



RESOURCE-BASED VIEW:

AN ANALYSIS OF COOPERATIVES INVOLVING FAMILY FARMERS



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Abstract

Objective: Analyze how collective action through the participation of family farmers in cooperatives contributes to the use of internal resources in rural enterprises from the theoretical perspective of the resource-based view (RBV).

Methods: A systematic analysis of articles with case studies of family farmers participating in Brazilian cooperatives between 2010 and 2020 was carried out using descriptive statistics.

Originality/relevance: Analysis of the contribution of cooperatives to resource use and exchange among farmers to enter and remain competitive in the market.

Major results: In some cases, collective action through cooperatives contributed to resource use and exchange, allowing for market insertion and competitive permanence of family farmers. Reputational resources based on environmentally sustainable production and traditions provided a competitive advantage. Organizational resources related to farmers' capacities to create interrelationships between production units and markets provided strategic conditions to harness internal resources and become competitive.

Theoretical and methodological contributions: Discussions bringing together family agriculture, cooperatives, and internal resources from the perspective of RBV demonstrated the interdisciplinary nature of the theme and contributed to the scientific literature, where there is a lack of such joint analyses.

Managerial contributions: Managers of cooperatives and public policy makers will be able to identify which resources contribute to the competitiveness of family farmers and the difficulties encountered by these agents, such as investments in physical, financial, and technological infrastructure.

Keywords: Farmer. Cooperativism. Strategy.

VISÃO BASEADA EM RECURSOS: UMA ANÁLISE DE COOPERATIVAS ENVOLVENDO OS AGRICULTORES FAMILIARES

Resumo

Objetivo: Analisar como a ação coletiva, envolvendo os agricultores familiares em cooperativas, contribui para o uso dos recursos internos dos empreendimentos rurais, sob a perspectiva teórica da Visão Baseada em Recursos (RBV).

Método: Uma análise sistemática de artigos com casos estudados de agricultores familiares inseridos em cooperativas brasileiras, entre 2010 e 2020 foi realizada, com o uso de estatística descritiva.

Originalidade/relevância: A análise da contribuição das cooperativas para o uso e a troca de recursos entre os agricultores, a fim de se inserem e permanecerem competitivos no mercado.

Principais resultados: A ação coletiva, por meio das cooperativas, contribuiu em alguns casos com o uso e troca de recursos, permitindo a inserção e permanência competitiva dos agricultores familiares. Os recursos reputacionais, baseados na produção ambientalmente sustentável e tradições, permitem vantagem competitiva. Os organizacionais, relacionados às capacidades dos agricultores criarem uma inter-relação entre unidades produtivas e mercados, possibilitam condições estratégicas de explorarem os seus recursos internos e se tornarem competitivos.

Contribuições teórico-metodológicas: As discussões dos temas agricultura familiar, cooperativa e recursos internos, sob a perspectiva da RBV, de forma conjunta, contribuem cientificamente demonstrando interdisciplinaridade da pesquisa, diante da ausência de estudos que reúnem tais temas.

Contribuições gerenciais: Os gestores de cooperativas e de políticas públicas poderão reconhecer os recursos que contribuem para a competitividade dos agricultores familiares e quais dificuldades encontradas por eles, como investimentos em infraestruturas físicas, financeiras e tecnológicas.

Palavras-chave: Agricultores. Cooperativismo. Estratégia.

VISIÓN BASADA EN LOS RECURSOS: UN ANÁLISIS DE LAS COOPERATIVAS DE AGRICULTORES FAMILIARES

Resumen

Objetivo del estudio: Analizar cómo la acción colectiva, que involucra a los agricultores familiares en cooperativas, contribuye al uso e intercambio de los recursos internos de las empresas rurales, desde la perspectiva teórica de la Visión Basada en los Recursos (RBV).

Metodología/abordaje: Análisis sistemático de artículos con estudios de casos de agricultores familiares insertos en cooperativas brasileñas, entre 2010 y 2020, con estadística descriptiva.

Originalidad/relevancia: La contribución de las cooperativas al uso e intercambio de recursos entre los agricultores para insertarse y seguir siendo competitivos en el mercado.

Resultados principales: La acción colectiva, con las cooperativas, contribuyó en algunos casos al uso e intercambio de recursos, permitiendo la inserción y permanencia competitiva de los agricultores. Los recursos de reputación, basados en las tradiciones y producción ambientalmente sostenibles, permiten una ventaja competitiva. Los recursos organizativos, como la capacidad de los agricultores crean una interrelación entre las unidades de producción y los mercados y condiciones estratégicas para explotar sus recursos internos y ser competitivos.

Contribuciones teóricas/metodológicas: Las discusiones de los temas agricultura familiar, cooperativa y recursos internos, desde la perspectiva de la RBV contribuyen a demostrar científicamente la interdisciplinariedad de la investigación.

Contribuciones de la gestión: Los gestores de las cooperativas y de las políticas públicas podrán reconocer los recursos que contribuyen a la competitividad de los agricultores familiares y qué dificultades encuentran, como las inversiones en infraestructura física, financiera y tecnológica.

Palabras-clave: Agricultores. El cooperativismo. Estrategia.

Cite as / Como citar

American Psychological Association (APA)

Negreti-Campos, A. S., Dall Evedove, A. C. L. & Smith, A. E. B. (2022). Resource-based view: an analysis of cooperatives involving family farmers. *Iberoamerican Journal of Strategic Management (IJSM)*, 21(1), 1-38, e19696. <https://doi.org/10.5585/riae.v21i1.19696>

(ABNT – NBR 6023/2018)

NEGRETI-CAMPOS, Amanda dos Santos; DALL EVEDOVE, Antônio Cesar Lourenzani; SMITH, Ana Elisa Bressan. Resource-based view: an analysis of cooperatives involving family farmers. *Iberoamerican Journal of Strategic Management (IJSM)*, v. 21, n. 1, p. 1-38, e19696, 2022. <https://doi.org/10.5585/riae.v21i1.19696>

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1 Introduction

In recent decades, family farming has come to be considered a fundamental mode of organization for agricultural production and rural development because of its important contributions to food and nutrition security, preservation of traditional foods, biodiversity conservation, income generation in the countryside, and local economic development (Elias, Belik, Cunha, & Guilhoto, 2019). Historically, family farming has great relevance in Brazil in producing foods that form the basis of the Brazilian diet, such as rice and beans (Castro, 2015). According to the last census, there were 3.9 million family-owned agricultural enterprises in 2017 in the country, accounting for 77% of agricultural units and about 70% of the workforce in rural areas. Family farms occupy 23% of the land and produce 23% of the national food supply. Despite limitations related to land access, family farmers contribute significantly to food security, mainly through the production of corn, cassava, rice, beans, onion, and potato. Those foods comprise a major part of the diet of Brazilian populations (*Instituto Brasileiro de Geografia e Estatística* [IBGE], 2017).

