involves a mobilizing strategy that highlights the role of social organizations, especially cooperatives, associations, and solidarity consumption groups. Furthermore, its actions consider the habits and behaviors of consumers of family farming products who participate in short circuits at free markets and digital and online marketing spaces.

However, the innovations and novel developments that contributed to this process emerged from a promising partnership between organizations of family farmers and Extension projects from the State University of Rio Grande do Norte


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<sup>18</sup> E8 Consumer. Interview VIII. [Jan. 2022]. Interviewer: César José de Oliveira. Mossoró, 2022. 1 audio file .mp3 (25 min.).

(UERN) and the Federal Rural University of the Semi-Arid (UFERSA). This partnership facilitated extension services that brought knowledge and science to specific dimensions right to the farmers' gate, creating an environment characterized by the integration of family farming with small-scale agro-industry and coordinating a cooperative to facilitate market access. The cooperative is named "Cooperativa de Comercialização Solidária Xique Xique (COOPERXIQUE)",<sup>19</sup>

Despite the diversification of foods offered by COOPERXIQUE, the delivery strategy, according to a manager from Network Xique Xique, during the initial weeks of the COVID-19 pandemic when distributing baskets to urban households, recorded variations of 35 to 40 baskets, peaking at over 120 baskets per week, and then decreasing to 60 to 65 baskets delivered to consumers' homes. Nonetheless, the cooperative continues to expand its actions in building immersed markets and digital food markets within family farming, as its operations are not limited to physical store distribution and home deliveries. In addition to marketing through the digital platform, the Network has a catalog of varied product requests, as shown in Chart 1, and to meet demand, it is supported by an agricultural production structure linked to it, consisting of over 56 family units in 32 rural communities and agrarian reform settlements.

Chart 1: Variety of Products in the Xique Xique Network Catalog

		
CATEGORIES	ITEMS	PRODUCTS
Beverages	5	- Hibiscus Ginger Kombucha and Lemon Ginger Kombucha.
Meats and Seafood	9	- Tuna Steaks, Goat Offal, Tilapia Fillet, Free-Range Chicken, Pork Loin (whole), Clam, Salami (individual), and Tilapia Steaks.
Sweets and Jams	17	- Caju in syrup, Kikan Orange Compote, Creamy Banana Sweet, Creamy Caju Sweet, Creamy Mango Sweet, Banana Sweet, Caju Sweet, Osana Caju Sweet, Creamy Coconut Sweet, Milk Sweet, Papaya with Coconut Sweet, Osana Acerola Jam, Osana Guava Jam, Mangaba Jam, Passion Fruit Jam, and Pepper Jam.
Fruits	12	- Apple Banana, Pacovan Banana, Silver Banana, Chunk Coconut, Grated Coconut, Dried Coconut, Green Coconut,

<sup>19</sup> It constitutes the economic arm with the commercialization platform available at the following website: <https://redexiquexique.wixsite.com/redexiquexique>, as well as the virtual store at this link: <http://redexiquexique.resf.com.br/>. According to a member of the Xique Xique Network, consumers place their weekly food orders through the digital platform managed by COOPERXIQUE by accessing and filling out the form available at: <https://forms.gle/kTrQN9fb8PMRsvaA>. All orders are recorded and accumulated throughout the week, and the form with the orders is reviewed by COOPERXIQUE every Monday, when the number of food baskets is prepared for delivery at the physical COOPERXIQUE store, or delivered by motorcyclists to the requesting households..



