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THE ROLE OF INTERCOOPERATION IN INNOVATION AND ADDING VALUE IN THE CONTEXT OF AGRICULTURAL COOPERATIVISM

O PAPEL DA INTERCOOPERAÇÃO NA INOVAÇÃO E NA AGREGAÇÃO DE VALOR NO CONTEXTO DO COOPERATIVISMO AGROPECUÁRIO

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Abstract

This research is aimed to identify the influence of intercooperation on innovation and value addition in agricultural cooperativism. Agricultural cooperatives play an important role in coordinating and integrating production chains, sale of inputs and minimizing risks. However, there are theoretical gaps around fostering innovation, as well as the relationship of organizational and social interaction variables in the context of cooperatives. A case study was carried, out with a qualitative exploratory-descriptive approach, with cooperatives in Brazil and Spain. The study identified that intercooperation influences the transfer of resources for innovation by facilitating access to capital resources, organizational resources, and knowledge; the transfer of these resources, in turn, influences the addition of value, which occurs through industrialization, commercial packaging, certifications, geographical indications, commercial brands, product differentiation, traceability, sustainable processes, social responsibility and logistical processes. The research contributes to a better understanding of the aspects that influence the development of innovation, as well as the addition of value to commodities and organizational and social interactions in cooperativism.

Keywords: Cooperation between Cooperatives; Intercooperation; Innovation; Adding value; Agricultural Cooperatives.

Resumo

Esta pesquisa tem como objetivo identificar a influência da intercooperação na inovação e na agregação de valor no cooperativismo agropecuário. As cooperativas agropecuárias desempenham um papel importante na coordenação e integração de cadeias produtivas, comercialização de insumos e minimização de riscos. No entanto, existem lacunas teóricas sobre o fomento à inovação, bem como a relação das variáveis organizacionais e de interação social no contexto das cooperativas. Foi realizado um estudo de caso, com abordagem qualitativa exploratório-descritiva, com cooperativas do Brasil e da Espanha. O estudo identificou que a intercooperação influencia a transferência de recursos para inovação ao facilitar o acesso a recursos de capital, recursos organizacionais e conhecimento; a transferência desses recursos, por sua vez, influencia a agregação de valor, que ocorre por meio da industrialização, embalagens comerciais, certificações, indicações geográficas, marcas comerciais, diferenciação de produtos, rastreabilidade, processos sustentáveis, responsabilidade social e processos logísticos. A pesquisa contribui para uma melhor compreensão dos aspectos que influenciam o desenvolvimento da

inovação, bem como a agregação de valor às commodities e as interações organizacionais e sociais no cooperativismo.

Palavras-chave: Cooperação entre Cooperativas; Intercooperação; Inovação; Agregação de valor; Cooperativas agropecuárias.

1 INTRODUCTION

The characteristics of each country influence the advantages or disadvantages in the production of certain products (LECTARD; ROUGIER, 2018). Comparative costs are factors that determine which countries have an advantage in the production and export of certain products (TRIPOLI; PRATES, 2016). In the context and characteristics of Brazil, agribusiness - which refers to the set of operations and transactions that involve from the production of agricultural or livestock inputs, activities carried out in agricultural production units, to the storage, industrialization, and distribution of agricultural products (ARAÚJO, 2007) – emerged as one of the main economic sectors (FIGUEIREDO; SANTOS; LIMA, 2012), with comparative advantages in products such as soy, sugar, orange juice, chicken, corn, and coffee (DINIZ, 2017; WAQUIL et al., 2004).

Brazilian agribusiness plays a vital role in economic and social growth. It also plays a significant role in international trade, representing approximately 20% of total jobs in the country (CEPEA, 2019), and responsible for about 21% of the national GDP (CNA, 2019). It is one of the main sectors of the Brazilian trade balance. Between 1999 and 2010, agricultural production was responsible for 42.53% of total national exports (IPEA, 2014). In 2019, agribusiness exports totaled US$96.8 billion, representing about 43% of the country's total exports (MDIC, 2019). In this aspect, Brazilian international trade is characterized as a major exporter of agricultural commodities, which correspond to 50.2% of the total traded in the international market (IPEA, 2019).

In the 1990s, with the increase in international competition and the extrapolation of the national market, Brazilian agricultural organizations saw the broad need to obtain an advantage over the competition (ZYLBERSZTAJN; NEVES, 2005); which can happen, among other things, as a result of the addition of value to products, as well as through economies of scale and/or scope (BIALOSKORSKI, 2012), which are significant factors for the agribusiness sector and have an influence on the competitiveness of organizations (SILVEIRA, 2014).

A large representation of cooperatives is apparent in that they exported US$ 5.137 billion in 2016, exercising trade relations with 147 countries, with the main destinations being China, the USA, and Germany (OCB, 2017a), with emphasis on agricultural cooperatives that operate in the production and export of grains and meats and that are part of the group of largest Brazilian agribusiness organizations, according to a ranking by Forbes (OCB/MS, 2018). In addition, the cooperatives have approximately 209.8 thousand employees, contributed approximately R$ 5.13 billion in tax collection in 2018 (OCB System, 2019) and approximately 48% of all Brazilian agricultural production is linked directly or indirectly to a cooperative (IBGE, 2017).

