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Behaviors and attitudes that encourage information sharing and promote managerial innovation in agricultural cooperatives

Comportamientos y actitudes que fomentan el intercambio de información y promueven la innovación gerencial en las cooperativas agrícolas

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Abstract

This study analyzes behaviors and attitudes of managers that encourage information sharing and promote managerial innovation in agricultural cooperatives. The responses obtained in the survey conducted with 94 managers of Brazilian agricultural cooperatives, were analyzed using structural equation modeling. The results indicate the influence of cognitive conflicts, trust, and cooperation on information sharing, as well as information sharing on managerial innovation. Indirect effects are only observed from cognitive conflicts and cooperation in managerial innovation. These findings add to the literature by revealing behaviors and attitudes of managers that encourage information sharing, which can mitigate communication problems that potentially hinder the development of tasks and managerial innovation. They also contribute to management practice with insights for managers about behaviors and attitudes that can reinforce the guiding principles of cooperative organizations.

JEL Code: M12, M41
Keywords: cognitive conflicts; trust; cooperation; information sharing; managerial innovation

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Resumen

Este estudio analiza comportamientos y actitudes de los gestores que fomentan el intercambio de información y promueven la innovación gerencial en las cooperativas agrícolas. Las respuestas obtenidas en la encuesta con 94 gerentes de cooperativas agrícolas brasileñas fueron analizadas mediante modelado de ecuaciones estructurales. Los resultados indican la influencia de los conflictos cognitivos, la confianza y la cooperación en el intercambio de información, así como el intercambio de información en la innovación gerencial. Los efectos indirectos se observan sólo en los conflictos cognitivos y la cooperación en la innovación gerencial. Comportamientos y actitudes de los gerentes que fomentan el intercambio de información, lo que puede mitigar problemas de comunicación que potencialmente obstaculizan el desarrollo de tareas y la innovación gerencial. También contribuyen a la práctica de la gestión con conocimientos para los directivos sobre comportamientos y actitudes que pueden reforzar los principios rectores de las organizaciones cooperativas.

Código JEL: M12, M41
Palabras clave: conflictos cognitivos; confianza; cooperación; intercambio de información; innovación gerencial

Introduction

In the organizational context, sharing information can help in different ways, whether in understanding the work being carried out, highlighting what each individual in the group knows, or providing greater effectiveness and efficiency in preventing and solving problems, coordination and allocation of task responsibilities, and promoting the improvement of business processes (Gunawong & Leerasiri, 2022). However, different factors can influence the information sharing process and challenge information management.

Cognitive conflicts, among these factors, are present in the group and organizational context, which can boost creativity and generate innovation in behaviors and attitudes (Dimas et al., 2005). Cognitive conflicts relate to tasks and arise from the perception of disagreements in different judgments regarding points of view, ideas, and opinions about how to achieve a common goal (Bedford et al., 2019). These conflicts can boost creativity and generate innovation in behaviors and attitudes, since from different points of view they seek to achieve common goals through discussions and exchanges of ideas (Petrou et al., 2019). Depending on how divergent perceptions are presented to the group, conflicts can generate benefits, such as influencing the information sharing process (Xie et al. 2014).

Other factors can influence information sharing, such as trust and cooperation. Organizations must provide the necessary conditions for establishing trust among their employees, as this can boost the exchange of information and knowledge sharing (Rutten et al., 2016). In a more cooperative environment, better conditions are created for sharing information (Beuren et al., 2019; Liu et al., 2020). Information sharing, in turn, can help generate innovation, by stimulating discussions that provide insights for the

development of new strategies, processes, or products (Hilmawati et al., 2023; Lin et al., 2010).

Evidence of isolated relationships between these factors (e.g., Sridharan & Simatupang, 2013; Tsai & Bendersky, 2016; Wang et al., 2019) leads to conjecture that, combined, may reveal important complementarities. However, in the context of cooperatives, especially in the agricultural industry, these elements may be more prominent, since they are organizations guided by cooperative principles (Mannes et al., 2022) and are dependent on integrated activities, from promoting rural producers to the commercialization of agricultural products (Anzilago et al., 2018). According to Webering (2020), cooperatives are the organizational model that provides the best conditions for cooperation between internal members or even when it involves relationships with external agents.

Despite recognizing the isolated importance of these factors, the literature is silent on their combined interaction. It is silent about these behaviors and attitudes of managers in agricultural cooperatives, an environment that is supposed to be conducive to interaction, aimed at social organization to improve the socioeconomic conditions of rural producers and their families (Anzilago et al., 2018). Thus, the purpose of this study is to analyze behaviors and attitudes of managers that encourage information sharing and promote managerial innovation in Brazilian agricultural cooperatives. To this end, a survey was carried out with managers of Brazilian agricultural cooperatives, and structural equation modeling using partial least squares was applied to the data.