		Papaya, Mango, Coité Mango, Organic Watermelon, and Organic Melon.
Grains and Cereals	19	- Peanut, Red Rice, Superior Coffee, Traditional Coffee, Roasted Cashew Nut, Brazil Nut, Raw Cashew Nut, Roasted Cashew Nut, Corn Cream, Cassava Flour, Fava Bean, Green Bean, Pure Corn Floc, Sesame Flour, White Sesame, Brown Sesame, Fresh Gum, Cereal Porridge, and Corn Porridge.
Dairy, Eggs, and Derivatives	9	- Milk (liter), Land Butter (liter), Land Butter (200ml), Free-Range Eggs (dozen), Cheese Curds (kg), Butter Cheese (kg), Ricotta Cheese with Oregano (g), Ricotta Cheese without Oregano (g), and Cream Cheese (g).
Honey	11	- Propolis Extract, Honeycomb (250ml), Honeycomb (500ml), Honeycomb (700ml), Bee Honey (liter), Bee Honey (300ml), Caju Honey (250ml), Jandaíra Honey (157ml), Honey Sachet (100g), Dehydrated Bee Pollen (250g), and Propolis Ointment (individual).
Sauces and Condiments	10	- Pork Lard (200g), Cherry Tomato Paste (220g), Flavored Sea Salt, Hot Sauce (150ml), Cherry Tomato Sauce, Coconut Oil, Swamp Coconut Oil, Sesame Oil, Powdered Monkey Pepper, and Annatto (100g).
Breads, Cakes, and Cookies	13	- Oat and Cocoa Cookie, Cocoa Cookie, Cashew Nut Cookie, Angel Drop Cookie, Sensation Cookie, Banana Cake, Potato Cake (slice), Jerimum Cake (slice), Milk Cake (slice), Cassava Cake (slice), Fitness Cake (slice), Goat Milk Bread, and Whole Goat Milk Bread.
Fruit Pulp	7	- Acerola Pulp, Cajarana Pulp, Caju Pulp, Guava Pulp, Graviola Pulp, Mango Pulp, and Tamarind Pulp.
Vegetables and Greens	34	- Watercress (bunch), Iceberg Lettuce (head), Curly Lettuce (head), Red Lettuce (head), Basil (bunch), Garlic (head), Leek (bunch), Carrot Potato (kg), Red Sweet Potato (kg), Jerimum Potato (kg), Purple Potato (kg), White Onion (kg), Red Onion (kg), Chives (bunch), Carrot (kg), Cilantro (bunch), Kale (bunch), Spinach (bunch), Orange Leaf (bunch), Jiló (kg), Cassava with Peel (kg), Basil (bunch), Green Bell Pepper (kg), Pepper (kg), Black Pepper (g), Green Bell Pepper (package), Okra (package), Radish (g), Arugula (bunch), Celery (bunch), Parsley (bunch), Cherry Tomato (g), and Table Tomato (kg).
Syrups and Medicinal Herbs	10	- Lemongrass (bunch), Lemon Balm (bunch), Mint (bunch), Peppermint (bunch), Mallow (bunch), Moringa Powder, Angico Syrup, Cumaru Syrup, Banana Mangará Syrup, and Pega-Pinto Syrup.

Source: Rede Xique Xique, 2022.

Regarding institutional affiliation, COOPERXIQUE is part of the framework of cooperatives within the National Union of Family Agriculture and Solidarity Economy Cooperatives (UNICAFES). Being part of the sphere of solidarity economy cooperatives, the cooperative entered into Contract No. 055/2020 with the Government of the State of Rio Grande do Norte in 2020, the year the COVID-19 pandemic began. This initiative aimed to operationalize government purchases through the "Simultaneous Donation" modality of the Public Procurement Program

for Family Agriculture and Solidarity Economy (PECAFES), resulting from a legislative project regulated by State Decree No. 29,893 of 2019. The project aimed to distribute 5,000 basic food baskets to 1,667 quilombola families in Rio Grande do Norte.

This was one of the initiatives of the extension action that involved universities, leading to the creation and internalization of innovations and improvements in accessing institutional markets in Rio Grande do Norte. This occurred during a period when, in addition to the pandemic, there was a countermovement in national politics aimed at dismantling policies, including those focused on family agriculture. To facilitate the marketing of food from the new PECAFES, a digital platform called the Regional Information System for Family Agriculture (SIRAF/Northeast) was created within the University of the State of Rio Grande do Norte (UERN) for the entire Northeast region. The SIRAF-NE began operations with PECAFES as its target market, with food processed in small agro-industries and packaged for commercialization, as shown in Figure 1.

Figure 1: Packaging of the Xique Xique Network for the Storage and Marketing of Red Rice



Source: Photo provided by the collection of the Xique Xique Network, 2021.

The process of socially constructing immersed markets and digital food markets presents a significant challenge for family agriculture and its collective organizations, particularly within the Xique Xique Network. The increasing importance of consumer roles, combined with issues of planning and logistics, must be addressed by associating processes of recovering and structuring food production chains. This is confirmed by the urgent adjustments needed for inversion; previously, food was produced in rural areas and subsequently organized and transported by family farmers to urban markets for sale at open-air markets. However, during the COVID-19 pandemic, producers began delivering directly to urban households. Recently, open-air markets have resumed and expanded in cities, as demonstrated by the list of markets organized by the Xique Xique Network in Chart 2.

