Innovation and organizational performance as antecedents of competitive advantage in the context of beef cattle

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Abstract

Agribusiness is a set of linked operations with the objective of producing, benefiting and distributing food. This sector deals with the various activities ranging from genetic improvement to the delivery of the final product. The agents, whether small or large, are inserted in at least some part of the production chain. In this context, it is noteworthy that the innovation that has been defined as a critical issue for cooperation networks. Theory has pointed out that innovation, and organizational performance, has an influence on competitive advantage. In view of this, the general objective of this study was to identify whether innovation and organizational performance are antecedents of competitive advantage in the context of beef cattle, in the view of agents working in cooperation networks in southern Brazil. Therefore, the method proposed for the development of this study is of a qualitative nature, operationalized through in-depth interviews and non-participatory observation. Nine producers were interviewed, from four cooperation networks in the states of Paraná, Santa Catarina and Rio Grande do Sul. The results obtained show that innovation and organizational performance are antecedents of competitive advantage, in the perception of the producers who participated in the study.

Keywords: Innovation; performance; competitive advantage.

1. Introduction

Beef cattle farming occupies a prominent position in Brazilian agribusiness. The country has held the world leadership in beef exports since 2004, and with export projections of 2.55 million tons in 2020 (BEEF MARKET CENTRAL, 2020; USDA, 2020).

World beef consumption has been losing ground, mainly to poultry, over the years. In 1961, beef accounted for 41% of total meat consumption worldwide, and today this percentage is only 22% (FAO, 2019). Developing countries, such as Brazil, have been increasing their beef consumption, mainly due to the increase in their population's income (RITCHIE, 2019), despite the loss of market share for chicken meat.

The expansion of the Brazilian beef cattle herd has more than doubled in the last four decades, but the three states in the southern region of Brazil had growth of only 9.52% (IBGE, 2020). The main reasons evidenced are the opening of new frontiers for cattle breeding in the central-western and northern regions of the country, and the pressure for physical space for grain production (PEDROSO OAIGEN et al., 2013).

In this way, beef producers in the southern states of the country have been experiencing other competitive pressures on their activity, and new models of competition and organization of the production chain have been developed, mainly because they are made up of small producers.

In this competitive landscape, companies need to continuously improve and maintain their competitive position to sustain long-term growth and profitability. Therefore, questions about identifying product competitive advantages become increasingly important (VAN; CAO; J.H., 2017).

In the search for the potential to improve competitive advantages, companies need to focus on the basis of product innovation, quality improvement, and product availability always at the lowest possible costs (HENRIQUES; PEÇAS, 2013).

Innovation is recognized as the mechanism for competitiveness and economic development and as the

driving force for creating distinctive value for products, services, and brands (PORTER, 1993; BANBURY; MITCHELL, 1995; GRANDORI; SODA, 1995; NOKAKA et al., 1997; JONASH, 2001; VAN DEN BOSCH; VAN WIJK; VOLBERDA, 2003).

The creation and sustaining of competitive advantage is something that has no "recipe", it is very dynamic, and the establishment of competitive strategies must follow this logic always considering the context (TEECE; PISANO; SHUEN, 1997).

Finally, it can be stated that in companies that seek corporate sustainability and competitiveness in turbulent and complex environments, strategic planning is necessary, but in a different and less formal logic, as argued by (GRANT, 2003).

In this context, the following research question is presented: Are innovation and organizational performance antecedents of competitive advantage in the context of beef cattle raising, in the view of the agents that act in the cooperation networks in southern Brazil?

2. Theoretical Framework and Propositions

2.1 Innovation

The definition of innovation includes the concepts of novelty, commercialization, and/or implementation, i.e., if an idea has not been developed and transformed into a product, process, or service, or has not been commercialized, it would not be classified as innovation (POPADIUK; CHOO, 2006).

Innovation is an interactive process initiated by the perception of a new market and/or new service opportunity for a technology-based invention that leads to development, production, and marketing tasks that seek the commercial success of the invention (FREEMAN, 1989).

This definition addresses two important distinctions: (i) the innovation process comprises the technological development of an invention combined with the market introduction of that invention to end users through adoption and diffusion, and (i) the innovation process is interactive in nature.

The origin of innovation lies in the shared vision and mission focused on the future, moreover, the vision and mission of an innovative organization is also customer and market oriented, focusing on solving customer problems (COVEY, 1993).

