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# Quesillo: a cultural and economic legacy in Oaxaca through the social and solidarity economy

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## 1 Introduction

Quesillo, also known as Oaxaca cheese, is an artisanal product that originated in Reyes Etlá and has expanded to other localities in the Central Valleys region of Oaxaca (Camacho-Vera et al., 2020). Its production has been transmitted from generation to generation, which has allowed the conservation of traditional techniques that are an integral part of the Oaxacan cultural identity. However, artisanal production faces significant challenges due to unfair competition from industrial cheeses that imitate its flavor and texture, which puts the economic viability of local producers at risk (Domínguez-López et al., 2011; Espejel-García et al., 2018). This situation has led many local producers to see their income diminished and face the difficulty of marketing their products in a market that increasingly values the artisanal less and less.

More strategies are needed to improve the quality and recognition of artisanal quesillo, contributing to this problem. Many consumers need to be made aware of the benefits of choosing authentic quesillo over its industrial counterparts, which limits sales opportunities and product valorization. Quesillo stands out for its meticulous production process and its focus on the quality of the ingredients, which gives it a unique flavor and aroma not found in industrial cheeses. The price difference also reflects this distinction: quesillo is more expensive due to its labor-intensive process and the superior quality of its ingredients, while industrial cheese is affordable but lacks the distinctive character offered by the artisanal product (see Table 1). In addition, the limited dissemination of information about artisanal production and its socioeconomic benefits has made it difficult for producers to obtain a fair price for their work (Espejel-García et al., 2018). Quesillo production also fosters job creation in other areas, such as transportation and marketing. As a product consumed locally and in broader markets, its production generates a value chain that benefits several sectors of the local economy (Patiño-Delgado et al., 2022). However, for this value chain to be sustainable, producers must receive support regarding training and access to fairer markets.

The social and solidarity economy is presented as a viable alternative to face these challenges. This model promotes cooperation and solidarity among producers, encouraging the creation of networks that allow them to improve their living conditions and strengthen their economic autonomy (Landaburú-Mendoza et al., 2024; Boadu et al., 2024). This model seeks to encourage the creation of cooperatives that allow them to join efforts and resources. By working together, producers can improve the quality of their products, reduce costs, and access larger markets.

Cooperatives would not only help improve the production and marketing of quesillo but would also empower communities. Producers can establish support networks through the social and solidarity economy that allow them to share knowledge and experiences, thus strengthening their capacity to compete in the market. In addition, this model promotes the inclusion of women and youth in quesillo production, which contributes to their empowerment and creates a more equitable economy (Boadu et al., 2024). Quesillo production thus becomes a tool for community development, as it generates income, preserves cultural traditions, and promotes environmental sustainability.

## 2 Quesillo in the local economy

Quesillo production contributes significantly to the local economy. According to recent data, Oaxaca cheese represents ~10% of total cheese production in Mexico, equivalent to about 40,778 tons per year (see Tables 2, 3; Agudelo-López et al., 2021; BM Editores, 2024). This production volume generates direct employment for cheesemakers and activates other economic sectors, such as transportation, wholesale, and gastronomic tourism. In communities where quesillo is produced, such as Reyes Etna, Nazareno Etna, and other towns in the Central Valleys, this artisanal cheese is a vital source of employment. Many families depend on the production and sale of quesillo as their primary source of income. This process involves the cheesemakers and creates employment opportunities for other community members. In a survey conducted by us in 2023 to quesillo producers in some regions of the Etco Valley, we found that of 27 producers surveyed, 27% of them have been working in this family business for more than 10 years, and where more than 96.3% inherited from their parents the knowledge of how to prepare quesillo. 51.9% of the producers commented that they have a production of more than 200 L of cow's milk per day, which must be processed into the final product. From the milk collection to the final product's distribution, quesillo generates an ecosystem of work that benefits many people (see Table 4).