Chart 2: Economic Transactions Conducted by the Xique Xique Network by Municipality (Information Before the COVID-19 Pandemic, March 2020)

1. **MOSSORÓ** - Conducts three markets, two of which are weekly: one at the Federal Institute – IFRN, Mossoró, and another at the headquarters of the Xique-Xique Network - RXX. A third market is held biweekly in the Nova Vida neighborhood. Additionally, there are four contracts with the IFRN in Mossoró for food supply under the National School Feeding Program (PNAE). One contract is with the IFRN in Mossoró, and three are with the IFRN in Natal, with a statewide scope. Generally, the markets and these contracts provide: fruits and vegetables, meats, processed foods, and cakes.
2. **APODI** - Holds two weekly markets, one on the side street next to the municipal market on Saturdays, coinciding with the city's traditional open market, and another at the IFRN headquarters. Farmers also supply products for the RXX markets in Mossoró, as well as for the three contracts under PNAE with the IFRN/State. The products typically sold include fruits and vegetables, meats (slaughtered free-range chicken), eggs, cheese, sweets, fruit pulps, cakes, fish, and red rice.
3. **JANDUÍS** - Holds one weekly market adjacent to the city's open market. Within the municipal market, the network occupies a stall that operates as an agroecological store. The most commercially available products include fruits and vegetables, free-range chicken, eggs, fruit pulp, and sugarcane juice.
4. **MESSIAS TARGINO** - Participates in the city's weekly open market. The predominant products in the market are fruits and vegetables, free-range chicken, and eggs.
5. **TIBAU** - Sends its products to the agroecological store of the network in Mossoró. The predominant products in the market include fruits and vegetables, free-range chicken, and eggs.
6. **GROSSOS** - The predominant products in the market are fish, shellfish, and handicrafts. Products are sent to the store in Mossoró for sale to city consumers and to fulfill contracts under the PNAE.
7. **BARAÚNA** - The predominant product in the market is honey. Products are sent to the store in Mossoró for sale to city consumers and to fulfill contracts under the PNAE.
8. **SÃO MIGUEL** - Holds two markets per week, one on Wednesdays and another on Saturdays, adjacent to the city's open market. The predominant products in the market are fruits and vegetables. Typically, products are sent to the store in Mossoró for sale to city consumers and to fulfill contracts under the PNAE. The products are registered as a Social Control Organization (OCS), which is a certification issued by the Ministry of Agriculture (MAPA) indicating that the farmer is engaged in organic production.
9. **SÃO MIGUEL DO GOSTOSO** - Holds a weekly market on Mondays adjacent to the city's open market and sells through the PNAE. The predominant products in the market include fruits and vegetables, cassava flour, and tapioca gum.



10. **FELIPE GUERRA** - Farmers sell at the city's open market and send products to the network's store in Mossoró for sale to city consumers and to fulfill contracts under the PNAE. The products sold are fruits and vegetables and red rice.
11. **PENDÊNCIAS** - Participates in the weekly open market and sells products to the municipal government through the PNAE. The products sold include fruits and vegetables, free-range chicken, eggs, fish, and handicrafts. Occasionally, products are sent to the network's store in Mossoró.
12. **UPANEMA** - Participates in the weekly open market and sells products to the municipal government through the PNAE. The products sold include fruits and vegetables, free-range chicken, eggs, and fish.
13. **NATAL AND PARNAMIRIM** - Occupies one of the stalls at Cecafes, Natal, and participates in fairs and events. The products sold are handicrafts.

Source: Rede Xique Xique, 2022.

Strategies and initiatives such as the social construction of immersed markets and digital food markets have traversed paths that require coordination, leading to intense and continuous learning processes for family farmers and their collective organizations. Considering the characteristics of digital food markets, the processes involved in their construction increasingly demand the qualification of actors (family farmers, extension workers, cooperative managers, operators, and administrators of digital platforms, etc.). Additionally, there is a need to adopt more agile economic transaction methods in relation to consumers, such as the use of cards and bank accounts, among others. For the supply of food in urban areas and in times of crisis, legal innovations, such as certification for the insertion and construction of markets, particularly those processed in small agro-industries, are necessary. This serves as a fundamental requirement for establishing trust relationships between family farmers who produce in rural areas and consumers who purchase in urban settings, with the consumer playing an increasingly important role in this context.