The study is based on the Cognitive Dissonance Theory (CDT), proposed in 1957 by Leon Festinger, which considers that divergences can influence changes in the cognitions and behaviors of the different individuals that make up a group (Hinojosa et al., 2017). Cognitive dissonance, in this research with a positive perspective, is based on two contradictory cognitions, whether or not to share information among members of the work group. An environment that promotes debates and encourages the exposure of possibilities, arising from the variety of knowledge, skills, and perspectives, contributes to information being shared and conflicts mitigated (Weingart et al., 2015).

The research results contribute to the literature that addresses the relationships proposed here between cognitive conflicts and information sharing (e.g., Tsai & Bendersky, 2016), trust and information sharing (e.g., Sridharan & Simatupang, 2013), cognitive conflicts and innovation (e.g., Wang et al., 2019), information sharing and innovation (e.g., Beuren et al., 2020). Furthermore, the literature on information sharing usually focuses on the context of supply chains (e.g., Bailey et al., 2021), thus disregarding information sharing within the organization (Beuren et al., 2018).

The research also contributes to the management practice of agricultural cooperatives by highlighting the importance of stimulating trust and organizational cooperation to promote information sharing (Silva et al., 2022), with a view to improving work relationships and organizational development. Furthermore, understanding cognitive conflicts can contribute to promoting the necessary conditions for

treating them as constructive sources for those involved. When there are conflicts in teams, open and spontaneous communication can reduce friction, especially when group members share information and make the environment more cooperative and trusting, which, consequently, helps to improve group performance (Bui et al., 2019). Thus, the locus of research stands out, especially the cooperative role in the dissemination of technologies and management of rural properties (Silva et al., 2022).

Theoretical basis and hypotheses

Effects of cognitive conflicts, trust, and cooperation on information sharing

Cognitive conflicts or task conflicts can arise from policies, task responsibilities, resource distribution, or procedures (Kakar, 2018). These occur in various parts of the organization and in different phases of a process, and can have different effects in the initial, intermediate, and final phases of the process (Schulze et al., 2014). They can be constructive, when they increase the group's effectiveness, or destructive, when they have a negative correlation with the group's effectiveness (Jehn, 1995).

Cognitive conflicts can provide conditions that improve the quality of decisions made, triggering greater cognitive diversity, due to the discussion of different points of view, which favors broader access to information and knowledge (Mooney et al., 2007; Wang et al., 2019). If properly managed, they have the potential to generate greater diversity, ideas, and innovative solutions (Bedford et al., 2019). Furthermore, cognitive conflicts can facilitate information sharing between group members, in order to support the decision-making process and promote the expansion of the organization's innovative capacity and competitiveness (Hilmawati et al., 2023).

Information sharing can be defined as the degree of information disclosure by one party to facilitate the activities of another party, which helps in mutual understanding of business and the maintenance of partnerships on a longer basis (Huo et al., 2014). Information is shared and conflicts are resolved when expressed directly and through debates that allow the exposure of possibilities arising from the variety of knowledge, skills, and perspectives (Weingart et al., 2015).

Previous research (e.g., Tsai & Bendersky, 2016; Weingart et al., 2015) set out to investigate the relationship between cognitive conflicts and information sharing. Cognitive conflicts or task conflicts, expressed as disagreements or debates, can be associated with greater information sharing, indicating that there is receptivity to divergent opinions (Tsai & Bendersky, 2016). Conflicts expressed in the form of debates are more likely to induce conditions that favor information sharing and conflict resolution (Weingart et al., 2015). Therefore, we conjecture that:

H1a: Cognitive conflicts directly and positively influence information sharing.

Trust is essential in the process of understanding different levels of social phenomena, as it involves processes that observe individuals in the context of their behavior within groups (Breuer et al., 2016) or social interactions (Evans & Krueger, 2011). Trust at the group level is related to attitudes that involve greater commitment, information processing, and group performance, in addition to knowledge sharing among group members and between groups (Breuer et al., 2016).

In an organizational relationship with a high level of trust, individuals do not hesitate to share and believe information and knowledge, which generates greater willingness to share information and produces mutual contributions (Kmieciak, 2021; Sridharan & Simatupang, 2013). On the one hand, increased confidence can generate greater exposure to risks (Collier & Sarkis, 2021). On the other hand, the absence of trust can inhibit the free flow of information, which makes it difficult to implement and manage initiatives that generate value (Collier & Sarkis, 2021; Zaheer & Trkman, 2017).