The concept of innovation is not restricted to an idea of improving processes in an organization to facilitate its day to day (DRUCKER, 1986), but in a process that aims to discover, experiment, develop, as well as adopt new products, new production processes and new organizational forms (DOSI, 1988), and can occur in a new product or service, a new administrative structure or system, a new technological production process, a new plan or a program related to the members of the organization (DAMANPOUR, 1991).

In a more evolutionary approach, which goes beyond the logic of transaction costs, the concept of innovation networks is highlighted with more durable and interactive relationships between specific partners in the innovation process, which can also include more informal links between companies and organizations, such as those in industrial districts (ASHEIM, 1996), a given technology or piece of knowledge is not only exchanged, but also collectively developed and the respective knowledge base is increased (TÖDTLING; LEHNER; KAUFMANN, 2009).

Innovation as a collective and interactive process that are distinguished by different mechanisms of

innovation and coordination among dispersed actors (MYLAN et al., 2015). Thus, social capital is essential for a company and allows its strategic stance or innovation activities to generate desirable outcomes (ZHOU et al., 2021).

The process of agricultural innovation (knowledge) does not rely solely on the actions and competencies of individual farmers. Agricultural innovation is more influenced by social networks where farmers are embedded or have been purposely created to support and assist them in their innovation efforts by providing relevant information, knowledge, and other resources (ALAIE, 2020).

In open innovation networks, participating actors exchange different resources (technology, managerial and market knowledge, as well as products, services, and personnel) vertically and horizontally across organizational boundaries (ALBERTI; PIZZURNO, 2017).

Research linking interorganizational networks to innovation has emphasized the benefits of knowledge recombination associated with spanning structural gaps and crossing institutional boundaries, as well as in building collaborative ties as a way to engage in knowledge recombination (MARIOTTI; HAIDER, 2020).

Understanding how firms can improve the potential for recombinant innovation and knowledge integration should help firms tune their competencies and capabilities and therefore leverage the contributions of their partners more effectively (FORKMANN; HENNEBERG; MITREGA, 2018).

Collaborating with an increasingly diverse set of partners can produce recombinant innovations, that is, in a new context. FORKMANN; DIEZ-VIAL, 2018; KOBARG; STUMPF-WOLLERSHEIM; WELPE, 2019).

Value creation organization increasingly depends on business networks (MÖLLER; SVAHN, 2003; ANDERSEN; MEDLIN, 2016) and the innovation fostered by these networks (VAN FENEMA; KEERS, 2020).

Innovation in business networks can take many forms, such as business process improvement (DE MARTINO et al., 2013), network relationship development, and collective product-service delivery (TAX; MCCUTCHEON; WILKINSON, 2013).

Interaction is likely to include teaching, learning, coercion, and concession by all participants at specific times and for specific issues, and involves all actors in exchanges between their own counterparts, long- and short-term costs and benefits (FORD; MOUZAS, 2013).

2.2 Performance

Performance is a recurrent subject in most management branches, being a topic of interest for both academics and managers (LIAO; WU, 2009).

The importance of using systems to measure performance is varied, since they can demonstrate how and how well the organization is performing its activities, as well as, the progress it has had over time (LIAO; WU, 2009), as well as, allowing the comparison with the competition (RICHARDS et al., 2009).

Performance effectiveness improves various processes, increases adaptability, creates opportunities, and presents innovation that emerges as a significant source of sustainability (AKRAM et al., 2018).

Organizations try to build sustainable performance through the appropriate combination of organizational capabilities and resources to maintain a balance between operational and economic performance (SZÉKELY; KNIRSCH, 2005).

A well-implemented strategy will create a competitive advantage that will help increase performance (FRIIS; HOLMGREN; ESKILDSEN, 2016; WOGWU; HAMILTON, 2018).

Performance comes from the organization's use of resources, including knowledge, technology, and management resources, which induce the generation of innovations of different types (DAMANPOUR; ARAVIND, 2012). Moreover, the ability of firms to use knowledge more appropriately is a key factor in achieving higher performance (VAN WIJK et al., 2012).