## 5. Consideration

This article aimed to analyze the social construction of immersed agro-food markets and digital food markets, considering the perspectives of farmers and consumers from the Rede Xique Xique in Rio Grande do Norte. It sought to understand how the search for agro-food products occurs and the main motivations for accessing these markets, as well as how the commercialization mechanisms, such as digital platforms and other means, are constructed. Additionally, it aimed to highlight the social and cultural values invoked by family farmers to attribute quality to the products, examining how trust is generated between farmers in rural areas and consumers in urban settings.

The analytical framework of new economic sociology was adopted, which presupposes markets as social constructions and embraces the notion of embeddedness as a social process, built upon the mobilization of social and cultural values that attribute meaning and significance to economic practices and actions. We also utilized the immersed markets approach to understand the dynamics and nature of the counter-movements of consumers and farmers in the construction of new markets. Thus, qualitative research was conducted with an exploratory and descriptive character, aiming to clarify concepts and notions regarding the social

construction of immersed agro-food markets. This approach delved into the meanings of actions and social relationships, emphasizing beliefs, values, and attitudes.

The empirical research, conducted in the municipalities of São Miguel, Apodi, Mossoró, and São Miguel do Gostoso, reveals the normative framework in which the Rede Xique Xique is rooted. It consists of values that justify consumers' motivations to purchase agro-food products from the network: healthy foods (natural, ecological, organic, and/or agroecological) produced by local farmers and a concern for health. It is also characterized by values that confer quality attributes to the products: the origin of agro-food products—sustainable agriculture (ecological, natural, organic, or agroecological) from family farmers and local production; cultural practices for handling products (picking, smelling, and tasting); diversity; durability; and flavor. Furthermore, values that generate trust in the relationship between farmers and consumers include friendship, mutual knowledge, and healthfulness.

The research also reveals that the agro-food market of Rede Xique Xique is a social construction immersed in this normative framework. Therefore, it represents a social initiative that can be characterized as an immersed agro-food market and, more recently, as a digital food market. These markets are constructed by farmers and consumers through their collective organizations (cooperatives, associations, networks, etc.), expressing themselves through the development of a specific style of agriculture, product diversity, high quality, food processing, the creation of free fairs, and the inclusion of new consumers. On one hand, it is evident that farmers are motivated by improving their living conditions. On the other hand, there is an interest in food security and offering consumers healthy foods. The spaces that emerge from this allow for the circulation of products and services, which do not entirely adhere to the rules, norms, and conventions of the globalized corporate agro-food system.

It is noteworthy that producing quality food requires a specific type of agriculture, carried out through a distinctive cultural repertoire expressed in terms of resources and skills (know-how) and specific social relations, as evidenced in the field interviews. These factors enable a differentiated production process compared to the dominant standards adopted by the globalized corporate agro-food system. The research also indicates that in constructing immersed markets and digital food markets, the transaction field (the circulation of products, the specificities of these products, the characteristics of the short circuits through which they circulate, the consumers, digital platforms, and other mechanisms of social networks, etc.) is fundamental, where economic actions and transactions can occur through virtual commerce, including via WhatsApp. For the differentiation inherent in the product to be conveyed to the consumer, the existence of this actor is essential. They must possess the ability to recognize, appreciate, legitimize, and value the distinctive attributes incorporated into the product, as well as the willingness to purchase and consume it with such characteristics.

Finally, it is emphasized that the notion of "good living" (A choice for good living: the social construction of agro-food markets in the context of Rede Xique Xique, Rio Grande do Norte) is associated with contesting the current methods of producing and marketing food. It expresses a preference for valuing sustainable agriculture (ecological, natural, organic, agroecological), wherein the production of ecological food is carried out by family farmers, preferably within a localized context.



This ensures that the commercialization of these foods provides a fair price for both the farmer and the consumer and enables an improvement in the farmers' living conditions. Moreover, it ensures that the dietary intake of both parties comprises healthy foods (ecological, natural, organic, or agroecological) due to a heightened concern for health and the pursuit of quality of life.

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