When considering the work group context, trust can increase the ability of group members to work together (Barczak et al., 2010). Previous studies (e.g., Lvina et al., 2017; Sridharan & Simatupang, 2013) investigated the effect of trust on information sharing. In general, trust facilitates working together, which implies greater information sharing (Lvina et al., 2017). Therefore, we propose that:

H1b: The level of trust directly and positively influences information sharing.

Cooperation can be defined as the level at which individuals are willing to work together to achieve the group's objectives (Yu & Cable, 2011). In the intragroup context, cooperation can benefit the individual, the group and/or the organization as a whole (Majer et al., 2018), through organizational learning and strengthening knowledge sharing behavior, among other aspects (Bendig et al., 2018).

For Massaro et al. (2019), when organizations begin to explore cooperation to expand their knowledge, those involved can benefit from information sharing. By exchanging information, members of a group or agents begin to cooperate to achieve common goals (Silva et al, 2022), building trust, which in turn improves coexistence and enables better performance (Nazifa & Ramachandran, 2019; Sridharan & Simatupang, 2013).

Information sharing is a determinant of collaborative culture, with the purpose of improving the decision-making and organizational results (Alduais et al., 2023; Prajogo & Olhager, 2012). When cooperative aspects predominate, there is a greater possibility of learning, which makes information sharing more noticeable and, thus, reinforces relationships of trust and cooperation. Therefore, we assume that:

H1c: The level of cooperation directly and positively influences information sharing.

Effects of information sharing on managerial innovation

Introducing new organizational structures, administrative systems, management and work practices and concepts, processes and techniques capable of creating value for the organization by improving performance are considered managerial innovation (Damanpour & Aravind, 2012). Managerial innovation comprises changes in the way managers perform their activities (Damanpour & Aravind, 2012) and is oriented towards improving competitiveness and organizational performance, involving fundamental changes for the organization over time (Alduais et al., 2023).

Information sharing and the continuous search for new ideas can help reduce information asymmetry and create conditions for promoting managerial innovation (Gunday et al., 2011; Wei & Guan, 2021). The relationship between information sharing and innovation was the focus of research by Lin et al. (2010), who observed positive effects of information sharing on product, process, marketing, and service innovations; however, a significant relationship between information sharing and managerial innovation was not found.

Kulangara et al. (2016) found in a survey with American executives that information sharing significantly affected trust and innovation. Beuren et al. (2020) observed in their research that information sharing generates positive impacts for the innovation process, as it allows discussions and meetings to synchronize the sharing of knowledge between different areas. In general, elements such as leadership, collaboration, and information sharing help the innovation process in the organizational context (Parast et al., 2019). Therefore, we assumed that:

H2: Information sharing directly and positively influences managerial innovation.

Mediating effect of information sharing in the relationship between cognitive conflicts, trust, and cooperation with managerial innovation

The perception of high cognitive diversity team members, which considers, among other elements, differences related to values, beliefs, and skills, can contribute to promoting managerial innovation in the organization (Hoever et al., 2012; Kanchanabha & Badir, 2021). Divergent thinking creates conditions for improvements in the innovation process, especially in environments where there it is safe to share and implement new ideas (Kakar, 2018).

Cognitive conflicts can facilitate the capacity for innovation, as they prevent premature consensus, stimulate critical thinking and provide reflections to support the decision-making (Jehn, 1995; Maia & Lima, 2020). Several studies (e.g., Bedford et al., 2019; De Dreu, 2006; Wang et al., 2019) found

a positive relationship between cognitive conflicts and innovation. Bedford et al. (2019) observed in their research that cognitive conflict is positively associated with ambidextrous innovation. De Dreu (2006) found that moderate levels of cognitive conflicts ideally influence innovation, as they stimulate information-seeking behaviors on the part of group members, in addition to the evaluation of alternative courses for their actions. Wang et al. (2019) observed that senior team cognitive conflict positively affects exploratory innovation.

The literature also presents evidence that trust (Kulangara et al., 2016) and cooperation (Beuren et al., 2020) influence the sharing of innovation and knowledge, which enhances managerial innovation. Kulangara et al. (2016) found empirical evidence that information sharing significantly impacts trust and innovation, and that trust mediates the impact of information sharing on innovativeness. Beuren et al. (2020) observed the impact of information sharing on the exploration of new knowledge between partner cooperatives. This evidence leads to the presumption that information sharing interferes with managers' behaviors (cognitive conflicts, trust, and cooperation) regarding managerial innovation. Thus, it is predicted that:

H3: Information sharing has a mediating effect on the relationship between cognitive conflicts (H3a), trust (H3b), and cooperation (H3c) with managerial innovation.