Therefore, agricultural cooperatives exercise important attributions, both in the coordination and integration of production chains (BIALOSKORSKI, 2005), as well as in industrialization, sale of inputs, marketing of products, and minimization of risks (ARAÚJO, 2007). However, it is worth noting that there are gaps regarding the broad knowledge about fostering innovation in the context of cooperatives (REED; HICKEY, 2016), as well as organizational and social interactions (MARTINS *et al*., 2017). Relevant aspects, since, in addition to innovation being an important element in the context of cooperativism (VIEIRA; BONIFÁCIO-DA-SILVA, 2016), it is centered on the social relationships undertaken (EMERY; FORNEY; WYNNE-JONES, 2017). These relationships are even part of the set of cooperative principles presented by the International Co-operative Alliance, that is, the principle of intercooperation - which is understood as the

interaction and/or joint work between different cooperatives, at local, regional, national, and international (ICA, 1995).

Thus, the study proposes to answer the following research question: what is the influence of intercooperation on innovation and value addition in the context of agricultural cooperatives?

That said, this article is composed, in addition to this introduction, of a theoretical review of resources for innovation, inter-organizational relationships, intercooperation, transfer of resources for innovation, and value addition. Furthermore, the methodological procedures for operationalizing the empirical research are presented. Then, research results are presented and discussed; and, finally, the conclusions of the study.

2.1 Resources for innovation and inter-organizational relationships

In the context in which innovations require attributes with relatively little complexity to be reproduced by other organizations, this will not be characterized as an element that sustains the superior competitive position of an organization. Thus, several studies emphasize the capabilities and resources of organizations as means to expand and sustain their competitive advantage (BARNEY, 1991; PETERAF, 1993; TEECE, 2009) and specifically, the attributes related to innovation that are related to heterogeneity and immobility of resources (GIACOMARRA *et al*., 2019; FARIA *et al*., 2019; JEAN, SINKOVICS; KIM, 2017). It should be noted that the very know-how for the development and use of innovation can be configured as a significant organizational capacity, and influence competitiveness (BATTOR; BATTOR, 2010), however, the attributes to sustain the superior results generated involve specific aspects beyond the competence to develop new products or new processes.

Thus, innovations enable organizations to reduce costs, offer better quality products or services (DHANORA *et al*., 2018), develop new products (DADFAR *et al*., 2013), optimize processes (DHANORA *et al*., 2018; RAJAPATHIRANA; HUI, 2017), the inclusion of new organizational mechanisms, improving internal and external relationships (ALI *et al.*, 2016) and strengthening resource management (LAWSON; SAMSON, 2001), thus generating higher growth rates (GEROSKI, 1993) and influencing the performance of organizations (SULISTYO, 2016).

In this sense, access to key resources is necessary for organizations to develop and expand their organizational capabilities linked to innovation (LAWSON; SAMSON, 2001); however, some of these resources have heterogeneous and imperfectly mobile characteristics that enable organizations to achieve and sustain a position of competitive advantage. Therefore, some researchers analyzed the resources that are needed for innovation, which are categorized and referenced in Table 1, below:

Table 1. Categories of Innovation Resources

Categories	Description	Source
Capital Resource	Financial Capital for innovation activities.	(BOŽIĆ; RAJH, 2016)
	Financial Capital for product innovation.	(LV; QI, 2019)
	Equipment and facilities for innovation.	(LV; QI, 2019)
	Access and use of technologies; technical equipment and computer systems.	AUDINO *et al*., 2017)
	Installations; equipment; products and materials; service infrastructure	(DIAS *et al.*, 2019)
	Technological assets for product innovations.	(CLAUSEN *et al*, 2013)
Knowledge Resource	Internal R&D; education; qualification; managerial experience.	(BARASA *et al*., 2017)
	Internal R&D; education and technical training of personnel; external knowledge.	(DLOREUX; LORDTARTE, 2014)

	R&D capability; management capacity; business alignment; capacity of partnerships; learning.	(DIAS *et al*., 2019)
	Market information, new product information; external knowledge.	(ZHANG; HARTLEY, 2018)
Organizational Resources	Collaborative product innovation capability; conflict resolution ability; cooperative culture; reliability; the atmosphere of product innovation.	(LV; QI, 2019)
	Intellectual property; organizational structure; Law Suit; image and brand; organizational culture; detailed information about the sector; organizational strategies.	(DIAS *et al*., 2019)
	Position on the network; formal structure and mechanisms for planning, coordination, control; informal relationships groups.	(WANG; HUANG; LIU, 2018)

Source: Research Authors

Based on the consolidation presented in the previous table, resources for innovation can be classified into three categories, namely: capital resources, knowledge resources, and organizational resources.

It is deduced that the second and third categories (knowledge resources and organizational resources) play significant roles in maintaining the competitive advantage of organizations since elements that make up these categories are characterized as assets of complex mobility, for example, management experiences, R&D capabilities, specific trajectory-dependent knowledge, cooperative culture, network ties, relationships between groups, trustworthiness, and consolidated brands. Therefore, the development and/or access to such resources is framed as attributes linked to innovation, significantly relevant for sustaining a position of competitive advantage.

Hence, there is an incentive to achieve diversified inter-organizational interactions because it is characterized as one of the elements that make up the category of organizational resources significantly relevant to innovation (LV; QI, 2019; WANG; HUANG; LIU, 2018), and because it is a means of accessing other resources considered essential (AHUJA, 2000; OLIVER, 1990).

Jean *et al.* (2017), Li and Atuahene (2001) argue that the innovation strategy is expressively linked to the dynamics of relationships practiced by the organization. Therefore, uncertainty regarding access to resources leads organizations to establish inter-firm relationships, achieve greater predictability, and carry out a more reliable key resources movement (SILVA, 2018; OLIVER, 1990).

It is recognized that organizations are part of an interconnected environment (OLIVER, 1990). In this sense, the capacity of an organization to access different types of knowledge and resources necessary for the development of innovation is influenced by established inter-organizational links (AHUJA, 2000). Therefore, organizations that use different collective knowledge are more likely to innovate (ARGOTE, 2013). The ability of an organization to innovate is linked to the set of external sources that enable access to necessary resources and skills (PARRILLI *et al*., 2010; CHOI *et al*., 2011), sources that can often, have a more expressive value than the internal sources themselves (SAKKAB, 2002).