Although family farming hold economic and social potential, there are challenges that are inherent to these production systems, such as low levels of education and lack of technical assistance (Batalha, Buainain, & Souza Filho, 2005; Souza Filho, Buainain & Paulillo, 2021). According to the latest census data (IBGE, 2017), about 26% of family farmers do not know how to read or write, and 51% have only primary education. Moreover, 82% of farmers reported not receiving technical assistance (IBGE, 2017).

These data shed some light on the difficulties faced by Brazilian farmers and the associated detrimental effects on market performance and competitiveness. A lack of knowledge and training resources, added to a scarcity of physical (land, infrastructure, and raw materials), financial, and technological resources, hinder the entry and permanence of family farmers in competitive environments (Batalha et al., 2005; Guanziroli, 2019). According to Batalha et al. (2005), one of the options to ensure that the competitiveness of family farming has a solid foundation is to adopt practices that stimulate organization and cooperation between agents with similar interests, such as, for instance, collective involvement in farmers' associations and cooperatives.

Cooperatives represent a relevant strategy for farmers to remain or become competitive without losing independence, as these associations allow for the coordination and interaction of resources between several economic agents (Batalha et al., 2005; Altman, 2015). Through different forms of cooperation that increase sales, facilitate product distribution, and improve access to credit, cooperatives can generate savings for individual enterprises while allowing farmers to maintain control over their property. These factors help family organizations stay competitive and sustainable individually (Altman, 2015).

The increase in the likelihood of family farmers becoming or remaining competitive by participation in cooperatives is related to the United Nations Sustainable Development Goals (SDGs),

such as decent work and economic growth (SDG 8), promoting sustained and inclusive economic growth for family farmers and creating complete, productive, and decent employment in rural areas. Agricultural cooperatives also foster sustainable agriculture (SDG 2) by increasing crop yield and farmers' income through secure and equal access to productive resources (e.g., land) and intangible assets (e.g., knowledge and financial benefits) (Nações Unidas Brasil, 2022).

Resource-based view (RBV) theory can be used to explain the entry and permanence of enterprises in competitive environments based on the use and exchange of internal resources. From the perspective of RBV, Penrose (1959) argued that a company is considered a collection of productive resources and that internal resources are one of the main competitive factors of organizations. Thus, in the current study, RBV was chosen as a framework to describe the strategic and competitive positioning of family-owned rural enterprises based on the use of resources related to management skills and better utilization and exchange of resources among family farmers participating in cooperatives (Wernefelt, 1984; Grant, 1991; Barney, Wright, & Ketchen, 2001).

Studies assessing cooperatives and family farms encompass several themes, such as the impact analysis of cooperatives on farm technical efficiency (Neupane, Paudel, Adhikari, & He, 2022), factors influencing the success of agricultural cooperatives (Ahado, Chkhvirkia, & Hejkrlik, 2022), collective actions promoting environmental education and sustainability among farmers (Silva & Torres, 2020), and logistical costs (Leitão, Da Silva, Da Silva, & Brisola, 2020). There are also studies examining relationships between cooperatives, family farmers, and resources, such as resource use for food production (Abate, Dessie, Adane, Tesfa, & Getu, 2022), farmers' access to resources and its effects on income generation (Othman, Oughton, & Garrod, 2020), and resource conservation in agriculture (Nyantakyi-Frimpong, Matouš, & Isaac, 2019). However, no study was found that simultaneously addresses family farming, cooperatives, and RBV theory to understand how the collective action of family farmers involved in cooperatives contributes to the use of internal resources in rural enterprises.

Given the economic and social difficulties encountered by family farmers, such as resource scarcity and limited access to and permanence in competitive markets, and the importance of cooperatives in coordinating resources and promoting competitiveness, this study explores the following question: How does the collective action of family farmers participating in cooperatives contribute to the use of internal resources of rural enterprises from the theoretical perspective of RBV?

The relevance of this research lies in analyzing the contribution of cooperatives to resource use and exchange as a strategy for family farmers to enter and remain competitive in the market. It also contributes to advancing scientific discussions that bring together the themes of family farming, agricultural cooperatives, and internal resources according to RBV theory, demonstrating the interdisciplinarity of the matter and the lack of studies jointly addressing these three topics.

The general objective of this study was to analyze how the collective action of family farmers organized in cooperatives contributes to the use of internal resources in rural enterprises from the theoretical perspective of RBV. Specific objectives were as follows: (i) identify how family farmers use

internal resources after joining cooperatives and (ii) investigate resource exchange among family farmers participating in cooperatives. The article is organized into six sections. This introduction presented the theme, research question, and objectives. The second section discusses the theoretical contributions of family farming, cooperatives, and RBV. The following sections include the methodology, results, and discussion. The sixth and last section provides final considerations.

2 Theoretical framework

In Brazil, the definition of a family farm/rural enterprise, given by Law No. 11,326/2006, simultaneously encompasses the following criteria: (i) area smaller than four fiscal modules, defined according to municipal standards, as per Law No. 6746/1979; (ii) predominant use of family labor in economic activities; (iii) income predominantly derived from farm activities; and (iv) rural enterprise managed by family members. As stated by Medina, Almeida, Novaes, Godar, and Pokorny (2015), family farming includes various forms of socioeconomic reproduction and organization, being consolidated not only as an economic segment but also as a way of life closely related to the local reality. Many family farm businesses are created with the aim of improving living conditions. Business owners need to explore alternatives to achieve development and advance toward higher income levels, especially in a scenario characterized by economic inequality and productive heterogeneity, with large internal differences between properties and segments (Aquino, Gazolla, & Schneider, 2017).

Tomazzoni and Schneider (2020) argued that collective action increases the capacity of agents to generate management alternatives and achieve development in family farming in the face of complex and trivial situations, fostering the inclusion of smallholders who are often vulnerable and marginalized, concerning the development options available in the country (Tomazzoni & Schneider, 2020). For Albuquerque (2003), the core of a cooperation agreement as a collective action is related to the self-management of agents, encompassing the democratization of social practices, shared power, and increased autonomy for collectivity. As examples of cooperation in rural areas, Tomazzoni and Schneider (2020) reported that cooperatives aid farmers in organizing production efforts in conjunction with their neighbors to achieve larger production scales, often surpassing private properties. Through cooperation, production can be decentralized, generating economic growth, increasing social wealth, and distributing national income. According to Altman (2015), agricultural cooperatives are highly relevant to rural areas, as they help to generate employment, food security, fair income distribution, and poverty reduction. Furthermore, cooperatives provide a means for small enterprises to be competitive by promoting product quality, yield, and efficiency.