Figure 1 shows the flow of relationships established in the formulated hypotheses.

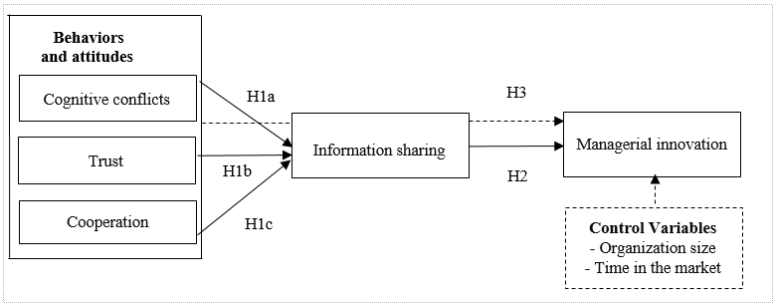

Figure 1. Research theoretical model

Note: The dashed line indicates indirect relationships between the independent variables and the dependent variables, mediated by information sharing.

Source: Prepared by the author

In this research, the influence of cognitive conflicts (H1a), trust (H1b), and cooperation (H1c) on information sharing is investigated. Furthermore, the relationship between information sharing and managerial innovation (H2) is analyzed. Finally, the mediating effect of information sharing is verified in

the relationship between cognitive conflicts (H3a), trust (H3b), and cooperation (H3c) with managerial innovation.

Methodological procedures

Population and sample

A survey was carried out with professionals who work in agricultural cooperatives, registered on the professional network LinkedIn. The search was carried out by professionals at different hierarchical levels, with positions such as "director", "manager", "coordinator", "supervisor". From August to October 2021, 855 invitations were sent to join the contact network, limited to one respondent per cooperative, of which 404 accepted the invitation. The link to access the questionnaire was sent to them via the QuestionPro platform. Furthermore, emails with the research link were sent to professionals working in 693 Brazilian agricultural cooperatives listed on the Brazilian Cooperative Organizations (OCB) website, which also supported the research and disseminated it across its networks. The final sample consisted of 94 valid responses, a quantity considered sufficient by parameters established by Faul et al. (2009).

The demographic profile of the agricultural cooperatives where the respondents work indicates that they are concentrated in the South (48%), Southeast (30%), and Central-West (15%) regions and, on average, have been operating in the market for 28 years. The predominant operating segments are supply goods and inputs (39%), industrialized products of animal origin (24%), and industrialized products of plant origin (24%). Some of these cooperatives operate in more than one economic segment. Regarding the profile of respondents, 70 (75%) identified themselves as male and 24 (25%) as female, and the mean sample age was 41 years old. As for the positions they occupy, 36% work as coordinators, 27% as managers, and 26% as supervisors.

Constructs and research instrument

The research theoretical model is made up of five constructs: Cognitive conflicts, trust, cooperation, information sharing, and managerial innovation. The research instrument comprises statements on a seven-point Likert scale, which indicate the degree of agreement, ranging from completely disagree (1) to completely agree (7). An exception occurred in the confidence statements, for which the original scale was maintained, ranging from never (1) to always (7). At the end of the questionnaire, questions were included to identify the respondents and the organizations where they work.

Initially, the independent variables were measured (cognitive conflicts, trust, and cooperation). Cognitive conflicts were measured with six statements, four of which were adapted from Mooney et al. (2007) and two by Shah and Jehn (1993). The adaptations consisted of transposing the statements from interrogative to affirmative form and changing the scale for standardization purposes. Confidence was measured with eight statements from Simons and Peterson (2000), in its original form. Cooperation was measured with five statements adapted from Mavondo and Rodrigo (2001), basically adapting to the group context, in addition to standardization with the adopted scale.

Next, the intervening variable, information sharing, was measured with three statements adapted from Bunderson and Sutcliffe (2002) and three statements adapted from Kakar (2018). The adaptations included changes to the scale, which was nine points, and replacing knowledge sharing from Kakar's (2018) research with information sharing.

Finally, the dependent variable, managerial innovation, was measured with six statements adapted from Vaccaro et al. (2012), which considered aspects related to management practices, management processes, and structures. The changes implied replacing the organizational context with the group level.

Initially, the questions that made up the research instrument were translated and then the reverse translation was carried out. The instrument was then submitted for evaluation by three researchers from a graduate program in accounting. Afterwards, a pre-test was carried out with three professionals in the field. Only a few wording adjustments were suggested before sending the questionnaire link to professionals from agricultural cooperatives.

