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ARTICLE

Governance of buyer-supplier relationships in food supply chains: toward relational rents

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Abstract

Purpose – The study aims to identify the governance configurations adopted by buyer-supplier relationships (BSRs) to generate high levels of relational financial and knowledge rents.

Theoretical framework – The research follows the classification of formal and informal governance mechanisms proposed by Cislaghi et al. (2022).

Design/methodology/approach – The study uses a crisp-set Qualitative Comparative Analysis (csQCA) to examine data collected from 181 food and beverage suppliers in Brazil. The analysis considered 10 formal and 14 informal governance mechanisms.

Findings – The study identifies three governance configurations that generate high knowledge rents and two configurations that produce high financial rents for suppliers. The results emphasize the importance of contractual coordination and a good reputation as critical governance mechanisms across all configurations. Additionally, the study highlights the role of trust, information sharing, and other informal governance mechanisms in fostering relational rents.

Practical & social implications of the research – We contribute to the literature by showing that multiple configurations of governance mechanisms produce higher levels of relational rents for suppliers. Future research should consider both sides of the relationship to gain a comprehensive understanding of governance configurations and their impacts on relational rents.

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Originality/value – To the best of our knowledge, this is the first study to adopt a configurational approach to identifying which governance mechanisms foster relational rents in BSRs. This paper fulfills the need to consider specific formal and informal governance mechanisms since they can be combined to produce knowledge and financial rents. Furthermore, it demonstrates that BSRs rely heavily on a vast repertoire of informal governance mechanisms to foster relational rents.

Keywords: Governance mechanisms, relational rents, knowledge rents, financial rents, qualitative comparative analysis, organic farming.

1 Introduction

The increasing complexity and specialization of food supply chains has had significant negative environmental impacts, including soil degradation, water pollution, and deforestation (Rueda et al., 2017). In response to these challenges, the global food system has undergone transformations in recent years, with a growing focus on sustainability, local sourcing, and closer relationships among supply chain actors (Jia et al., 2024).

Within this context, adopting a buyer-supplier relationship (BSR) perspective provides a novel lens, as it uncovers how different governance mechanisms shape the creation of relational rents. Studies examining food supply chains from a BSR perspective have highlighted the importance of analyzing the effects of interorganizational governance strategies (Menard, 1996; Do Canto et al., 2021; Jia et al., 2024; Polater et al., 2024; Sezer et al., 2024). However, little is known about how such strategies emerge in these contexts, characterized by demand volatility, regulatory requirements, and inherent vulnerabilities, such as the short shelf life of products and heightened exposure to external shocks, including diseases and natural disasters (Jia et al., 2024; Sezer et al., 2024; Cislaghi et al., 2022; Tarifa-Fernandez & De Burgos-Jiménez, 2017).

The Relational View (RV) provides a theoretical foundation for this perspective, arguing that interorganizational relationships can become critical sources of competitive advantage when firms acquire assets and governance mechanisms for each relationship (Dyer & Singh, 1998). Understanding the interaction between various governance mechanisms, both formal and informal, is essential for managing these relationships effectively (Jean et al., 2021) and generating relational rents (Dyer & Singh, 1998; Dyer et al., 2018). This framework has been extended to various supply chain contexts, including logistics integration and performance (Prajogo et al., 2016), as well as governance in collaborative innovation projects (Patrucco et al., 2022a, 2022b).

Prior research has also shown how formal and informal governance mechanisms (Poppo & Zenger, 2002) can be used to stimulate joint work, interorganizational learning (Lui, 2009), supply chain resilience (Wieland & Durach, 2021), and joint outcomes (Cao & Lumineau, 2015). The existing literature shows significant advances regarding the mechanisms adopted to govern BSRs (Um & Oh, 2020). However, this literature is mainly composed of case studies that offer anecdotal evidence (Alvarez et al., 2010; Cislaghi et al., 2022; Rouyre et al., 2024) or surveys with statistical analyses aiming to identify the impact of governance mechanisms on specific outcomes (Vanpoucke et al., 2022; Faruquee et al., 2024).