Work done in partnership assists in obtaining and reliably accessing a variety of external resources, capabilities, and information (HSIAN-MING; HSIN-FENG, 2020). And by putting more effort into developing and maintaining inter-firm alliances and networks, a firm can not only gain the advantage of acquiring resources with lower costs and the benefits of economies of scale and scope in manufacturing, but also create the advantages of innovation, research and development, and other activities through the synergy of the partners' corresponding operations and competitive strategies to strengthen its competitive advantage (HSIAN-MING; HSIN-FENG, 2020).

Performance measurement as a means of quantifying the efficiency and effectiveness of activities undertaken by the organization (NEELY; GREGORY; PLATTS, 2005), and organizational learning is a critical part of improving firm performance, emphasizing competitive benefits (HINA et al., 2020)

Firm performance is also enhanced by deploying and developing resources for innovation while complying with the principles of environmental sustainability (LÓPEZ-GAMERO; MOLINA-AZORÍN; CLAVER-CORTÉS, 2009; CHEN et al., 2015; LEE; CHE-HA; ALWI, 2020).

Organizations have in their power different measurement systems, which can use financial and non-financial indicators, as well as objective or subjective measures (ATALAY; ANAFARTA; SARVAN, 2013). It is observed in the literature studies that address performance in terms of financial performance, operational performance and/or organizational effectiveness, as addressed in the study of (LIAO; WU, 2009). The complexity, adding to other variables that affect organizational productivity performance, such as innovation, leadership, organizational culture (SOEWARNO; TJAHJADI; ANMARISKA, 2020).

2.3 Competitive Advantage

Facing a highly competitive environment, factors such as knowledge assimilation are fundamental to leverage and understand the economic, social and cultural differences of the organizations for success. Other characteristics such as identifying, understanding and enabling for the market also contribute to a successful competitive environment, in addition to observing price and quality (PORTER, 1990).

Organizations that stand out in competitive advantage have evidence of an effective management and a consolidated environment, both technologically and economically, understood as a core of knowledge from which value will be added to products by collective learning (PRAHALAD; HAMEL, 1997), where individuals are essential in the learning process of the organization (HINA et al., 2020).

Partnerships play a significant role in shaping competitive advantage. External resources are incorporated into the cooperation network that provide strategic opportunities and affect behavior and business value (LAVIE, 2006). The studies of (SINGH; MITCHELL, 1996; SAXTON, 1997; STUART; HOANG; HYBELS, 1999; AFUAH, 2000; STUART, 2000; LEE; LEE; PENNINGS, 2001; ROTHAERMEL, 2001)

show that partners' resources influence the competitive advantage of the interconnected firm.

The competitive advantage of a network can be understood as a function of the combined value and rarity of all resources and the interactions arising between partners, and is influenced by the interactions, combinations, and complementarities between its internal resources and its partners (AMIT; SCHOEMAKER, 1993). The heterogeneity of these resources requires that not all partners possess the same amount and types of resources (PETERAF, 1993). Networks articulate a set of resources, which are all the types of assets, organizational processes, knowledge, capabilities, and other potential sources of competitive advantage that are owned or controlled by the network, and that can produce a positive, neutral, or negative impact on its competitive advantage. This result depends on the characteristics of each resource: its value and rarity (BARNEY, 1991).

From another point of view, Lavie (2006), states that acting in networks has an important contribution to resource homogeneity, facilitating asset flows between interconnected partners, but that generally, alliances do not increase competitive advantage by contributing to resource heterogeneity. However, under conditions of pure resource homogeneity, alliances will be formed only for collusion purposes, rather than to gain access to complementary resources. Mergers and acquisitions may be even more effective than alliances for these purposes.

The competitive advantage of a company that operates in a cooperative network, based on the combination of internal resources and partner resources, is greater than its competitive advantage if evaluated on the basis of its internal resources alone. Firm-specific, partner-specific, and relationship-specific factors play a role in determining the type and magnitude of rents extracted from both the firm's internal resources and the resources of the alliance partners (LAVIE, 2006).

Despite growing evidence of the contributions of partnerships in cooperative networks to competitive advantage, most of the studies reviewed do not provide a comprehensive theoretical framework to explain this important relationship between network resources and network performance, nor how networks combine internal and external resources to gain competitive advantage.

Organizations need to leverage their knowledge-based resources to develop a knowledge-based economy, so these firms can enhance their overall performance and gain a sustainable competitive advantage by relying on organizational intellectual assets to deliver enhanced and innovative products and services (AKRAM et al., 2018).