The data was collected by a single method and the respondent filled in all variables (dependent and independent), which may trigger Common Method Bias (CMB) problems (Podsakoff et al., 2003). To mitigate this problem, a cover letter was included with detailed instructions about the research purpose, guarantee of anonymity, and clear disclosure regarding the scale items. Furthermore, after data collection, Harman's single-factor test was performed, in which a total explained variance equal to 35.86% was obtained, a value that meets the criteria proposed by Podsakoff et al. (2003), with values below 50%.

Control variables

Control variables were also considered. The organization size was measured by the number of professionals the organization employs, with absolute values converted to natural logarithm, as operationalized by Bedford (2015). Research shows that the organization size can be associated with innovation (Mol & Birkinshaw, 2009), under the argument that larger companies have greater pressure to

incorporate new management practices and are more capable of carrying out innovations in the management process, which does not happen in smaller companies (Mol & Birkinshaw, 2009).

The organization's time in the market is another control variable considered, and was operationalized according to the study by Bedford (2015), considering "0" for organizations that have been operating for less than 20 years and "1" for those that have been operating in the market for at least 20 years. The organization's time in the market or age has been used in previous studies (e.g., Baregheh et al., 2016) under the assumption that younger organizations have greater flexibility and propensity for innovation, while older organizations are linked to existing routines, so they may be less prone to innovation (Hui et al., 2013).

Data analysis techniques and procedures

Exploratory factor analysis was carried out, and in general the statements presented satisfactory reliability and sampling adequacy indexes, however, there was a need to remove statements. As they did not meet the criterion of a factorial load greater than 0.70 (Hair Jr. et al., 2017), two statements were removed from the cognitive conflicts construct, one from information sharing and two from the trust construct.

The hypothesis test was carried out using the structural equations modeling (SEM) technique, estimated from partial least squares (PLS), with the aid of the SmartPLS 3.0 software. SEM is a multivariate analysis technique, which combines factor analysis and multiple regression methods, in order to examine the structure of interrelationships between constructs (Hair Jr. et al., 2017). This technique allows the handling of complex modeling, in addition to offering robustness when data is not normal and there is no compatibility with smaller samples (Hair Jr. et al., 2017).

To analyze the measurement model and the significance of the relationships between the latent variables, Bootstrapping was considered with 5 000 resamples, Bias-Corrected and Accelerated (BCa) confidence interval, and two-tailed test at a 0.05 significance level (Hair Jr. et al., 2017). Blindfolding was adopted to reuse samples to observe the predictive relevance (Q2) (Hair Jr. et al., 2017).

Description and analysis of results

Measurement model

The measurement model assesses the convergent and discriminant validity of the constructs, in addition to the composite reliabilities (Hair Jr. et al., 2017). Table 1 presents the values for the validity and reliability of the measurement model.

Table 1
Validity and reliability of the measurement model

	Cronbach's alpha	rho_A	CR	AVE
1. Cognitive conflicts	0.839	0.859	0.895	0.685
2. Confidence	0.876	0.879	0.906	0.618
3. Cooperation	0.832	0.879	0.879	0.595
4. Information sharing	0.751	0.757	0.834	0.503
5. Managerial innovation	0.855	0.887	0.890	0.580

Note: Cronbach's alpha (>0.70); rho_A (>0.70); CR = Composite Reliability (>0.70); AVE = Average Variance Extracted (>0.50)
Source: Own elaboration

The model presents validity and reliability, with Cronbach's alpha, rho A, and composite reliability (CR) loadings greater than 0.70 for all constructs (Hair Jr. et al., 2017). Convergent validity using the Average Variance Extracted (AVE) criterion was also met, as all variables obtained loadings greater than 0.50 (Hair Jr. et al., 2017). Table 2 presents the discriminant validity values.

Table 2
Correlations and discriminant validity results

	1	2	3	4	5	6	7
1. Cognitive conflicts	0.828	0.513	0.528	0.644	0.325	0.045	0.144
2. Confidence	0.450	0.786	0.645	0.665	0.494	0.067	0.062
3. Cooperation	0.469	0.583	0.771	0.718	0.378	0.125	0.106
4. Information sharing	0.515	0.553	0.609	0.709	0.566	0.185	0.138
5. Managerial innovation	0.288	0.452	0.353	0.492	0.761	0.115	0.185
6. Organization size	-0.040	-0.023	-0.120	-0.133	-0.027	-	0.002
7. Time in the market	0.134	0.043	-0.088	-0.124	-0.111	-0.002	-

Note: Values in bold represent the square roots of the AVE, and the lower diagonal indicates the correlations using the Fornell-Larcker criterion; and the upper diagonal indicates the values according to the HTMT criterion
Source: Own elaboration

For discriminant validity, the Fornell-Larcker criterion, which requires loadings greater than 0.50 (Hair Jr. et al., 2017), was met. The Heterotrait-Monotrait Ratio of Correlations (HTMT) criterion, which assesses whether the average correlations of items between constructs present values below 0.90 (Hair Jr. et al., 2017), was also met. Verification of the validity and adequacy levels of the measurement model proved to be satisfactory, allowing the analyzes to continue.