Note that organizations are not only related in a dyad but there are also numerous indirect links with third parties (JONES *et al*., 1997), with a positive association between the cooperative relationships formed and the development of innovation (SHAN, 1994).

Based on this, it can be said that organizations are not limited to entities that use their internal resources to carry out their operations; organizations can access large resources through inter-organizational networks – which represent, according to Thorelli (1986), the long-term relationships between two or more organizations.

These relationships can provide opportunities for the transfer of resources between organizations, or even the execution of joint actions, to provide access to critical resources that the internal hierarchical structure could not obtain individually.

2.2 Intercooperation and transfer of resources for innovation

As discussed above, the key resources for the organization can largely be controlled by other actors, however, access to such resources is possible through the existing inter-organizational links (BALESTRIN *et al*., 2010; AHUJA, 2000).

Competition can take on two important roles: it can be the main threat to economic results (BUAINAIN *et al.,* 2014) or it can also take on the role of a partner, bringing broad benefits to the organization (ZYLBERSZTAJN; NEVES, 2005).

Therefore, the achievement of partnerships is an important aspect in the context of agribusiness, especially for producers with a smaller production scale. Partnerships can be a way for these organizations to enter and remain in relevant supply chains, which requires a certain rationalization of costs and production processes (NANTES, 2001). Organizations that make up the agribusiness can operationalize inter-organizational alliances from the achievement of informal collaborative links (BATALHA; SILVA, 2001) to the integration and control of all operations (e.g., mergers and acquisitions).

The cooperative model presents itself as an alternative for the integration of these organizations; and, thus, agricultural cooperatives - which are the union of agricultural or livestock producers, who are classified as owners, users, decision-makers, and beneficiaries of the cooperative organization (BIALOSKORSKI, 2012; CALZOLAIO; MENDIN, 2019) - can maximize the bargaining power of inputs by concentrating the purchase volume (ESNARD *et al.,* 2017), in addition to mitigating risks (Machinski, et al., 2016), agro-industrializing production (CECHIN, 2014), improving the competitiveness of small producers (COLOMBO; PERUJO-VILLANUEVA, 2017), making it possible to reach different marketing channels (LÓPEZ; GUERRA, 2011), enabling access to new markets, and providing opportunities for the transfer of technological innovations and knowledge about agricultural processes (CECHIN, 2014). Therefore, given the need for access to a range of resources and capabilities, there is an incentive for organizations to establish cooperative agreements.

The congress that referenced the centenary of the International Co-operative Alliance - ICA (maximum organization of cooperativism in the global context), structural changes in the cooperative movement were analyzed, as well as the trends in the performance of this movement, and, because of this, the general principles have been revised. Thus, among the seven established principles, "Cooperation between cooperatives" - also called "Intercooperation" - encourages integration between different cooperative organizations (KONZEN; OLIVEIRA, 2015).

Intercooperation - understood as the interaction and/or joint work between different cooperatives, at a local, regional, national and international level (ICA, 1995) - is seen as a significant aspect, as it enables the optimization of cooperativism through the development of networks, which are seen by Simão *et al.*, (2018) and Saes and Silveira (2014) as one of the most expressive strategic trends in cooperativism and agribusiness and as emphasized by Barney et al. (2001), it is a complexly imitable organizational asset. Therefore, in addition to integrating the set of cooperative principles, it is a strategic action favorable to the actors involved who intend to achieve a sustainable position of competitive advantage (SILVA *et al.,* 2004).

Bialoskorski (2012) states that there are different stages of intercooperation; from relational links to the complete integration of management and existing processes. Therefore, the first stage is an informal relational network between cooperatives; at this stage, the relationship takes place mainly concerning the coordination of networked information about some cooperative activities, mainly in a relational way. The second stage takes place in the constitution of a formal organization whose function is to manage contracts and information, and even logistical and brand management; the cooperative consortium is an example of this stage. The third stage would be

the constitution of a new centralizing company responsible for the integral management of processes and products; thus, central holdings or cooperatives that are part of a set of cooperatives fall into this stage.

In intercooperative relationships, there is both the establishment of formal and informal links, however to different extents. In this sense, actors can cooperate from formal contractual relationships supported by specific legislation, or even by informal relational bonds (BIALOSKORSKI, 2012), which can be essential for organizations to have access to critical resources (VAN WITTELOOSTUIJN, 2006), through, for example, the sharing of knowledge and technological assets (CECHIN, 2014; KONZEN, 2015). In this sense, the first proposal of the study is presented.

Proposition 1 (P1): Intercooperation influences the transfer of resources for innovation.

2.3 Resources for innovation and value addition

Silveira (2014) highlights a dilemma involving the productive trajectory of agricultural actors, namely: adding value to agricultural/livestock products, or taking advantage of the comparative advantage of commodity production - this advantage is due to the scale of production obtained through the volume produced from the same agricultural crop, which results in a reduction in the cost per unit produced (BESANKO *et al.,* 2012).

There are trajectories in agribusiness that are established because of the environmental context in which the producer organization is inserted (SILVEIRA, 2014). Thus, it is discussed whether Brazilian agricultural production is necessarily based on the intensive use of the resource widely available in the country (land).

The flat geological quality of Brazilian regions has made it possible to maximize the possibility of mechanization, thus favoring the increase in the scale of production (VIEIRA FILHO, 2014); in addition, Brazil has a large agricultural land area, and, in addition, (due to the climate characteristic) it has the possibility of producing more than one crop in different crops (GALVÃO, 2014).