Cheesemakers often rely on the help of family members and neighbors, which reinforces social cohesion within the community. Young people often participate in the learning process, ensuring that production techniques are passed on from generation to generation (Villegas de Gante et al., 2014). This collaborative approach not only strengthens the local economy, but also fosters a sense of belonging and pride among producers. The artisanal production of quesillo encourages the sustainable use of natural resources. The region's pastures, used to feed cattle, are vital for the production of high-quality milk, which in turn translates into

a quesillo that is superior in taste and texture. This approach not only benefits producers, but also promotes the conservation of the environment and local biodiversity.

Quesillo has begun to attract the interest of gastronomic tourism; visitors to Oaxaca seek to experience the state's rich culinary tradition, and quesillo is an essential component of this experience. Restaurants and local markets offer dishes that highlight this cheese, which not only promotes its consumption, but also benefits producers by increasing demand. This phenomenon has allowed quesillo-producing communities to integrate into the tourism circuit, thus diversifying their sources of income (Flores-Pacheco, 2019).

## 3 Challenges and opportunities in the social and solidarity economy for the quesillo product

Despite its importance, quesillo production faces several challenges. One of the main problems is the lack of effective strategies to improve the quality and value of the product, which limits its competitiveness vis-à-vis industrial cheeses. The limited dissemination of the benefits of artisanal quesillo and the lack of recognition in the market as an authentic product must also be overcome (Camacho-Vera et al., 2020). A significant challenge facing this industry is the migration of young people to the cities in search of better opportunities and generational, cultural changes that have reduced the labor available for quesillo production. The economic crisis caused by trade restrictions resulting from the COVID-19 pandemic has also reduced quesillo sales and production.

Training producers in production and marketing techniques can significantly improve the quality and value of artisanal quesillo. The formation of cooperatives and support networks among producers facilitates access to more extensive and fairer markets, allowing them to obtain an adequate price for their work. Artisanal quesillo production, when carried out sustainably, encourages the responsible use of natural resources such as pastureland to feed livestock, contributing to environmental conservation. Supporting the production of quesillo preserves traditions and ancestral knowledge that are part of Oaxaca's cultural heritage. By promoting responsible and sustainable production practices, we contribute to the conservation of the environment and the proper use of natural resources. This benefits the producers and ensures that future generations will be able to continue this tradition. The works of Porras-Sánchez (2022) and Camacho-Vera et al. (2020) strengthen what has been described concerning the social and solidarity economy offered by quesillo in this region of the state of Oaxaca.

The economic valorization of artisanal cheese production practices in Mexico is reflected in the case of quesillo from Oaxaca and other regional cheeses such as Cotija and Asadero. These products are fundamental to Mexican cultural identity and represent a significant opportunity to improve the quality of life of the producing communities. Growing demand, both nationally and internationally, encourages producers to maintain their traditions

TABLE 1 Key differences between artisan cheese and industrial cheese.

Quality	Quesillo	Industrial cheese
Production method	Handmade following traditional and ancestral techniques	Mass produced using standardized machinery and processes
Ingredients	It uses high quality raw milk, without additives or preservatives.	It usually includes pasteurized milk and chemical additives to improve texture and flavor.
Taste	Intense flavor, slightly acidic and with complex nuances.	More uniform flavor, often sweet and less pronounced.
Aroma	Distinctive and strong aroma, which varies according to region and producer.	Subtle aroma, with little variability between different types of cheese.
Texture	Rough texture, with a natural rind and variations in consistency.	Homogeneous texture, smooth and shiny, with defined shapes.
Maturation	Controlled ripening process, often under natural conditions.	Rapid and controlled ripening, often in artificial environments.
Price	Generally, more expensive due to artisanal methods and quality of ingredients.	More economical, since it is produced in large quantities and with lower production costs.
Variety	Variety Each producer has its own style, resulting in unique and unrepeatable cheeses.	Limited varieties with standardized characteristics.
Milk origin	Locally sourced milk, often from specific herds.	Milk from multiple sources, sometimes from different regions.