2.4 Propositions

2.4.1 Proposition 1: Innovation positively influences organizational performance.

In its essence, the term innovation captures the novelty of an idea that attempts to improve organizational performance (CAMISÓN-ZORNOZA et al., 2004).

Several studies indicate that innovation positively influences organizational performance (BOWEN; ROSTAMI; STEEL, 2010; CHIANG; HUNG, 2010; CARAYANNIS; GRIGOROUDIS, 2014; POPA; SOTO-ACOSTA; MARTINEZ-CONESA, 2017). Similarly, a study conducted by (JIMÉNEZ-JIMÉNEZ; SANZ-VALLE, 2011) show that product, process, and organizational innovation positively influence organizational performance.

Thus, innovation is essential to improve organizational performance, since organizations that focus on

innovation are more successful in securing greater market share, which can lead to high revenues and profitability (GARCÍA-MORALES; LLORÉNS-MONTES; VERDÚ-JOVER, 2008).

2.4.2 Proposition 2: Organizational performance positively influences competitive advantage.
Ho and Ho,Mohd-Raff, (2019) suggest that it is essential to investigate the impact of external and internal factors on firm performance and sustain performance for long-term survival. Nustini, Yuni (2006) concludes that the firm must control its performance to sustain its competitive advantage.
Thus, the indicators of the "competitive advantages" dimension reflect the benefits related to the achievement of value and improvement of organizational competitiveness, with respect to increased productivity and organizational performance (BRYNJOLFSSON; HITT; KIM, 2011; MÜLLER; FAY; VOM BROCKE, 2018).

3. Methodology

The research presented here is qualitative in nature. Several researchers such as Attride-Stirling (2001), Gummesson (2000), Hoskisson et al., (1999), and Van Maanen (1979) have considered qualitative research as one of the main methodologies used when exploring organizational and managerial issues.
The research strategy adopted in this study is based on case studies. The case study "involves the study of a topic explored through one or more cases within a limited system" (CRESWELL et al., 2007).
The following techniques were used for data collection: semi-structured interview, non-participant observation and consultation providing data triangulation. For the treatment of this information, the NVivo® software was used, i.e., for the codification of all the material collected during the interviews (systematized by means of audios and transcriptions), with the specialists of the beef cattle farming cooperation networks, field diaries of the researcher (containing notes of the observed evidences) and also of secondary data (technical reports of the cases' performance, strategic plans, among other analyzed documents).
The instrument used for data collection was a structured questionnaire with 35 questions, where the researcher asked each interviewee to answer individually. All interviewees belonged to the technical staff or producers associated with the corresponding cooperation network. The choice of interviewees was made by convenience of the researcher. The interviews were recorded with prior consent of the interviewee, and were conducted between January 10 and 27, 2020, and totaled 5 hours and 37 minutes, with an average of 38 minutes per interviewee.

3.1 Characterization of the Cases

The following is a description of the cooperation networks of the three southern states that participated in the research.

3.1.1 Case 1 – GRUPO NOVICARNES – Pato Branco, Paraná
Association located in the city of Pato Branco, in the state of Paraná, created in May 2005, where an association of cattle breeders of precocious cattle started to be called NOVICARNES Cooperative, being

constituted by 21 cooperated members. The cooperated cattle farmers, known as Grupo NOVICARNES, started to organize themselves on capital call practices and/or financing support lines creating a structure composed of a cold storage plant, supported by a complete transportation system of animals rescue to the cooperative members' properties and a distribution sector of its products (NEUMANN; BARCELLOS, 2006).

3.1.2 Case 2 - COOPERALIANÇA – Guarapuava, Paraná

The Aliança Mercadológica de Guarapuava is composed and led by producers of early steers in the municipality of Guarapuava (Paraná), who develop marketing agreements with meat packing plants and retail chains in the state of Paraná. Characterized by a horizontal network of relationships, it was formed by the organization of 18 producers, which coordinates the transactions from producer to retail of meat from superprecocious animals (BRAGA, 2010).

Currently, COOPERALIANÇA has more than 140 associated producers and its products can be found in more than 100 points of sale in the state of Paraná, with its own industrial plant in the final stages of construction (COOPERALIANÇA, 2020a).