In analyzing market strategies and the competitive performance of farmers, Dhakal, O'Brien, and Mueses (2021) stated that an agricultural cooperative is a form of collective action whereby a group of people join efforts to improve their productivity and strategic marketing options through increased access to new markets at lower production costs, which makes farmers more competitive. The use of tangible and intangible resources influences the performance of farmers and agricultural cooperatives

on the channels they operate, affecting their chances of attaining competitive advantages in new markets. For example, Galati, Tulone, Tinervia, and Crescimanno (2019) observed that physical resources (including physical infrastructure such as machinery) and financial resources were some of the factors that most contributed to the competitive advantage of farmers participating in wine cooperatives in Sicily, Italy. However, for family farmers to be successful in cooperatives, they must have a set of capabilities and access to complementary resources, creating a scenario where one individual depends on the other and resources need to be shared among members who willingly contribute to the joint effort in a manner that maintains balance (Gueller & Schneider, 2021). In this context, Batalha et al. (2005) clarified the importance of cooperation being built competitively, with agents from all chain nodes having the capacity to use resources for farm development efficiently.

From the theoretical perspective of RBV, Barney (1991) and Grant (1991) pointed out that farm managers equipped with the ability to manage well their internal resources have strategic and competitive advantages. Furthermore, such managers can add value to their products and are in a better position to control risks and harness opportunities (Barney, Wright, & Ketchen, 2001). According to Wernefelt (1984), a resource is any asset that can be considered a strength or weakness of an enterprise. Barney (1991) advanced and detailed this concept by defining resources as all assets, organizational processes, capabilities, information, and knowledge, among others, that are controlled by the organization and enable the implementation of strategies that increase efficiency and effectiveness.

This article adopted the theoretical perspective of RBV as a route for rural family enterprises to achieve strategic and competitive positioning based on the use of internal resources, management skills, and better utilization and exchange of resources among family farmers (Wernefelt, 1984; Grant, 1991; Barney et al., 2001). Strategic resources can be classified into different categories, as shown in Table 1. The resource categories presented here follow those RBV theorists proposed, and some examples applied in agribusiness, family farming, and agricultural cooperatives. Thus, using RBV theory, this article sought to analyze how the collective action of family farmers through cooperatives contributes to the use of internal resources in rural enterprises.

Table 1

Description of studies applying resource-based view (RBV) in the fields of agribusiness, family farming, and agricultural cooperatives

Resource	Examples	Reference framework	Field of study		
			Agribusiness	Family farming	Cooperatives
Intangible	Commercial contracts, improved working conditions, environmental suitability, business development, improved quality of products marketed through cooperatives, resilience	Wernerfelt (1984), Barney and Mackey (2016)	Phillips, Peterson, and Porter (2014)	Suess-Reyes and Fuetsch (2016)	Saes (2010), Ji, Jia, and Xu (2018)
Physical	Production plant, machinery, physical structures, physical space, inputs (raw materials), location (physical geographical space), land, equipment, facilities, tools	Penrose (1959), Grant (1991), Barney (1991), Barney (1996), Wilk and Fensterseifer (2003)	Bortsie-Aryee, Gabriel, Fennessy, O'Kane, and Walton (2018), Sachitra and Chong (2018)	Araujo, Catapan, and Mordado (2019)	
Financial	Financial capital, access, and ease of access to capital, financing, capital flow, improved financial conditions, rural credit	Penrose (1959), Grant (1991), Barney (1991), Barney (1996)	Bortsie-Aryee et al. (2018), Sachitra and Chong (2018), Tohidi, Ghorbani, Karbasi, Asgharpourm Asouleh, and Hassani-Mahmoo (2020)	Pogutz and Winn (2016), Araujo et al. (2019)	
Human	Knowledge, training, intelligence, experience, skills, competencies, internal relations, perception of consumer needs, ability to use information, knowledge networks, experience sharing between members and cooperatives, synergies in farmers' understanding, and the development of natural resource management capabilities	Penrose (1959), Grant (1991), Barney (1991), Barney (1996), Barney and Mackey (2016)	Mugera (2012), Grimstad and Burgess (2014), Bortsie-Aryee et al. (2018), Tohidi et al. (2020)	Blesh and Wolf (2014), Pogutz and Winn (2016), Araujo et al. (2019)	Gall and Schroeder (2006)
Organizational	Coordination and control of systems that comprise the agribusiness and its multiple stakeholders, planning, strategies, administrative system, management (diversification of activities and managerial capacity for optimal use of resources), relationships with external agents through cooperatives, a synergy between business units, process innovation (flexibility toward changes), strategies aimed at seeking opportunities for differentiated products to the detriment of commodities, alliances between cooperative members and between cooperatives, focus on scale	Grant (1991), Barney (1994)	Wilk and Fensterseifere (2003), Fensterseifere Rastoin (2010) Phillips et al. (2014), Tavares, Negreti, Pigatto, and Pigatto (2017), Sachitra and Chong (2018), Bortsie-Aryee et al. (2018), Tohidi et al. (2020)	Blesh and Wolf (2014), Suess-Reyes and Fuetsch (2016), Pogutz and Winn (2016), Araujo et al. (2019);	Gall and Schroeder (2006), Tondolo and Bitencourt (2008), Ji et al. (2018)

Continua



	and scope of agricultural products, farmers organized in cooperatives, sustainable management of natural resources			
Technological	Mechanization, technological devices, information technology, technological inputs, improved product processing and manufacture using technological tools	Grant (1991), Przychynski and Vanti (2012)	Kurkalova and Carter (2017)	Suess-Reyes and Fuetsch (2016), Araujo et al. (2019)
Reputational	Project impacts on company image and society, brand value, social and environmental responsibility, actions that enforce reputational values (tradition, culture, succession of family farming, environmental awareness), differentiated processing and production methods, economic and social sustainability in family farming, reinforcement of social identity, cultural heritage	Grant (1991), Augusto, Souza and Cario (2013)	Grimstad and Burgess (2014), Tavares et al. (2017), Sachitra and Chong (2018)	Suess-Reyes and Fuetsch (2016)
Natural	Natural preservation and biodiversity, soil, climate, minerals, sustainable management of natural resources, landscape attractiveness, privileged location, environmentally sustainable cooperative model, and environmental sustainability actions that provide a competitive advantage for regional farmers	Grant (1991), Muboko (2017)	Fensterseifere Rastoin (2010), Grimstad and Burgess (2014), Wiyono and Sunarto (2016), Kurkalova and Carter (2017), Bortsie-Aryee et al. (2018)	Blesh, Wolf (2014), Grimstad and Burgess (2014), Suess-Reyes and Fuetsch (2016), Pogutz and Winn (2016) Ji et al. (2018)

Source: Prepared by the authors.

Other studies approached cooperatives and family farming by focusing on the importance attributed by farmers to cooperatives, such as Costa, Amorim Junior, and Silva (2015) and Tomazzoni and Schneider (2020). However, it was not possible to identify studies analyzing how the collective action of family farmers through cooperatives contributes to the use of internal resources in rural enterprises from the perspective of RBV.