TABLE 2 Industrial production of milk and dairy products 2018–2023 (1,000's of liters and tons; [Cámara Nacional de Industriales de la Leche, 2024](#)).

	2018	2019	2020	2021	2022	2023
Ready to drink milk* 1/	2,757,359	2,691,249	2,627,665	2,544,604	2,604,625	2,720,200
Yogurt 2/	789,411	768,080	704,116	696,947	700,986	769,508
Cheeses 3/	481,637	507,687	515,321	549,678	619,490	632,895
Powdered milk 4/	277,775	257,485	263,453	251,718	265,137	265,097
Milk cream 5/	75,215	79,472	78,547	85,319	92,345	90,129
Butter 6/	34,694	35,312	34,332	38,714	40,779	40,474

\*Thousands of liters.

1/, Includes whole milk (pasteurized, pasteurized, and homogenized, ultra-pasteurized), skim milk (ultra-pasteurized), flavored milk and milk formulas.

2/, Includes plain yogurt, yogurt with fruit and/or cereal and drinking yogurt.

3/, Includes Amarillo, Chihuahua, Cream, Double Cream, Fresco, Manchego, Oaxaca (Quesillo), Panela, Asadero, and Other cheeses.

4/, Includes whole, skim, lactating, and semi-skim milk.

5/, Includes natural and sour cream.

6/, Includes natural butter.

TABLE 3 Industrial cheese production 2018–2023 (tons; [Cámara Nacional de Industriales de la Leche, 2024](#)).

	2018	2019	2020	2021	2022	2023
Amarillo	61,059	58,543	55,612	57,958	59,311	63,001
Chihuahua	44,970	55,591	63,331	64,950	70,117	75,568
Cream	25,034	25,336	22,916	23,528	25,292	23,380
Double cream	66,366	71,571	77,458	86,622	107,016	108,697
Fresco	87,769	95,354	100,298	105,903	122,868	125,602
Manchego	42,052	42,172	43,640	45,563	48,425	46,759
Oaxaca (Quesillo)	33,872	33,135	32,227	37,021	41,300	40,778
Panela	50,141	51,005	46,673	44,710	47,345	48,385
Asadero	14,126	13,224	13,665	14,206	14,674	15,169
Other cheeses	56,248	61,756	59,501	69,217	83,142	85,556
<b>Total</b>	<b>481,637</b>	<b>507,687</b>	<b>515,321</b>	<b>549,678</b>	<b>619,490</b>	<b>632,895</b>

TABLE 4 Consumer prices (MXN) of dairy products (cheese) 2018–2023 (Cámara Nacional de Industriales de la Leche, 2024).

	2018	2019	2020	2021	2022	2023
Amarillo	102.96	106.14	115.35	123.20	140.29	145.52
Manchego y Chihuahua	102.59	107.18	115.11	123.92	147.01	148.36
Fresco	102.36	107.46	115.25	123.94	148.24	154.01
Oaxaca (Quesillo) y Asadero	102.23	106.23	113.08	122.74	148.51	153.11
Other cheeses	101.85	107.41	115.30	121.36	143.24	147.73

while adapting their methods to meet the expectations of the modern market.

## 4 Conclusions

In conclusion, quesillo production in Oaxaca is more than an economic activity; it is a vital element of cultural identity and an engine of social development. Through the social and solidarity economy, quesillo producers can face the market's challenges, improve their living conditions, and preserve their traditions. Implementing strategies that strengthen artisanal production is essential, promoting the recognition of quesillo as an authentic, quality product. This ensures the economic viability of producers and contributes to the sustainable development of Oaxacan communities, guaranteeing that quesillo continues to be a symbol of the region's cultural and gastronomic richness.

## Author contributions

DM-M: Conceptualization, Investigation, Supervision, Writing – original draft, Writing – review & editing. DM-P: Conceptualization, Methodology, Writing – original draft. CV-S: Conceptualization, Investigation, Writing – original draft. EH-B: Conceptualization, Investigation, Supervision, Writing – original

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