3.1.3 Case 3 – COOPERTROPAS – Lages, Santa Catarina

In 2013, a group of producers in the Amures region started the Campos das Tropas Integration and Experience Exchange Club, with an indefinite duration. The program's fundamental principles were cooperation and mutual help, promoting technological development, associativist education and technical professional improvement of the members of Campos das Tropas, through lectures, conferences, meetings, meetings, courses and technical monitoring with the purpose of cattle production of early calves of British breeds and finished on pasture (COOPERTROPAS, 2020).

3.1.4 Case 4 – APROCCIMA – Antônio Prado, Rio Grande do Sul

The Association of Rural Producers of the Campos de Cima da Serra (APROCCIMA) was created on May 26, 2006, but the embryo of the association dates back to October 1997, when the Integration and Exchange of Experience Club 120 (CITE 120) was founded. APROCCIMA was born from another internal demand from the CITE 120 producers, who, in a way, already had a good internal organization of the productive system in general, but the producers felt the need to extend their action outside the gate, and act at the production chain level.

APROCCIMA was created to organize productive chains, integrating agricultural and livestock systems with forestry and tourism resources and value the production of the Campos de Cima da Serra of Rio Grande do Sul and currently has 27 associated producers (APROCCIMA, 2019). The association performs the function of identifying useful knowledge and coordinating with the whole network the generation of knowledge, assimilation and the integration of new knowledge to the existing ones (FILIERI; ALGUEZAUI, 2012).

4. Results

4.1 Proposition 1: Innovation has a positive influence on organizational performance

The strategy of offering a significantly new product, with a differentiated market positioning, in terms of price, quality and relationship with the customer, enabled one of the researched chains to build its own meatpacking industry with its own resources, which is part of the production chain management, by eliminating or mitigating inefficient links that do not contribute to the final value of the product.

The business model developed and the management style adopted by the networks are related to the development of innovations, which in turn positively affect the organizational performance. This can be verified in some of the interviewees' answers.

"Every time we innovate, like last year when we offered Wagyu (2020) beef crossed with Angus, as a differentiated product, the price is higher. There have been some positive results." (Interviewee A).

"If we don't innovate, if we don't make the changes on top of what the market wants, we will lose competitive advantages. We will be losing to our competitors. That's the fear we can't have, because fear of a competitor is a certificate of incompetence." (Interviewee A).

"Our business model provides opportunities for small producers to be placed in the market, so we are able to access markets in a much easier way than if we were isolated." (Interviewee B).

"We were able to access restaurants, chefs that we couldn't access before, exactly because of our new products, processes, meat technologies, and differentiated ways of commercialization." (Interviewee B).

"This whole market, this gourmetization of beef, was largely due to the participation of Cooperaliança in Paraná. Outside the state there are other companies that developed the same work. Today, the barbecue chef has the pleasure of having 4, 5, 6 different cuts and grilling them. Before the habit was more of a skewer, today the grill is gaining more space because the roasts are very fast. Today we roast the forehead, the chuck, which used to be pressure cooker meat. We have a prime rib roast, ancho steak, chorizo steak, short rib roast. It's several cuts, which the co-op has a lot to do with this gourmetization of meat." (Interviewee D).

"We have sought in training, with consumers and with our employees, to offer differentiated cuts, suggestions for dishes, recipes. This is undoubtedly an innovation." (Interviewee A).

"We want to have a larger carcass size, a better standard, and therefore a better price, guaranteeing the market these specifications. The racial standard, fat coverage, are some of these standardizations. We do studies for feed standardization with the objective of standardizing meat flavor, so that the consumer buys meat with a certain flavor this week and with the same flavor the next week." (Interviewee F).

"We price our sales above the commodity price [...] when we sell a product with the price above the market, we establish a different relationship with the customer." (Interviewee D).

"If we did not have this quality standard, we would not be able to add value, [...] we would not be able to remunerate the producer in a satisfactory way. Our product has a higher production cost, and the producer needs to receive more for that, but on the other hand, if we don't have quality we won't be able to remunerate him adequately." (Interviewee E).

"The higher the quality of the product, the higher the added value. So we can sell better and that is a differential that improves our financial performance." (Interviewee I).