3 Methods

This study has an exploratory nature. According to Cervo and Bervian (2002), an exploratory study is particularly useful for researching little-known problems, familiarizing oneself with a phenomenon, or gaining a new perspective on an issue. Thus, an exploratory investigation was conducted to bring together the topics of family farming, cooperativism, and RBV, constituting a little-explored theme.

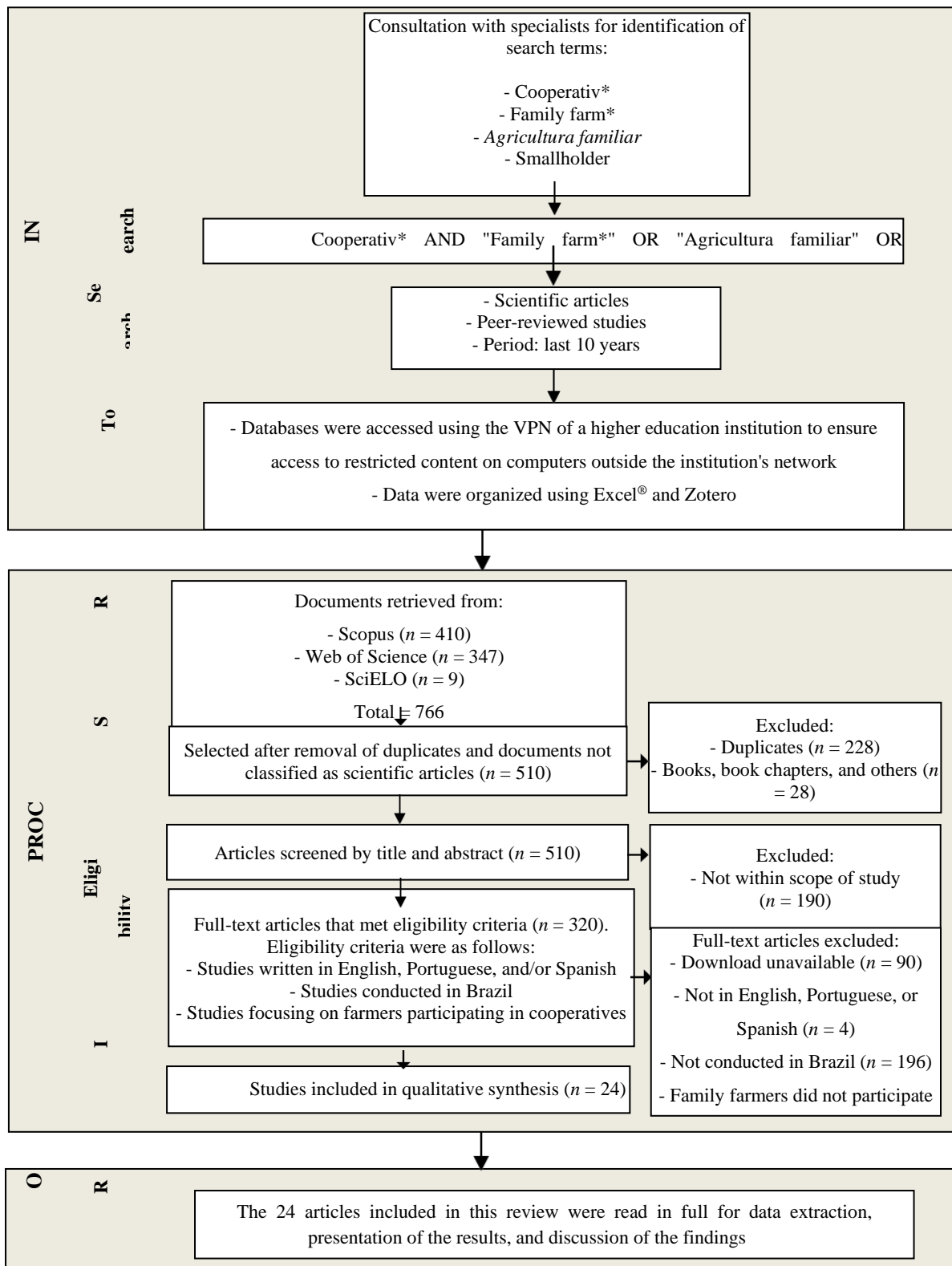
The study adopted a qualitative approach. As Diehl and Tatim (2004) stated, this approach provides a better understanding of complexities between variables that involve interactions in social groups. Here, a qualitative approach was used to understand better the complexities between resource use and exchange in social interactions of family farmers participating in cooperatives.

The research method was a systematic review of the literature. Levy and Ellis (2006) described that a systematic review involves three main stages: input, processing, and output. Figure 1 shows a flow diagram of the research steps based on Levy and Ellis (2006), Moher et al. (2009), and Conforto, Amaral, and Silva (2011).

In the input phase, the first source of information was consultation with experts to identify search terms and conduct a preliminary materials analysis. The experts invited were researchers on family farming, agricultural cooperatives, and RBV theory. Search words were selected according to experts' opinions and the research objective. The other sources of information were scientific databases, namely Scopus, Web of Science, and Scientific Electronic Library Online (SciELO). Wang and Waltman (2016) remarked that Scopus and Web of Science have an international scope and follow strict policies for journal selection. SciELO uses scientific criteria for journal assessment, inclusion, and maintenance and contains many national articles (SciELO, 2018).

Figure 1

Research steps



Source: Prepared by the authors based on Levy and Ellis (2006), Moher et al. (2009), and Conforto, Amaral, and Silva (2011).

We used the search terms in the selected databases with Boolean operators (AND, OR) to form the following search string: Cooperativ* AND "Family farm*" OR "Agricultura familiar" OR "Smallholder." We used AND to find records that appear in sets and OR to combine the results. Asterisks (*) were used to find similar words; for example, Cooperativ* was applied to search for the terms cooperatives, cooperative, and cooperativism, among others (Clarivate, 2020).

The inclusion criteria were peer-reviewed scientific articles published in the last ten years, from 2010 to May 2020. Excel® and Zotero were used to organize the data. Zotero is a free reference management software that allowed us to organize articles and read titles and abstracts.

The processing phase consisted of four main stages, namely identification, screening, eligibility, and inclusion, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach. PRISMA provides a checklist with the main items to be followed to improve the consistency of data reporting in systematic reviews and meta-analyses (Moher, Liberati, Tetzlaff, & Altman, 2009). We applied this approach for consistency in the major steps of the systematic review, as follows: (1) identification of studies in different databases; (2) screening of articles related to the search topic; (3) analysis of eligibility criteria for article inclusion; and (4) determination of the number of studies included in the analysis. It is worth noting that all exclusions were justified, as suggested by the PRISMA approach.