Structural model

In the analysis of the structural model, the results of the hypothesis tests are presented in Table 3.

Table 3
Structural model results - Direct effects

	Direct relationships	Beta (β)	Error	t-value	VIF	p-value	Decision
H1a	Cognitive conflicts → Information sharing	0.241	0.112	2.160	1.364	0.031**	Accepted
H1b	Trust → Information sharing	0.235	0.131	1.797	1.612	0.072*	Accepted
H1c	Cooperation → Information sharing	0.359	0.11	3.271	1.648	0.001***	Accepted
H2	Information sharing → Management innovation	0.457	0.106	4.325	1.461	0.000***	Accepted
-	Organization size → Managerial innovation	0.036	0.08	0.456	1.020	0.649	-
-	Market time → Management innovation	-0.063	0.107	0.589	1.074	0.556	-

Note: *p<0.10; **p<0.05; ***p<0.01.
Assessment of the structural model: R^2: Information sharing = 0.455; Managerial innovation = 0.215.
Predictive relevance (Q^2): Information sharing = 0.209; Managerial innovation = 0.127.
Source: Own elaboration

In the path analysis of the hypotheses, significance levels up to 10% were considered for direct relationships, which provided statistical support to accept them. There is a positive and significant influence of cognitive conflicts (H1a), trust (H1b), and cooperation (H1c) on information sharing. Furthermore, there is a positive influence of information sharing on managerial innovation (H2), with statistical significance (p<0.01). When considering the influence of control variables (organization size and time in the market) in relation to managerial innovation, there was no statistical support to accept the proposed relationships.

To assess the absence of multicollinearity, we checked whether the Variance Inflation Factor (VIF) values were lower than 3.0 (Hair Jr. et al., 2017). The highest VIF presented was 1.648, which denotes the absence of multicollinearity. In the process of validating the model, the explained variance was also observed, and in social and behavioral sciences an R2 of 2% characterizes a small effect, 13% a medium effect, and 26% a large effect (Hair Jr. et al., 2017). Based on the values presented, the variables information sharing, and managerial innovation have great explanatory power. Finally, the predictive relevance (Q2) was measured, which considers the need to present values greater than zero (Hair Jr. et al., 2017), therefore, the values allow inferring predictive relevance for the variables.

In the analysis of potential indirect effects in the structural model (Table 4), it is verified whether there is a mediating effect of the information sharing construct.

Table 4
Structural model results - Indirect effects

	Indirect relationships	Beta (β)	Error	t-value	p-value
H3a	Cognitive conflicts → Information sharing → Managerial innovation	0.110	0.062	1.784	0.074*
H3b	Trust → Information sharing → Management innovation	0.107	0.066	1.626	0.104
H3c	Cooperation → Information sharing → Management innovation	0.164	0.072	2.292	0.022**

Note: *p<0.10; **p<0.05; ***p<0.01
Source: Own elaboration

Cognitive conflicts (β=0.110, p-value=0.074) at a significance level of 10%, and cooperation (β=0.164, p-value=0.022) at a significance level of 5% present indirect effects on managerial innovation, via information sharing. As a positive and significant direct relationship was observed between cognitive conflicts and managerial innovation, mediation is partial (Hair Jr. et al., 2017).

Discussion of results

The discussion of results was based on testing the hypotheses of the research model. H1a predicte a direct and positive relationship between cognitive conflicts and information sharing, which was supported (β=0.241; p<0.05). This result is in line with studies by Tsai and Bendersky (2016) and Weingart et al. (2015) and suggests receptivity regarding differences of opinion (Tsai & Bendersky, 2016), which can act positively in the cooperatives by generating debates and exchanging information (Tsai & Bendersky, 2016). When discussing tasks, new ideas can emerge and lead to task conflicts, which in turn help to improve group performance (Wu et al., 2017).