4.2 Proposition 2: Organizational performance has an influence on competitive advantage

It was found that superior organizational performance gives cooperation networks some competitive advantages. The first of these is the freedom to charge prices up to 25% higher than competitors. This is possible because of the efficient management of the production chain, the quality of the products and services, and the trusting relationship established with the clients. The other is the management of resources throughout the production chain, which minimizes losses of efficiency and provides conditions for profitability to producers, even when charging prices similar to those of rivals.

"Today the cooperative has an average remuneration around 20 to 25% higher than the common market, which is what all the slaughterhouses in the state pay, a remuneration like that you imagine that for every 5 steers that you sell in the common market, you would only need 4 inside the cooperative, because it is 20% a significant difference and this money goes to the producer's hand." (Interviewee H).

In this way, this capacity to take responsibility for the organization of the production chain gives the researched networks a sustainable competitive advantage, given the complexity of the productive arrangement, its cultural dynamics, the capacity to appropriate knowledge resources, the scarcity of some strategic resources, as well as the difficulty of being replicated in a short period of time.

It is still possible to see that the organizational performance, by the answers of the interviewees, when asked if the work of the network is carried out in collaboration.

"Yes, there is a popular saying: 'the more sickle, the bigger the field. We don't know everything, and being this way, we need to surround ourselves with people who know what we don't know. In some subjects we are always ignorant, in the literal sense of the word. It is mandatory that no matter how much knowledge you have, you have to look for people who complement what you don't know how to do." Interviewee A, (2020).

"Our producers in the vast majority have higher education in the most different areas, bringing with them their experiences [....] everyone doing their best for the group's result. So these differentiated experiences, they bring this sum." Interviewee A, (2020).

"[...] for our producers to be producing quality, they need to have a head, a different culture, they are producers more adept at adopting knowledge and technology, most of our producers are not cattle farmers by essence, they are farmers who already have a cooperative culture of their agricultural production system, most, I believe 98% of our producers are farmers and are associated with some other cooperative." Interviewee E, (2020).

"We have partnerships with some of our suppliers, who work a lot in the search for information, we do some field work, and from these works that new information is generated, which is passed on to the cooperated producers." Interviewee D, (2020).

> "The financial performance comes by consequence, but the competitive advantage itself is made within the serious work we perform [...] committing to the producer, helping him to produce efficiently and have profitability when processing the product, remunerating according to our carcass classification table." Interviewee E, (2020).

In this way, it is possible to infer the existence of a common thread between financial performance and competitive advantage, which gives the cooperation networks studied a differentiated competitive condition.

> "The competitive advantage that the producer has is the higher price and the scale of slaughter." Interviewee E, (2020).

> "We know about the price oscillations, but we managed to stay almost three years with the same price for the producer, around 12% above any slaughterhouse." Interviewee F, (2020).

5. Final Considerations

The complex dynamics of competition and constant change have made it virtually impossible to use off-the-shelf solutions to current and future problems. Given this realization, organizations need to create value to gain competitive advantage, and the best way to do this is through innovation. While this obvious realization is not recent, a systemic view of innovation in relation to the non-economic aspects of innovation, such as the social and cultural aspects, provides a better understanding of the notion of innovation.

It is known that efficient production chains better manage resources in all their stages, as well as provide customers with new experiences and added value. It is still preponderant in Brazil the aspect that agribusiness is a supplier of raw material, since the times of Cabral to foreign countries and/or now to the industrial sector, and not as an important participant in the process of transformation and aggregation of value.

Some networks have adopted an open innovation model to make their projects feasible, looking for partners that can contribute to the efficiency of the beef production chain.

The disorganization of this chain, the dissatisfaction of the producers with the industry, the availability of resources from educational, research, and extension institutions, the awareness that the guarantor of the quality of the final product is the rural producer, and that there was no conflict of interest between the producer links and the final consumer, were some of the situations raised as motivators for the consolidation of a chain organization model from the producer's perspective.

Organizational performance motivates networks to launch new innovative products and services to sustain market advantages among competitors. Many factors have been shown to support organizational performance growth and competitive advantage, and one of them is organizational culture, which can be seen during the interviews conducted.

It is recommended for future studies to quantify the relationships between the constructs in a wider sample, which was not possible in this research, not only because of those who were not willing to participate in the study, but also because the size of the total population of the identified arrangements that operate in cooperation networks in the southern region of the country does not support a study of this nature.

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