Descriptive statistics were used for data analysis. According to Martins and Teóphilo (2007), descriptive statistics are applied to explore, interpret, and describe a set of data by using tables, graphs, and charts. This statistical strategy was used to investigate the resources used and exchanged among family farmers. Tables and graphs were generated to facilitate data interpretation with associated results with the literature (Barros & Lehfeld, 2014). Thus, we sought to relate the results by classifying resources according to RBV literature during interpretation. For exploring applications/examples of each resource category, we used literature on RBV and family and cooperative agriculture.

4 Results

A total of 24 articles were selected and included in the analysis after the search process. Below, we perform a characterization of the selected publications.

4.1 Characterization of articles

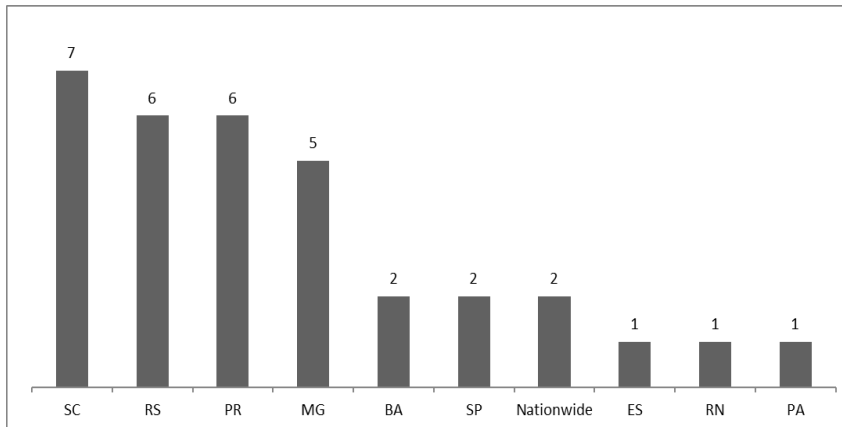
The largest publication volume on family farming and cooperatives in the period studied (2010 to 2020) was observed from 2015 to 2018. There were five articles per year, the smallest in 2013 and 2020, with one article each. In the other years, three articles were published per year.

The main study regions, and consequently the regions of the studied cooperatives, were classified by state, as depicted in Figure 2. Some publications analyzed more than one cooperative, each

located in a different state. Two studies investigated all Brazilian states (national level). For these cases, more than one state was counted per article.

Figure 2

Main Brazilian states analyzed in studies applying resource-based view in agricultural research



Source: Prepared by the authors based on research data.

As shown in Figure 2, most articles (n = 19) investigated family farms and/or cooperatives in southern Brazil, comprising Santa Catarina, Rio Grande do Sul, and Paraná States. Some institutional programs were mentioned in the studies, such as the National School Feeding Program (PNAE), Family Agriculture Food Acquisition Program (PAA), National Biodiesel Production Program (PNPB), Terra Forte, and the Children's Milk Program, as shown in Figure 3. It is important to highlight the central public policies attended by cooperatives and their locations, demonstrating the organizational capacity of cooperatives and family farms to access these markets. The results also indicate the states that were the focus of research on these public policies.

Figure 3

Distribution of institutional programs by the state in studies applying resource-based view in agricultural research



Source: Prepared by the authors based on research data.

Note: some studies mentioned more than one institutional program. In such cases, all mentioned programs were recorded. Studies that conducted nationwide analyses are identified by the abbreviation BR.

PNAE and PAA stood out with 21 citations. The number of cooperatives participating in institutional programs did not vary much by state. Santa Catarina and Minas Gerais had the highest number of cooperatives participating in PNAE, and Bahia had the highest number participating in PNPB. Half of the articles (50%) reported participation of the institutional market in school meal programs (PNAE and PAA).

The main products marketed by farmers' organizations were fresh produce (e.g., fruits and vegetables) ($n = 12$), followed by processed foods, such as cereals, dairy products, fruit pulps, and flours ($n = 11$), processed products not used for consumption, such as biodiesel and ethanol ($n = 4$), animals ($n = 3$), commodities ($n = 3$), and handicrafts ($n = 1$). Family farmers acted in different types of markets through cooperatives, selling their products within the municipality ($n = 6$), in the state ($n = 6$), in other states ($n = 6$), and internationally ($n = 2$).

4.2 Resources used and exchanged among family farmers after participation in cooperatives

Analysis of the selected articles allowed identifying the resources used and exchanged by family farmers after participation in cooperatives. Table 2 shows the resources used (X) and exchanged (x). The table also shows the references and classification of resources (i.e., intangible, physical, financial, human, organizational, technological, reputational, and natural).

Table 2

Internal resources used and shared by agricultural cooperatives

Reference	Type of resource							
	Internal	Physical	Financial	Human	Organizational	Technological	Reputational	Natural
Silva and Souza (2013)	X	X	X		x			
Stattman and Mol (2014)				X x	X x		X x	
Alvez, Schmitt, Farley, Erickson, and Méndez (2014)		x						
Maroun and La Rovere (2014)				X x	X x		X x	X x
Petry, Pilatti, Zucchi, and Santos Junior (2015)					X x		X* x*	
Soares, Martinelli, Melgarejo, Davó-Blanes and Cavalli (2015)				X x	X* x			
Costa et al. (2015)				X	X x			
De Almeida et al. (2015)							X x	
Silva, Dias, and Amorim Junior (2015)				X x	X x		X x	
Araújo, Magalhães and Gomes (2016)				X x	X	x	X* x	X x
Rover and Riepe (2016)			X x	X x	X* x		X* x*	
Iasulaitis, Nebot, and Da Silva (2016)			X		X x		X x	
Guerra, Blesh, Schmitt Filho, and Wittman (2017)			X* x	X x	x		X x	
Conejero, Cesar, and Batista (2017)	X							
Drebes and Spanevello (2017)							X x	
Beber, Theuvsen, and Otter (2018)	X				X x		X x	
Barros Ribeiro, Moreira, Ferreira, and Cesar (2018)	X		X* x	X				
Baggio and Kuhl (2018)					X* x		X x	
Herrera, Lourival, Da Costa, Mendes, and Moreira (2018)	X		X	X	X x*		X x	
Pires Gregolin, Gregolin, Mattia, Corbari, and Zonin (2018)			X		x			
Bezerra, Franco, Souza-Esquerdo, and Borsatto (2019)				X x			X x	X* x
Dos Santos, Ferreira, and De Campos (2019)			X		X x		X x	
Silva and Torres (2019)				X x			X x	X x
Do Nascimento, Calle-Collado, and Benito (2020)			X				X x	

Source: Prepared by the authors based on research data.

Resources used (X) and exchanged (x) by family farmers participating in cooperatives.

* The use or exchange of this resource was identified more than once within the same category, demonstrating its relevance to agricultural cooperatives. Some resources were reported more than once in the same study, with different examples for the same category. The frequency of resources used by farmers was calculated for each study. Reputational ($n = 20$) and organizational ($n = 17$) resources were the most frequent, followed by human ($n = 12$), financial ($n = 11$), intangible ($n = 5$), natural ($n = 5$), and physical ($n = 1$) resources. It is important to emphasize that some resources, such as reputational and organizational, are related to intangible assets, as, in general, they cannot be counted (Barney & Mackey, 2016). The examples in Table 1 were used as a basis for each resource under RBV. Reputational ($n = 19$) and organizational ($n = 16$) resources were the most frequently exchanged among farmers. The other resources had a frequency lower than 10.