In cooperatives, it is essential that cognitive conflicts promote information sharing and demonstrate receptivity to divergent opinions (Tsai & Bendersky, 2016), in line with what cooperative principles establish (Mannes et al., 2022). In cooperatives, conflicts can arise as a result of strategic disagreements or agency conflicts (Maciel et al. 2018). The process and results of the decisions made by cooperatives may denote their ability to manage conflicts (Hess; Bacigalupo, 2013). The success of the decisions made is related to the skills of the cooperative's members in promoting working relationships that foster bond-building, collaboration and effective communication (Piki, 2021).

H1b conjecture a direct and positive relationship between trust and information sharing, which was supported (β=0.235; p<0.10). In line with the finding of Lvina et al. (2017): when there is trust, individuals are willing to engage in collaborative partnerships, leading them to share research and exchange information and knowledge. This can increase the group's contributions (Tuya & Tuya, 2019),

but it requires an organizational environment that stimulates the flow of information, which represents an incentive for the formation of trusting partnerships.

In agricultural cooperatives, trust can facilitate interaction between peers, including the work of professionals with members in integrated production, enjoying greater sharing of information (Lvina et al., 2017). This highlights the need to adopt strategies that can mitigate possible problems that affect relationships of cooperation and trust. It is known that trust and cooperation are basic pillars for cooperatives (Saz-Gil et al., 2021). Trust helps generate feelings of belonging and pride, as well as reducing problems such as opportunism (Mazzarol et al., 2013; Jensen-Auvermann et al., 2018). In addition, alliances are formed for cooperation on projects that can help to obtain competitive advantages and improve performance (Peñalver et al., 2018).

H1c advocate that cooperation directly and positively influences information sharing, which was supported (β=0.359; $p<0.01$). This result is in line with Massaro et al. (2019). Members of a group cooperate to improve decisions and, therefore, gather information and share it; however, if they are in competition, they group less valuable information and do not share it (Toma & Butera, 2015). In general, a cooperative atmosphere within the group tends to encourage the formal sharing of information, which keeps the group informed and provides social support (Lai & Yang, 2017). Sharing information is a determinant of the collaborative culture (Prajogo & Olhager, 2012) that permeates the environment of agricultural cooperatives (Beuren et al., 2018; Silva et al., 2022), especially in the integrated modality of producing and marketing products and share the gains (Wang et al., 2019).

H2 advocate a direct and positive influence between information sharing and managerial innovation, which was supported (β=0.457; $p<0.01$). This finding reinforces that of Parast et al. (2019). When team members overcome difficulties related to information sharing, conditions are created for integration and transformation of different knowledge into new solutions, that is, the capacity for innovation is expanded (Tzabbar & Vestal, 2015). Fostering information sharing and managerial innovation in the context of agricultural cooperatives is important for complying with cooperative principles (Mannes et al., 2022), and for improving their economic and social performance and achieving favorable conditions of competitiveness (Wang et al., 2019).

Sharing information is fundamental for cooperative models. However, agricultural cooperatives stand out for the benefits they can provide, based on mutual trust and reciprocal behavior, which help to improve organizational effectiveness and member well-being (Sergaki et al., 2020). Furthermore, the importance of communication for innovative development is highlighted. When considering collaborative innovation in agricultural cooperatives, Mannes and Beuren (2024) found positive influence of communication intensity on innovation.

H3 assumed the mediating effect of information sharing in the relationship between cognitive

conflicts (H3a), trust (H3b), and cooperation (H3c) on managerial innovation. Measuring effect of information sharing was observed for cognitive conflicts and cooperation, but not for trust. Therefore, the results support H3a and Ha3c, in line with the findings of Wang et al. (2019). A low level of trust can make it difficult to share information and, consequently, increase transaction costs (Sridharan & Simatupang, 2013), which encourages more research in the context of cooperatives. In these organizations, innovations go beyond the adoption of new technologies, they imply the creation of new institutional arrangements and practices (Klerkx, Hall & Leeuwis, 2009), converging with the mission and social and cooperation values.

The research results denote the need to encourage the sharing of information, so that dissonances can be useful to encourage reflections and discussions that lead the organization to achieve superior performance, as recommended by CDT. This is because dissonances can arise from exposure to a source of news or information that, on the one hand, challenges managers' behaviors and attitudes and, on the other hand, can even undermine confidence in existing beliefs (Metzger et al., 2020). However, it should be noted that divergent thoughts observed in isolation do not lead to innovation, requiring group members to share information that favors the analysis of the best ideas (Paletz & Schunn, 2010).