Buainain (2014) emphasizes that the origins of wealth in agribusiness, which in the past was based on the productive space (land), has progressively been based on other kinds of assets, such as infrastructure, land quality, resources environmental, technology, human capital, managerial capacity, etc.; therefore, there has been minimization of the relevance of land and an increase in the importance of other species of assets. Thus, the author defends that there are changes in the process of accumulation of assets, which traditionally was based on the integration of land and the analogous use of labor.

This new process of accumulation is linked to the desires of consumers, as well as commercial norms (formal and informal), cultural factors, sectoral policies, which subordinate agricultural production dynamics (BUAINAIN, 2014). Furthermore, the competitive element – which in various agribusiness segments, mainly in the production of commodities, was characterized as a secondary aspect (ZYLBERSZTAJN; NEVES, 2005; BUAINAIN, 2014) – starts to require significant and continuous investments in factors conditioned by the market, such as, for example, food safety, product differentiation and social and environmental responsibilities (BUAINAIN, 2014; SAES; SILVEIRA, 2014). Thus, the results of the actors that make up agribusiness are increasingly conditioned to the intensification of the use of the set of assets, and, therefore, should adjust to the new process of accumulation, which, according to Buainain (2014), it requires organizational and technological changes.

In the specific case of Brazil (which has stood out in the production and export of agricultural commodities, especially soybeans, according to data from the Ministry of Agriculture, Livestock and Supply (MAPA, 2019)), there has been significant development of public actions and private companies that expanded the intensified use of technology and genetic improvement of grains. Thus, there was a wide allocation of resources (public and private) in agricultural

projects linked to the production of commodities, and, in this way, it was possible to obtain gains of scale concerning the Research and Development processes (SALLES-FILHO; BIN, 2014).

Therefore, technology, together with other elements, such as the country's territorial extension, tax legislation, and geological characteristics, influenced the definition of the productive trajectory of agricultural organizations in the country (GALVÃO, 2014; SALLES-FILHO; BIN, 2014; SILVEIRA, 2014). Therefore, the factors that distinguish agribusiness in Brazil are the economic, political, technological, and geoterritorial heterogeneities, which shape the trajectory of national agribusiness. Of these, we emphasize the heterogeneities that enable the development and access to wealth-generating assets for agribusiness presented above (infrastructure, land quality, environmental resources, technology, quality of human capital, management capacity), which can be broadly linked to political, economic, and technological aspects, and, in addition, to organizational elements.

Given this, the allegations that assume that agribusiness (mainly Brazilian) is fundamentally a producer and exporter of low value-added goods, as emphasized by Luz (2014), is imprecise, since agricultural and livestock production demand technologies, R&D, and innovations developed over decades and that required substantial investments, to promote the optimization of production processes and allow for productivity gains. In this sense, the added value can be expressed both encompassing the elements downstream of agricultural production (for example, agro-industrialization of production, packaging, geographical indications, introduction of trademarks, etc.), as well as in productive activities and upstream of production agriculture and livestock (e.g., traceability of production, sustainable production processes, production of organics, livestock with differentiated cutting possibilities, etc.) (BAGGIO; KUHL, 2018; CHIDICHIMA *et al*., 2018; LEONELLI; OLIVEIRA, 2016; LUZ, 2014; SOUZA; LIMA-FILHO, 2012; VILCKAS; NANTES, 2007).

That said, the set of activities that provide opportunities for adding value to agricultural production is specified in Table 2, below.

Table 2. Agricultural production value-adding activities

Value-adding activities	Description	Source
Agro-industrialization	Modification of product form through the improvement, transformation, or processing of the *in natura* production. Adding value through agro-industrialization allows products to be sold at different prices.	(FOGUESATTO, 2018) (VILCKAS; NANTES, 2007) (WINCK *et al.,* 2014)
Commercial Packaging	Packaging can play an important role in adding value to agricultural production, acting as a tool for identification, promotion, and exposure. It can instrumentalize the organization as a marketing mechanism.	(VILCKAS; NANTES, 2007)
Certifications and seals	Its purpose is to ensure good agricultural production practices. They can add value by enabling greater quality assurance, as well as aspects of food safety, environmental practices, cultural requirements, forms of management. (ex. Global Gap; ABIC Seal).	(VEIGA; RODRIGUES, 2010) (FUCHS; KALFAGIANNI, 2010)
Geographical Indications	Geographical indications (GIs) are linked to the territorial, historical, and cultural characteristics of the place where agricultural production takes place. These aspects can add value to the product by relating it to regional elements.	(CHIDICHIMA *et al*., 2018) (BARRA, 2019)

Trademarks	Trademarks related to the product and/or the organization allow for greater market penetration and product offerings at differentiated prices due to their possible association with the quality of the product, corporate image, or commercial positioning of the organization.	(BAGGIO; KUHL, 2018) (SOUZA; LIMA-FILHO, 2012)
Product differentiation	The aggregation of value can occur through the consumer's perception of the different characteristics of the product, that is, beyond the generalization or uniqueness of the product species.	(LEONELLI; OLIVEIRA, 2016) (VILCKAS; NANTES, 2007)
Traceability	It is the use of information systems that provide the history of a product or process from its origin to the final point of sale. Thus, it can be characterized as a means to ensure that products have the characteristics and meet the standards associated with a specific identity.	(NIEDERHAUSER *et al*., 2008) (ARAÚJO, 2007)
Sustainable processes	Agricultural production processes that have elements of environmental sustainability can add value to agricultural production, influencing consumer decision-making based on the execution of environmentally responsible production processes.	(TRIENEKENS *et al*., 2014) (PIAO et al., 2019)

Source: Research Authors

In each of the categories presented in Table 2, there can be the development and implementation of relevant innovations that make it possible to add value to production.