The use and exchange of domestic resources by family farmers after participation in cooperatives are presented in Table 3. First, we show the resources used by farmers, followed by the resources shared among farmers after participation in cooperatives.

Table 3

Resource use frequency among family farmers after participation in cooperatives

Resource	Example	Frequency	References
Intangible	Better use of work resources	3	Silva and Souza (2013), Conejéro et al. (2017), Herrera et al. (2018)
	Contracts (guaranteed sales)	2	Beber et al. (2018), Barros Ribeiro et al. (2018)
Physical	Better use of space and land	1	Silva and Souza (2013)
	Income (economic sustainability, poverty reduction)	5	Silva and Souza (2013), Iasulaitis et al. (2016), Herrera et al. (2018), Dos Santos et al. (2019), Do Nascimento et al. (2020)
Financial	Credit access (use of financial capital)	3	Guerra et al. (2017), Barros Ribeiro et al. (2018), Pires Gregolin et al. (2018)
	Premium price	3	Rover and Riepe (2016), Guerra et al. (2017), Barros Ribeiro et al. (2018)
Human (knowledge)	Agroecological management, sustainable production	5	Maroun and La Rovere (2014), Silva et al. (2015), Guerra et al. (2017), Bezerra et al. (2019), Silva and Torres (2019)
	Production information	3	Costa et al. (2015), Herrera et al. (2018), Barros Ribeiro et al. (2018)
	Entry into institutional environments (documentation, organization, commercial practices)	3	Stattman and Mol (2014), Soares et al. (2015), Rover and Riepe (2016)
	Certification criteria	1	Araújo et al. (2016)
	Internal organization, access to institutional environments	3	Stattman and Mol (2014), Soares et al. (2015), Iasulaitis et al. (2016)
Organizational	Internal organization, access to new markets (from local to distant markets)	5	Petry et al. (2015), Rover and Riepe (2016), Beber et al. (2018), Baggio and Kuhl (2018), Dos Santos et al. (2019)
	Product diversity, coordination among producers	5	Soares et al. (2015), Costa et al. (2015), Silva et al. (2015), Rover and Riepe (2016), Herrera et al. (2018)
	Product differentiation	3	Maroun and La Rovere (2014), Rover and Riepe (2016), Baggio and Kuhl (2018)
	Certification, coordination among producers	1	Araújo et al. (2016)
Reputational	Differentiated production methods, environmental sustainability	10	Stattman and Mol (2014), Maroun and La Rovere (2014), De Almeida et al. (2015), Petry et al. (2015), Silva et al. (2015), Araújo et al. (2016), Rover and Riepe (2016), Guerra et al. (2017), Bezerra et al. (2019), Silva and Ribeiro (2019)
	Social and economic sustainability (social inclusion, access to new markets, increased sales to local markets, empowerment)	8	Petry et al. (2015), Rover and Riepe (2016), Iasulaitis et al. (2016), Baggio and Kuhl (2018), Herrera et al. (2018), Beber et al. (2018), Dos Santos et al. (2019), Do Nascimento et al. (2020)
	Actions that reinforce social and cultural identity as a means to reduce the rural exodus	2	Araújo et al. (2016), Drebes and Spanevello (2017)
Natural	Animal welfare, free-range animal production, chemical-free products	1	De Almeida et al. (2015)
	Landscape improvement and conservation of local biodiversity, water, soil, fauna, and flora	4	Maroun and La Rovere (2014), Araújo et al. (2016), Bezerra et al. (2019), Silva and Torres (2019)

Source: Prepared by the authors based on research data.

As shown in Table 3, reputational resources were the most frequent ($n = 20$), which include differentiated production methods, environmental sustainability ($n = 10$), social and economic sustainability ($n = 8$), and social and cultural identity ($n = 2$). Organizational resources ($n = 17$) were the second most frequent; this category comprised internal organization for access to institutional and private markets ($n = 8$), product diversity ($n = 5$), product differentiation ($n = 3$), and certification ($n = 1$). The third most frequent category was human resources ($n = 12$), followed by financial resources ($n = 11$), in which access to credit had a frequency of five. The resources exchanged and shared among family farmers after participation in cooperatives are shown in Table 4.

Table 4

Resource sharing frequency among family farmers after participation in cooperatives

Resource	Example	Frequency	References
Physical	Physical infrastructure (shared use of cooperative facilities)	1	Alvez et al. (2014)
Financial	Price premium	3	Rover and Riepe (2016), Guerra et al. (2017), Barros Ribeiro et al. (2018)
	Knowledge (production information, reduction in environmental impacts)	5	Maroun and La Rovere (2014), Silva et al. (2015), Guerra et al. (2017), Bezerra et al. (2019), Silva and Torres (2019)
Human	Knowledge (documentation, experiences for participation in institutional environments)	3	Stattman and Mol (2014), Soares et al. (2015), Rover and Riepe (2016),
	Knowledge (certification criteria)	1	Araújo et al. (2016)
	Shared planning and articulation (combined actions to meet market demands)	7	Silva and Souza (2013), Stattman and Mol (2014), Petry et al. (2015), Soares et al. (2015), Iasulaitis et al. (2016), Baggio and Kuhl (2018), Herrera et al. (2018)
Organizational	Shared planning to diversify products	5	Maroun and La Rovere (2014), Costa et al. (2015), Silva et al. (2015), Rover and Riepe (2016), Herrera et al. (2018)
	Logistics	3	Guerra, et al. (2017), Beber et al. (2018), Dos Santos et al. (2019)
	Management (planning and decision-making for cooperative self-management)	1	Pires Gregolin et al. (2018)
Technological	Joint use of the cooperative's technological apparatus for product storage	1	Araújo et al. (2016)
Reputational	Environmental responsibility through sustainable processes	9	Stattman and Mol (2014), Maroun and La Rovere (2014), Petry et al. (2015), De Almeida et al. (2015), Rover and Riepe (2016), Silva et al. (2015), Guerra et al. (2017), Bezerra et al. (2019), Silva and Torres (2019)
	Economic and social sustainability (social inclusion, access to new markets, participation in local markets)	8	Petry et al. (2015), Iasulaitis et al. (2016), Rover and Riepe (2016), Beber et al. (2018), Baggio and Kuhl (2018), Herrera et al. (2018), Dos Santos et al. (2019), Do Nascimento et al. (2020)
	Strengthened social and cultural identity as a means to reduce the rural exodus	2	Araújo et al. (2016), Drebes and Spanevello (2017)
Natural	Improved air, water, and soil quality, conservation of the landscape and local biodiversity	4	Maroun and La Rovere (2014), Araújo et al. (2016), Bezerra et al. (2019), Silva and Torres (2019)

Source: Prepared by the authors based on research data.