When inserting the control variables (organization size and time in the market) into the model, statistical evidence did not supported the effect on managerial innovation. These results differ from those found by Mol and Birkinshaw (2009), who confirmed a relationship between size and innovations in the management process. These contrasts with previous research indicate that there is a need to delve deeper into other factors that may interfere with this relationship between variables, especially in the field of agricultural cooperatives (Anzilago et al., 2018). For the control variable time in the market, the findings reinforce what was exposed by Baregheh et al. (2016), who also found no relationship between organization age and managerial innovation.

Conclusion and implications

Conclusion

This study analyzed behaviors and attitudes of managers that encourage information sharing and promote managerial innovation in agricultural cooperatives. Overall, the results support our established hypotheses, and there is a convergence of the relationships proposed in this research with the findings of previous studies (e.g., Kulangara et al., 2016; Lvina et al., 2017; Massaro et al., 2019) that investigated one or some of these relationships. The research results allow us to conclude that information sharing, driven by managers' behaviors and attitudes, specifically cognitive conflicts, trust, and cooperation, is

important to foster managerial innovation in the agricultural cooperatives investigated.

The relevance of these findings lies on the one hand, in the identification of elements that can influence the information sharing, such as cognitive conflicts, trust and cooperation, and on the other hand, it allows to mitigate information sharing problems, which end up hindering the development of tasks and affect organizational results. In the cooperative environment, given their cooperative purposes and principles, elements such as trust and commitment are relevant to mitigate the possibility of opportunism, in addition to allowing the development of feelings of purpose and pride in belonging to a cooperative organization (Mazzarol et al., 2013). We conjecture that the mediating effect of information sharing in the relationship between trust and managerial innovation not showing significance may arise from the perception of trust being inherent in this context.

Theoretical implications

The results of this research support the evidence observed in previous studies regarding established relationships. Thus, they contribute to the consolidation of knowledge, in addition to offering new perspectives based on the proposed model. In the context of cooperatives, national (e.g., Beuren et al., 2019; Beuren et al., 2020; Mannes et al., 2022) and international (e.g., Bailey et al., 2021) research observed strategic alliances and relationships of information exchange, while other research has investigated the relationship between cooperatives and members (e.g., Ghauri et al., 2021). Therefore, this research adds to the literature by offering an intragroup perspective on cooperatives, involving the development of tasks, relational aspects, and information sharing in the context of groups in a field that is still little explored. In a cooperative environment, knowing the interfaces of issues inherent to information sharing, trust and managerial innovation can be of great value (Calamel & Chabault, 2020; Ramanauskas et al., 2021), especially in situations where there is a growing need to promote integration and transparency in intragroup relations (Hendarsjah et al., 2019; Lin et al., 2022). The emphasis in the literature has been on the role of each construct, but that when combined they can enhance the individual effects and, thus, improve competitive advantage and cooperative performance.

Implications for management practice

The results also have implications in the management practices of the agricultural cooperatives investigated, given the need to manage work groups to ensure free communication and enable the effective use of information. Communication helps coordinate team behaviors, which can lead to increased information transparency and boost trust and dependence between work groups (Wu et al., 2017). In

cooperatives, the communication process gains prominence when considering, for example, issues related to the principle of information, given the need for development. In the context of cooperatives, trust is positively supported by cooperative principles. Functional aspects of cognitive conflicts in the development of group tasks also gain prominence, as they allow different perspectives to be synthesized and the most appropriate information for the decision-making process to be identified. Therefore, it is up to managers to develop monitoring, incentive and socialization strategies to inhibit opportunistic behaviors that may affect the performance of cooperatives (Hernández-Espallardo et al., 2022). The results elucidate that the managers' behaviors that encourage information sharing can mitigate communication problems that potentially hinder task development and managerial innovation.

Limitations and recommendations

Among the limitations of this research, it is worth highlighting that there is a possibility of the common method bias occurring, since the same respondents reported the dependent and independent variables. Even if procedures were adopted to mitigate a possible bias and the tests did not identify problems, future research can prevent this aspect with different respondents. The use of the survey method implies, generally, responses cross-sectional. Therefore, further studies may be conducted with different research methods, such as in-depth case studies, considering a timeline. Another research limitation refers to the choice of antecedent and consequent constructs of information sharing, which may not have captured certain behaviors and attitudes of managers regarding information sharing and management innovation. Future research may be included aspects related to the individual characteristics of managers and other members of work groups, since these can influence collaborative behavior, trust and innovation. Furthermore, aspects of the organizational context or external factors that may impact information sharing or managerial innovation can be included. Future research may also consider mediating or moderating effects of other variables that eventually affect information sharing or managerial innovation. Furthermore, the use of other statistical techniques may contribute new results.

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