To the best of our knowledge, few studies have adopted a configurational approach to understanding whether different combinations of governance mechanisms can be used for governing BSRs (e.g., Mellewigt et al., 2018), especially considering the peculiarities and contingencies of the food production context (Sezer et al., 2024). Recent efforts have focused on understanding the dynamics of the different mechanisms employed. For example, Yin et al. (2023) demonstrated the successful combination of various governance mechanisms in mitigating opportunism among supply chain partners. The configurational approach posits that there is not necessarily one best way to produce an outcome, but rather complex causality, where multiple configurations may yield the same outcome (Saridakis et al., 2022; Wegner et al., 2025). Moreover, Brazil, as one of the world's largest food producers and exporters, with a rapidly expanding organic sector, provides a distinctive setting in which to explore such governance configurations (Instituto Brasileiro de Geografia e Estatística, 2017). Building on this context, this study aims to answer the following research question: Which governance configurations have been adopted in BSRs to generate high levels of relational rents for suppliers?

We aim to analyze the governance configurations used in BSRs to achieve high levels of relationship value. To reach this goal, we investigated 181 food and beverage suppliers in Brazil and performed a crisp-set Qualitative Comparative Analysis (csQCA). The results show three governance configurations that generate high knowledge rents and two that generate financial rents for suppliers in

food and beverage BSRs. Moreover, we shed new light on the RV arguments, demonstrating that formal governance along with informal mechanisms may be important for relational rent generation. Our study also provides an example of how QCA can be used in BSRs, building on the guidance for applying this methodology provided by Saridakis et al. (2022). We also contribute to managerial practice by translating the results into recommendations on how suppliers can configure BSRs to foster higher relational rents.

2 Literature review

2.1 Governance mechanisms and relational rents

BSR governance is based on both formal and informal mechanisms, and our understanding of these mechanisms has changed over the years. Formal mechanisms include contracts and written rules that minimize opportunistic behavior and coordinate expectations (Poppo & Zenger, 2002). These mechanisms play an important role in protecting the parties against opportunism, bounded rationality, and power imbalances (Williamson, 1985).

Although contracts lay the groundwork for BSRs, they cannot easily predict every relationship situation. Therefore, partners must also rely on informal or relational governance mechanisms (Aslam et al., 2022). Relational governance encompasses elements beyond an economic focus, including personal interactions, extensive communication, trust, and mutual commitment (Macneil, 1974). Relational governance considers the role of social interactions and socially embedded relationships in economic operations, implying that long-term contracts are based on personal relationships and social norms, such as trust and mutual commitment (Macneil, 1974).

Studies suggest that formal and informal governance mechanisms should coordinate interactions throughout the supply chain (Lumineau & Henderson, 2012). Despite the number of previous studies on governance mechanisms, it is unclear when to switch from one to another in a long-term relationship. Cislaghi et al. (2022) propose a causal explanation of how a relationship might advance or regress throughout its stages of maturity, depending on the buyer's commitment to maintaining the relationship with the supplier using governance mechanisms.

Therefore, our research adopts the classification of formal and informal governance mechanisms proposed by Cislaghi et al. (2022, p. 3). Formal mechanisms can be categorized into two groups: (i) formal coordination mechanisms, which are "[…] formalized incentives that motivate and coordinate the actions, activities, and behaviors of participants". These consist of incentive systems and include formal standards and procedures to coordinate the partners; (ii) formal control mechanisms, which involve the roles that partners have to perform, describe their responsibilities, and control various aspects. Examples include sanctions and formal procedures to control partners. Chart 1 summarizes the main dimensions

Chart 1
Classification of formal governance mechanisms

FORMAL GOVERNANCE MECHANISMS	
Group and definition	**Dimensions and mechanisms**
Formal coordination mechanisms	**Incentive and investment systems**
"Formalized incentives that motivate, direct, and coordinate the actions, activities, and behaviors of participants in a supply chain (BSR) to provide members with superior performance (financial, economic, operational)."	Incentive systems Supplier qualification Supplier assessment Contractual coordination **Formalized operational standards** Technical visits
Formal control mechanisms:	**Contracts and sanctions**
"Roles and other forms of explicit, formalized agreements that detail responsibilities and regulate and control the BSR in a supply chain to reduce opportunism and favor the generation of economic and financial results."	Relationships governed by contract Standard procedures Sanctions / Sanctioning practices **Formal process control** Monitoring / Supplier monitoring Performance metrics

Source: Adapted from Cislaghi et al. (2022).

of formal governance mechanisms and their respective sub-dimensions.