Reputational ($n = 19$) and organizational ($n = 16$) resources were the most frequently shared among farmers after participation in cooperatives. Environmental aspects ($n=9$) and economic and social sustainability ($n=8$) were the most frequent within reputational resources.

5 Discussion

The number of publications on family farming and cooperatives declined over the study period. This result indicates a literature gap on the topic. Niederle, Fialho, and Conterato (2014), however, reported a growing interest in family farming among scholars, with several discussions on productivity, economic prospects, government actions, structural heterogeneity, social aspects, and collectivism.

The fact that most of the studies analyzed family farmers or cooperatives in southern Brazil, comprising Rio Grande do Sul, Santa Catarina, and Paraná States is explained by Medina et al. (2015). The authors stated that this region, in comparison with other Brazilian locations, has greater access to infrastructure, public policies, regular technical assistance, and socioeconomic integration (e.g., farmers' organizations and associations).

Costa et al. (2015) argued that public policies such as government procurement incentives provide important opportunities for family farmers to collectively access markets in an organized manner through cooperatives. The fact that 50% of articles cited the participation of the institutional market in PNAE and PAA demonstrates that some cooperatives faced challenges in supplying the institutional market, whereas others benefited from the opportunities. The main challenges of agricultural cooperatives are sanitary adequacy, technical assistance, logistics, and property management, as well as knowledge of the production chain and cooperative organization (Costa et al., 2015). Structured policies for supporting family farm cooperatives are relevant to ensure the supply of the institutional market (Costa et al., 2015). Here, we also observed essential opportunities for access to these markets, whereby cooperatives played an important role in organizing marketing, distribution, and income generation, as observed in the study of Dos Santos, Ferreira, and De Campos (2019). This result is in line with those of Cunha, Freitas, and Salgado (2017), who found that PAA and PNAE offer several benefits to participating family farmers, such as an increase in production and income, as well as access to new markets and product diversification. Participation in public programs also influences social factors, such as an expansion of institutional relations and greater family involvement in production. Incentives for pesticide-free production contribute to sustainability.

Stattman and Mol (2014) highlighted that the federal government had included family farming in the biodiesel production chain through institutional programs such as PNPB, promoting the social inclusion of this group with economic incentives. The importance of PNPB-related actions in Bahia can be attributed to the well-structured production of oilseeds in the state, as demonstrated by data from the National Petroleum Agency (ANP, 2019). Bahia is the only biodiesel producer in the region, indicative of its know-how. Whereas the country's major raw material for biodiesel production was soybean oil (>75%), from January to June 2020, Bahia used a diversity of materials. This state has used soybean oil

(36%), palm/palm oil (24%), bovine fat (20%), fatty materials (16%), and cotton oil (4%) during the same period, demonstrating the state's know-how (ANP, 2020). According to data from the Ministry of Agriculture, Livestock, and Supply (MAPA, 2020), Bahia ranks third in the number of cooperatives authorized by MAPA for having the social fuel seal and being suitable for biodiesel commercialization through PNPB, accounting for 15% of national participation.

The major product sold by family farms was fresh produce. According to Baccarin, Triches, Teo, and Silva (2017), this fact might be related to institutional programs that encourage local agricultural production, stimulating short supply chains. Furthermore, fresh produce contributes to the food and nutrition security of consumers and farmers. Nevertheless, family farming is no longer solely linked to a subsistence economy, with processed products representing an important share of sales (Strate and Conterato, 2019). Through cooperatives, family farmers participate in markets that promote accumulating and reproduction of large-scale resources (Strate and Conterato, 2019). Participation in cooperatives allowed farmers to access different markets, including the international market. Such a finding agrees with those of Batalha et al. (2005) and Altman (2015), who reported that cooperatives help family farmers participate in different competitive markets, contributing to employment, income, and food security as well as potentially reducing poverty via an increase in yield and efficient management.

The most relevant resources used by family farmers participating in cooperatives were reputational and organizational. This result is in line with that of Tavares et al. (2017), who observed that organizational resources were of great importance, being associated with relationships between farmers in cooperatives, such as strategic alliances, joint supply contracts, and agricultural partnerships.

Reputational resources are related to the production methods of family farmers, who often apply concepts of environmental sustainability in food production, producing differentiated foods, such as agroecological products. According to Guerra et al. (2017), some cooperatives help farmers by promoting knowledge exchange through rural outreach learning programs with themes related to agroecological production. The profits obtained from these premium products are shared among cooperative members, increasing the income of local agriculture (Guerra et al., 2017). Vido, Schiavi, Guimarães, and Santos (2019) argue that reputational resources can be explored by using different strategies that aim to add value to products. Value addition can be achieved through financial and social appeals (Vido et al., 2019). Farmers can use their reputational assets, based on the production of pesticide-free foods, to sell differentiated products that provide beneficial effects on health, positively influencing social and environmental aspects (Grant, 1991; Conto, Antunes Júnior, & Vaccaro, 2016),

Reputational and organizational resources were also among those most frequently exchanged among farmers participating in cooperatives. This result indicates that participation in cooperatives contributes to farmer organization, as demonstrated by strategic alliances and partnerships for collective production, certification, and food diversification to gain access to new markets. These actions contribute to ensuring competitiveness and regular product supply, as reported by Soares et al. (2015),

Araújo et al. (2016), and Dos Santos et al. (2019). Such findings agree with those of Gueller and Schneider (2021), who found that collective and coordinated actions among family farmers in cooperatives led to equity, with sharing of resources and knowledge, contributing to joint success and competitiveness.

Some family farmers in cooperatives share information about producing and processing agroecological products (reputational resources). Therefore, it was observed that the exchange of reputational resources was relevant, contributing to differentiated, environmentally sustainable production and promoting socioeconomic sustainability and sociocultural identity. The positive reputation of family farmers participating in cooperatives is constructed over time, given that differentiated, sustainable production generates positive impacts on society through social and environmental responsibility (Grant, 1991).

Cooperatives were found to contribute to the livelihood of farmers, positively influencing society. Through participation in cooperatives, family farmers reached new markets, empowering collective negotiations that could not have been achieved individually. These collective actions positively influence the social and economic well-being of farmers. Dhakal et al. (2021) explain that agricultural cooperatives promote strategies and opportunities for entering new markets, allowing farmers to become competitive and generate income.

Furthermore, cooperatives promoted cultural and social identity by reinforcing values in family farming, such as succession. Suess-Reyes and Fuetsch (2016) reported that the generation of competitive advantage in family farming is often related to the succession of the agricultural business to the next generation, particularly in the face of current challenges, such as price decline resulting from overproduction. In this context, reputational assets, such as tradition, heritage, culture, and social identity, are crucial in family agricultural enterprises (Suess-Reyes & Fuetsch, 2016).