Agro-innovation is expressed both through new agricultural and livestock processing techniques, which include control of plant and/or animal pathologies (GALLEGO-BONO; CHAVES-AVILA, 2015), animal genetic improvement, rationalization of land use, inputs genetically modified, production process control (NANTES; SCARPELLI, 2001), as well as the introduction of new products, new planning, management and marketing techniques (NANTES; SCARPELLI, 2001; PAULILLO; AZEVEDO, 2001).

It should be noted that the introduction of technologies without the respective learning process does not ensure the optimization of agricultural production (VIEIRA FILHO, 2014). Thus, the integration of innovation, knowledge, and absorptive capacity becomes fundamental.

Vieira Filho (2014) observed that smaller agricultural organizations have a lower capacity for technological absorption and make fewer investments in technology available. Thus, as Salles-Filho and Bin (2014) emphasize, the small producer needs not merely efficient technological innovations, they demand broad and specific knowledge, to allow them to appropriate the value created by the innovation.

Therefore, technology transfer will only be effective if, together, they are allowed access to attributes that enable them to capture the value created (such as relevant information, specifically accumulated capabilities, modification of shape and/or packaging, individual brands, and collective), otherwise, the innovation results will be accessed by other actors in the production chain (Salles-Filho; Bin, 2014). In this way, knowledge resources and organizational resources play a relevant role in capturing the value created, through attributes of imperfect mobility, such as consolidated brands, specific and trajectory-dependent capabilities, and relationships with customers and suppliers (PETERAF, 1993; BARNEY *et al*., 2001; GRIMPE; KAISER, 2010; BAGGIO; KUHL, 2018).

Therefore, assets that add value to agricultural production and are characterized as imperfectly mobile resources play an important role in capturing the value created by innovation, and, consequently, in the long-term maintenance of the benefits obtained from innovation, such as the case of product differentiation, commercial brands and corporate image regarding quality and sustainability (which can also be obtained through certifications and traceability).

Given the above, consideration, it is inferred that the transfer of capital, knowledge, and organizational resources influences the addition of value in agribusiness, with emphasis on the resources that expand the capacity to develop value-adding activities that enable the capture of value created (knowledge resources and organizational resources). That said, the second proposition of the study is presented.

Proposition 2 (H2): Resources for innovation influence value addition.

2.4 Intercooperation and Adding Value in Agricultural Cooperatives

A large number of agricultural organizations sell their products without differentiation, including some that have important technological innovations (SALLES-FILHO; BIN, 2014). And, in this way, different actors in the production chain can appropriate the value created by innovation, mainly from small agricultural organizations, thus minimizing the results of innovation. This is due, according to Baggio and Kuhl (2018), to the fact that the producer's technologies and other resources are often widely available to all market organizations. In this sense, proper decision-making must enable agribusiness organizations to be able to capture the value created.

The results of implementing technological innovations without the proper organizational innovations can be insignificant, and often unfavorable, especially for small producers (SALLES-FILHO; BIN, 2014). Therefore, complementary assets (discussed by Teece 2009, and related to what Dierickx and Cool (1989) called asset interconnectivity) may allow agribusiness organizations to capture the values of implemented innovations. Therefore, the absence of these assets will lead to the possible transfer of the benefits of innovation to other actors.

Baggio and Kuhl (2018) and Salles-Filho and Bin (2014) specified some mechanisms that can allow the implementation of complementary assets to innovation processes, to capture the values created, namely: social and environmental seals, geographical indications, certification of quality, agro-industrialization, commercial brands (which, according to Azevedo 2001, require an extensive period of a commercial relationship with the client so that the association of the brand as an indicator of quality is possible).

Thus, these attributes, which can be characterized as value-adding elements (according to Foguesatto *et al*., 2018; Vilckas and Nantes, 2007; Fuchs *et al*., 2010; Chidichima *et al*., 2018; Barra, 2019; Souza and Lima-Filho, 2012), can be configured as relevant aspects for capturing the value created.

In this sense, the inter-organizational relationships between actors that make up agribusiness provide opportunities for the development of mechanisms that make it possible to capture the value created (BAGGIO; KUHL, 2018). For example, through Cooperative relations, the expansion of bargaining power, cost reduction, access to assets, and specific capacities accumulated among actors regarding production chains and different technologies, can play a relevant role in capturing the value created by innovations, enabling the modification of the form or presentation of the product, brand consolidation, development of agrotechnology, among other aspects (CECHIN, 2014; BAGGIO; KUHL, 2018). As emphasized by Salles-Filho and Bin, (2014, p. 440), “innovation is a collective game in which players are not all on the same team”.

The composition of network organizations provides opportunities for the conception of relationships with cooperation, enabling the development of broad knowledge (DYER; SINGH, 1998), as well as asset transfers and joint actions that maximize access to key resources (CUI *et al*., 2018; KÜÇÜKSAYRAÇ *et al.,* 2015). In this way, cooperativism, which is largely influenced by social order factors (FIGUEIREDO; FRANCO, 2018), can obtain better competitive positions through the inter-organizational and social relations undertaken (MARTINS *et al.,* 2017), as is the case with intercooperation.

In this sense, among several aspects that can motivate the execution of inter cooperative actions, the existence of actors who have control over essential resources, such as, for example,

large agricultural conglomerates, industries, and/or distributors, can influence the motivation for the possible achievement of interfirm relationships (SPROESSER, 2001; NANTES, 2001). These relationships can enable access and control over essential assets such as technology, know-how, capital, distribution channels, natural resources, among others (PAULILLO, 2001).