Farmers used organizational resources to access markets and promote food diversity and product differentiation. Family farmers who organize their productive unit toward a specific goal have strategic factors, perceptions, and values, promoting interrelationships between productive units and markets, as argued by Ploeg (1995) and Schneider and Niederle (2008). Participation in cooperatives led to the development strategic conditions in some family farms, promoted by internal organizations to achieve objectives and create interrelationships with the target markets.

Institutional procurement caused changes to the planning and productive matrix of farmers participating in cooperatives, leading to product diversification rather than specialization, marked by the sale of commodities, for example. This factor was highlighted by Silva et al. (2015), who found that farmers organize themselves collectively to access institutional markets, thereby using organizational resources to generate greater product diversification.

Product differentiation leads to value generation through the application of internal resources as a means to protect the final product, as argued by Saes (2009) and Feizabadi, Singh, and Motlagh (2014). In this manner, the competition cannot imitate productive strategies, leading to increased sales. In some

of the studied cases, using internal resources resulted in value creation. Agroecological practices, application of knowledge, and revival of traditional values increased sales and negotiations with new markets.

Human resources were the third most cited. This resource type is related to knowledge, particularly about sustainable production. This result corroborates Wilkinson's (2003) report that knowledge accumulation and collective practices among farmers contribute to local development via shared learning, appreciation of traditions and values, and increased demand. As highlighted by Buainain, Garcia, and Vieira (2016), the valorization of traditions is related to traditional production practices that do not degrade the environment, with a valuation of environmental, social, and economic aspects, leading to an increase in land value. Such practices generate income and promote premium prices, positively impacting the financial resources of farmers. According to Sues-Reyes and Fuetsch (2016), financial resources are positively influenced in agricultural systems linked to traditional productive aspects, experiences, and environmental values. These factors allow the creation and development of competitive products. These traditional productive aspects, experiences, and environmental values are related to using natural resources, biodiversity conservation, and landscape improvement. The availability of natural resources, such as climate, soil, and luminosity, and their sustainable management in agriculture, together with technological and scientific infrastructure and public policies, provide many productive possibilities (Strate & Conterato, 2019), from fresh produce to processed products. Thus, as supported by Strate and Conterato (2019), family farming, including small-scale farming, can provide access to new markets, generate income, and increase farmers' autonomy, promoting rural production.

Agricultural cooperatives with high profitability have greater access to credit lines (De Souza Junior, Da Silva, & Da Piedade Araújo, 2020). Nevertheless, few studies (12.5%) reported that cooperatives played a role in providing farmers with access to rural credit and other credit lines. According to Conejero et al. (2017) and Pires Gregolin et al. (2018), most cooperatives studied in the selected articles do not have enough financial resources or assets to guarantee credit lines.

Reputational resources were among the major resources exchanged among farmers participating in cooperatives. This type of resource is related to environmentally sustainable production, well-being, and quality of life, benefits that can be shared among farmers (Silva & Torres, 2019). According to Deakins and Bensemann (2019), reputational resources, built over time based on experiences and traditions, can generate recognition and recommendations as competitive advantages. Therefore, through experiences, traditions, and environmentally sustainable practices, there is the possibility of generating recognition as a shared benefit. Participation in cooperatives promotes farmers' social inclusion by sharing work and income. Grant (1991) reported that cooperatives promote social and economic responsibility, positively influencing the lives of farmers, their families, and the local community.

Barney (1996) and Tavares et al. (2017) defined organizational resources as processes, informal/formal planning, and other factors controlled by organizations that enable the execution of strategies to improve effectiveness and efficiency. Thus, sharing formal and informal planning among farmers, such as the choice of product diversification and shared use of logistics, allows for adopting strategies that improve effectiveness (market supply) and efficiency (reduced logistics costs). This finding is in line with that of Oliveira, Grisa, and Niederle (2020). The authors reported that organizing product distribution and logistics expand farmers' capacities to meet demands and optimize processes. Barney (1991) and Gall and Schroeder (2006) argued that, based on trust, resource sharing can reduce operational costs and promote financial success, which can be maintained in the long term.

Sharing of physical and technological resources is also relevant. However, only one study reported that cooperatives stimulated farmers to share physical infrastructure. In another study, farmers shared product packaging. This result indicates the lack of physical and technological infrastructure in some cooperatives. Technological resources are a strategic source of competitive advantage in agricultural organizations, providing new products and processing methods with reduced costs and improved efficiency (Gall & Schroeder, 2006; Tavares et al., 2017). Nevertheless, according to Pires Gregolin et al. (2018) and Araújo et al. (2016), even if cooperatives seek to improve their systems and meet the demands of an increasingly demanding market, they will encounter financial difficulties. That is because the high costs of technological devices or systems hinder innovations, resource use, and sharing improvements.

Some of the challenges faced by cooperatives affected the ability of family farmers to enter the market and remain competitive, such as limited technical support, difficulties in productivity improvement actions, difficulty in coordinating input purchase, little participation, and engagement of stakeholders, and lack of transparency in management and accounting (Petry et al., 2015; Stattman & Mol, 2014; Araújo et al., 2016; Pires Gregolin et al., 2018).

6 Final considerations

The collective action of family farmers via cooperatives stimulated resource use and exchange, allowing for the insertion and permanence of farmers in the market in a competitive way. Family farming cooperatives that encourage sustainable food production, such as pesticide-free products, can better communicate with the consumer market about production methods and product origin. Such communication is achieved through product claims and labels, as well as media attention about the history of farmers and formation of cooperatives. That shows cooperatives contribute to the social and economic well-being of society and the agricultural community, social inclusion, employment and income generation, and reduction of rural exodus, among other factors. Such communication strategies can improve the reputation of cooperatives and family farmers, promoting consumer awareness about differentiation and the premium price of marketed products. These actions may further stimulate the use and sharing of financial and technological resources among family farmers participating in cooperatives.

This study provides important information for cooperative managers and public policymakers, showing that some resources can promote competitiveness in family farms. Furthermore, the study describes some of the difficulties that family farmers may face in cooperatives, such as scarcity of physical and financial infrastructure and technological factors.

As a scientific contribution, this study fills a gap in the literature about cooperatives formed by family farmers from the theoretical perspective of RBV, demonstrating its originality and interdisciplinarity. A limitation of the study was that it was not possible to deeply understand how and why cooperatives impact the lives of family farmers from the theoretical perspective of RBV. Future studies should seek to understand the impact of cooperatives on family farmers based on RBV by investigating how and why each resource provided by cooperatives influences, farmers. The methodology of the current study may be applied to other agribusiness sectors and other fields of study.

7 Acknowledgments

We are grateful that the Brazilian Coordination of Superior Level Staff Improvement (CAPES) – Process CAPES - AUXPE nº 88881.640579/2021-01 contributed financial resources to translate that research.

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