Furthermore, these cooperative links can promote access to new markets, including international markets, through the optimization of the use of relevant production factors, or even business relationships with other cooperatives at the international level (BIALOSKORSKI, 2012). Therefore, in international commercial transactions, there is a flow of information and, according to the effectiveness of the information obtained, the offeror will be able to infer about the characteristics of the market, as well as consumption habits and local singularities (AZEVEDO, 2001).

Therefore, the elements that can encourage cooperatives to operationalize intercooperation strategies include expansion of market power, cost reduction, development of agrotechnology, the complementarity of functions, access to relevant information, thus enabling the addition of value to agricultural production (BIALOSKORSKI, 2012; CECHIN, 2014). In this sense, the third proposal of the study is presented.

Proposition 3 (P3): Intercooperation influences value addition.

The relationships between the propositions are represented in the following theoretical model:

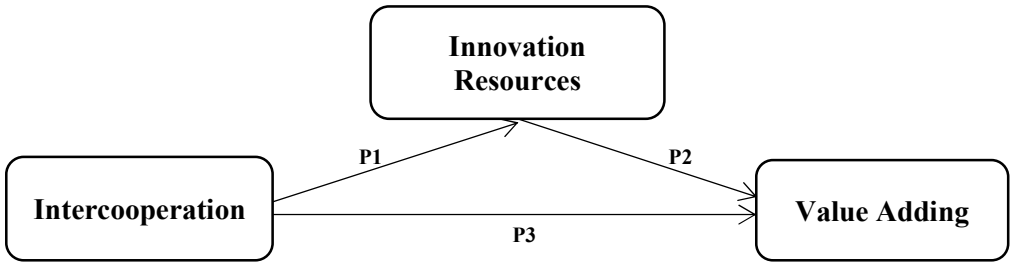

Figure 1. Proposed Theoretical Model
Source: Research Authors

3. MATERIAL AND METHODS

This research is a case study, with a qualitative approach, characterized as exploratory-descriptive research, as the purpose of the investigation is to understand the influence of intercooperation in the transfer of resources for innovation and value addition in agricultural cooperativism, observing the elements inherent to cooperative relations between cooperatives.

To achieve the proposed objective, it was necessary to investigate the ex-ante and ex-post categories of value addition, as well as the links between three constructs, namely: intercooperation, resources for innovation, and value addition. Therefore, data collection was carried out through semi-structured interviews conducted with presidents or directors of seven agricultural cooperatives located in Brazil and Spain. The investigation of cooperatives located in these countries did not aim to carry out a comparative study, but rather to identify characteristics of intercooperation in different contexts of maturation of cooperatives. Thus, the study was conducted with five Brazilian and two Spanish cooperatives.

The interviews were carried out between August 2020 and February 2021 using videoconference tools (Microsoft Teams, Skype, and Zoom). All interviews were recorded and transcribed for further analysis.

For the execution of the interviews, based on a theoretical review, the questions of the semi-structured script were previously developed, integrating questions about intercooperation, innovation, value addition, and their relationships. Furthermore, the aforementioned script was submitted to six academic judges for evaluation (objective and subjective) concerning the clarity, relevance, and theoretical relevance of the questions. Thus, the CVC (Content Validity Coefficient) method, proposed by Hernandez-Nieto (2002), was subsequently used. Thus, based on the CVC results and subjective considerations, the interview script was partially reformulated. It should be noted that the script was used, however, without limiting the arguments of the interviewees.

To analyze the collected data, the content analysis technique was used, according to Bardin (2016); thus, the data were coded and categorized based on the relationships between the content of the interviews, enabling interpretation and inferences from the results. For all categories presented, the respective empirical evidence was indicated.

The presentation and discussion of the results were carried out in the order of the propositions pointed out in the theoretical review of this article and the model illustrated in Figure 1; therefore, the role of intercooperation in the transfer of resources to innovation was initially analyzed (P1), then the influence of resources for innovation on value addition (P2) and, finally, the influence of intercooperation on value addition (P3).

After the content analysis, the information and categories presented were evaluated in light of the literature on cooperativism, innovation, value addition, and agribusiness.

4. RESULTS AND DISCUSSION

4.1 Intercooperation and transfer of resources for innovation (P1)

From the primary data collection, empirical evidence was identified on the influence of intercooperation on the transfer of resources to innovation. Thus, the categories that cover the role of intercooperation in the transfer of capital, knowledge, and organizational resources are presented in Table 3 below.

Table 3. Evidence of the influence of intercooperation on the transfer of resources to innovation

Categories	Empirical Evidence
Intercooperation and transfer of capital resources	We have a feed factory, we can reach another cooperative and say: if you want to provide service, we have a factory available, you pay x cost. The cooperative has a reasonable fleet of equipment, cooperative x, our partner, needs input delivery, for example, the cooperative has the logistics to do this. We integrate [with other cooperatives] the production of one of our products. Typically, any innovation within the industry is often extremely expensive. We can meet, let's say, investments and solutions that we want, or need because the union of cooperatives allows.
Intercooperation and transfer of knowledge resources	Each cooperative has different management and another cooperative that has already gone through a similar experience can be a case in point. We exchange information with other family farming cooperatives; there is an exchange of experiences. This management method that we have been trying to establish with producers, with members, comes from a relationship that we have with this technical assistance cooperative. The co-op always learns from the co-ops around it. We learned about working methods, ways of development, especially brands, and ways of making products.

Intercooperation and transfer of organizational resources	We have a lot of personnel difficulties; we talk to other cooperatives and there is an indication. Other cooperatives have a demand for production and we are often not in the market, we organize farmers so that they can make their products available, often more through contacts. When placing an order for materials, when we gather with other cooperatives, orders are placed at better prices, because the order is much larger. We and other cooperatives have to look for alternatives to our problems; many cooperatives do not know how to go abroad; we intend that the union of cooperatives can go out and sell. Intercooperative integration is in the sense of looking for small cooperatives, with low volumes to physically associate and form a large cooperative, which ultimately unifies. The union of co-ops we've done involves seventeen co-ops, and these co-ops are really joining forces to market as a single company.

Source: Research Authors

As shown in Table 3, it is observed that intercooperation influences the transfer of innovation resources, by facilitating access to capital resources, enabling physical and technological factors of production, such as physical infrastructure, equipment, and machinery, or even favoring the acquisition of raw materials and the production of certain products through integrated activities.

Furthermore, intercooperation influences the transfer of knowledge, whether related to management, technical information, working methods, and product development. Finally, it was identified that intercooperation significantly influences the transfer of organizational resources, firstly enabling the formation, expansion, and strengthening of inter-organizational networks, through the indication of labor, intermediation between cooperatives for the supply and acquisition of production; moreover, by maximizing the bargaining power of cooperatives through the possible integration of the volume of inputs and the marketing of production, thus expanding the commercial scale, thus reducing costs and expanding the capacity of cooperatives to develop new products, processes, and markets.

4.2 Adding value and the influence of resources to innovation (P2)

Initially, the empirical evidence of the categories of value-adding activities identified ex-ante (as presented in Table 2 of this article) is presented in Table 4, as well as the categories of activities identified ex-post.

Table 4. Categories and empirical evidence of value-adding activities

Categories	Empirical evidence
Categories *Ex ante*	
1. Agroindustrialization	Adding value is the question of industrialization, it is the verticalization of these products. In 2015 it was necessary to create a new product line. We plant cassava; we pack and sell to the market. We process the manioc flour and sell it. We add value from the bottling itself, which has an added value much higher than that of wine in bulk.
2. Commercial Packaging	We are adding value to our packaging; in a way, we are looking for new ways to make [packaging].

3. Certifications and seals	Our processes go hand in hand with quality standards such as GlobalGap [certification] and others. Another quality standard they make is to certify the product handling process. We currently have the BRC, and IFS quality standards, so the products are protected by their quality seals, and now our products are also certified with vegan qualifications.
4. Geographical indications	In the region we have been working with bananas that have a sweetness; it could be a geographical indication, recognizing that this product has specific characteristics, differentiated from other places. In all products we sell, they are labeled as mountain products. A product that does not meet these geographic characteristics cannot be transported; that's an added value.
5. Trademarks	We are adding value with flour, with farofa; we have our brand, the [brand x]. All products contain your brand. For [product x] we have several brands, and then the cooperative brand, with a series of requirements, which we mark because they are characteristics of our product.
6. Product differentiation	The project that the cooperative is developing is to work with some fruit with high added value, a fruit that is very much in vogue there now due to protein issues. We are approaching new markets towards sparkling wine, at very competitive prices, a higher quality wine.
7. Traceability	The end customer, the consumer of this product, if he wants to, can know perfectly well which tree [the product] came from.
8. Sustainable processes	What we are developing is to approach the production of ecological wines, which respect the environment, and all the themes that today, with climate change, are very, let's say, in fashion.
Ex post categories	
9. Logistic processes	The value addition of the cooperative is related to agility, the issue of logistics, a correct delivery schedule, the cooperative has the right day, the right time to supply the product
10. Social responsibility	[Project x] is to add value and enter the market with additional products from family farming.

Source: Research Authors

It is observed that empirical evidence was found for all ex-ante categories (Table 2). Furthermore, two ex-post categories were identified, namely: logistical processes and social responsibility. The first is related to Porter's (1989) value chain, which points out that the logistical system can be framed as an existing and potential source of differentiation for the company, with the possibility of being characterized as a unique and valuable attribute for buyers.

Social responsibility, in turn, in addition to being linked to the seventh principle of the ICA (1995), "concern for the community" - which advocates that cooperatives should work for the development of their communities - can enable cooperatives, add value to their production, with the commitment to contribute, in fact, to social development, such as, for example, valuing the production of family farming, marketing products from riverside communities, respecting the interests of the local population, or even enabling better social and economic conditions for

cooperative members; with this, as highlighted by Starobin (2021), a certain legitimacy is generated in the management of agricultural production.

That said, the influence of innovation resources on value addition will be analyzed below. Thus, the categories and empirical evidence that demonstrate such influences are presented in Table 5.

Table 5. Evidence of the influence of innovation resources on value addition

Categories	Empirical evidence
Product differentiation resources	Machines have been installed that have helped in the better treatment of the product, you guarantee the product quality, product uniformity, and quality that the customer demands today. We had to install sorting machines, as they guarantee uniformity in the product, something that with manual selection is very difficult. There are times when the fruit presents internal damage that cannot be seen with the naked eye, but it is possible through the machine with detectors, they are a series of processes that see certain damage in the fruit. We have created a new bottling line, also thinking about new market alternatives, such as wine x, which is a wine in which an isobaric bottler must be used.
Certification Resources	We are building a collection factory. This is an innovation project that is being launched. New installations. They are within the processes for the new certifications. The quality department achieved the BRC quality standards, which is what must be complied with in the English market; and the IFS, which covers the entire European market. The organic product requires a lot of attention with documentation, the specifics of this category, access to products that are certified.
Resources for agro-industrialization	Our cooperative is very innovative, we are immersed in investments and we inaugurated a new bottling unit, which will make it possible to develop new product trends. We are now working in facilities that manufacture our nitrogen and can work without depending on the outside.
Trademark Resources	We launched a brand aimed at the Horeca market, we are testing a new product, which is like a plastic drum type, where there is a container inside and it is made with air pressure. The cooperative is always on social media, is launching new products; tapioca was the first in the state. We went looking for a product formula that worked.
Resources for Geographical Indications	We need a series of guidelines and standards that lead us to ensure that our product meets specific characteristics that will later be beneficial to the market. For the recognized geographical indication, we are working to bring together producers to be able to do this for the region, but everyone must share this same ideology.
Resources for Sustainable Processes	The objective is to make the irrigation system and the cultivation system more respectful of the environment

Source: Research Authors

Empirical evidence was identified that demonstrates the influence of innovation resources on value addition. It was observed that there is a large demand for capital resources to add value through product differentiation, agro-industrialization, and sustainable processes, which require

physical infrastructure and machinery that enable the execution of such activities. Furthermore, the significant influence of knowledge resources to add value through certifications and geographical indications was identified, since these activities demand specific information and knowledge about certain regulations.

There is an expressive need for organizational resources to make geographical indications viable, as well as for the development and maintenance of valuable commercial brands; the first (geographic indication) requires the involvement of a wide range of actors from a given location so that there is proof that the product offered in the region has specific attributes that differentiate it in the market, since, in this context, the valuation perceived by the client, as highlighted by Bonadonna et al. (2017), is based on sensory aspects (taste, color, texture, fragrance), as well as the history of its origin, so many customers express a certain positive opinion about the products (BONADONNA et al., 2017).

The second value-adding activity whose study identified that they demand significant organizational resources (trademarks) require some signs of value from the cooperative, such as advertising campaigns, sponsorships, and sales actions. In this way, the use of a trademark for the agricultural product, as emphasized by Gregoric (2018), allows the identification of this product by the customer, making it recognizable in the market. It is worth noting, however, that the valorization of the commercial brand is linked to its image and reputation, which are organizational resources built by the cooperative throughout its history, complexly imitable and, therefore, a source of sustainable competitive advantage.

4.3 Intercooperation and adding value (P3)

Finally, the influences that intercooperation exerts directly on value addition are highlighted. Thus, in Chart 6 the categories and the respective empirical evidence that express such influences are presented.

Table 6. Evidence of the influence of Intercooperation in adding value

Categories	Empirical Evidence
Intercooperation and agro-industrialization	We relate to other cooperatives when we are going to industrialize a product that the cooperative has that does not benefit and needs a third-party service. There was a joining of cooperatives that thought they should stop selling wines in bulk, to enter the bottling world and make a bigger profit with their product.
Intercooperation and logistical processes	Milk cooperatives sometimes have idle capacity and others nearby with idle capacity; it does not make sense.
Intercooperation and trademarks	A brand was created through an association that integrates cooperatives and aims to sell a product with a quality brand, which attests to certain quality conditions.
Intercooperation and geographical indications	We have proposals here in the region for a brand in the region of organic producers, which would be a brand to unite more, so that they could use it. Access to geographical indication to other cooperatives remains, we can demonstrate that we meet a series of quality parameters; is what really unites us.

Source: Research Authors

It was identified that intercooperation influences value-adding activities related to agro-industrialization, logistical processes, commercial brands, and geographical indications.

It was observed that intercooperation enables agricultural production to be industrialized through relationships between cooperatives; through facilitating access to physical resources from one cooperative to another, as well as through the collective acquisition of equipment, enabling the product to be offered with greater added value. Furthermore, intercooperation actions can favor the sharing of logistical systems between cooperatives, allowing for a reduction in costs (due to greater use of transport capacity), as well as the possibility of expanding the logistical

range, and with more expressive capacity for modernization, thus enabling greater agility and consistency of deliveries.

It was observed that intercooperation enables cooperatives, acting in an integrated manner, to expand the conditions for creating commercial brands with important added value; this is primarily due to the significant cost of achieving an effective branding strategy, a cost that can be shared between associated cooperatives, thus expanding the possibility of carrying out relevant and expressive promotional actions that significantly value the trademark.

Finally, it is highlighted that intercooperation maximizes the possibility of adding value through geographical indications, primarily due to the need for broad participation of local actors who benefit from them, including cooperatives; furthermore, due to the possibility of carrying out collective actions that value such geographical indications, such as the promotion of local attributes that are specific and that differentiate the product, that is, aspects of authenticity and exclusivity, such as attributes pointed out by Adro (2020) that value Serra da Estrela cheeses, such as the specific altitude at which they are produced and the international recognition of the product's sensory characteristics; thus, the integrated action of cooperatives enables the achievement of broad promotional actions that enable the valorization of geographical indications, even enabling international recognition.

5. CONCLUSION

From the results of the investigation, it was identified that intercooperation influences the transfer of resources for innovation by facilitating access to capital resources, organizational resources, and knowledge; the transfer of such resources, in turn, influences the addition of value, which takes place through agro-industrialization, commercial packaging, certifications and seals, geographical indications, commercial brands, product differentiation, traceability, sustainable processes; social responsibility and logistical processes.

In this way, the research contributes to a better understanding of the aspects that influence the development of innovation, as well as the addition of value to commodities and organizational and social interactions in cooperativism.

It is important to emphasize that the present study was limited to carrying out qualitative research for the investigation and achievement of the proposed objective, therefore, for the generalization of the findings, it is suggested that the theoretical model presented be empirically tested through a quantitative investigation.

Furthermore, the following suggestions for future studies are proposed: to investigate the moderation of internal R&D activity in the transfer of resources for innovation; and, finally, the influence of internal relations on value addition in the context of agricultural cooperatives is analyzed.

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