Informal mechanisms fall into three groups: (i) informal coordination and control mechanisms, which include informal stimuli that motivate and direct the participants' actions through coordination practices and relational norms; (ii) informal cooperation mechanisms, which address the informal stimuli that motivate and direct the interorganizational relationships to promote cooperative action between members, such as commitment, trust, and joint action; and, finally, (iii) informal social mechanisms, which address the stimuli that motivate and direct the interorganizational relationships to promote social interaction, such as learning, culture, and organizational values (Cislaghi et al., 2022, p. 3). Chart 2 summarizes the main dimensions of informal governance mechanisms and their respective sub-dimensions.

Polater et al. (2024) investigated food supply chain networks and identified formal and informal mechanisms that optimize performance by extracting value from activities. However, the effectiveness of combining these mechanisms to foster relational rents remains inconclusive. One theoretical stream maintains that formal mechanisms weaken relational rents by signaling distrust and hindering collaboration (Hurmerinta-Haanpää & Viding, 2018). Another stream argues that formal mechanisms increase behavioral reliability and predictability (Meier et al., 2016). Gurcaylilar-Yenidogan and Windsperger (2014) highlight that formal mechanisms support knowledge creation, protect relationship-specific assets, and improve relationship quality, thereby generating relational rents.

The RV suggests that informal governance mechanisms are more effective at generating relational rents by fostering cooperation, preventing conflicts, and lowering transaction and control costs (Delbufalo, 2015; Wallenburg & Raue, 2011). Such mechanisms also strengthen identity, establish knowledge-sharing routines, and promote flexibility in negotiations and resource exchanges (Kamalaldin et al., 2020). High levels of informal governance foster a learning culture, enhance knowledge creation, and encourage collaboration to achieve common goals (Pemartín & Rodríguez-Escudero, 2017). Partners learn about one another's cultures, maintain networks of social exchanges, increase mutual trust, loyalty, and respect, and contribute to accessing external sources of knowledge (Cousins et al., 2008; Prim et al., 2023).

Research suggests that formal and informal governance mechanisms complement each other (Cao & Lumineau, 2015; Gold et al., 2020; Bonatto et al., 2022). Multiple governance modes can coexist if effective structures balance mechanisms, as "well-specified" formal mechanisms can complement informal ones without

Chart 2
Classification of informal governance mechanisms

INFORMAL GOVERNANCE MECHANISMS	
Group and definition	**Dimensions and mechanisms**
Informal coordination and control mechanisms:	**Relational norms**
	Visits and training
"Informal stimuli that motivate and direct participants' actions in a supply chain (BSR) to share expectations of behaviors and socialization so that members achieve superior performance."	Relationship without pressure
	Open relationship
	Flexible relationship
	Regular conversation
Informal cooperation mechanisms:	**Commitment, trust, and joint action**
"Informal stimuli that motivate and direct BSR actions in a supply chain to promote cooperative joint action between members to achieve superior performance and mutual results."	Information sharing
	Joint responsibilities
	Buyer-supplier collaboration
	Trust
Informal social mechanisms:	**Learning, culture, and organizational values**
"Informal stimuli that motivate and direct BSR actions in a supply chain to promote social interaction (sharing values and cultures), organizational learning, and superior performance."	Mutual learning
	Way of acting
	Loyalty
	Good reputation
	Family extension

Source: Adapted from Cislaghi et al. (2022).

conflict (Petersen & Østergaard, 2018; Agndal et al., 2023). Liu et al. (2009) highlight that the combined use of transactional (formal) and relational (informal) mechanisms fosters greater benefits and reduces opportunism compared to adopting each mechanism individually. More recently, Um and Oh (2020) provided empirical evidence indicating that different attitudes and behaviors toward collaboration exist between buyers (who perceive the mechanisms as complementary) and suppliers (who understand them as substitutes). Therefore, we argue that combining formal and informal governance mechanisms enhances the achievement of relational rents.

However, studies have shown that financial rents are only a part of the benefits arising from a collaborative relationship. Zhang et al. (2017) suggest that relational rents involve financial and economic benefits as well as intangible gains, such as knowledge and experience that result from collaboration between partners. Biggemann and Buttle (2012) present four dimensions that help explain how participants in an interorganizational relationship assess relationship value: personal, financial, knowledge-based, and strategic gains. As business practices evolve depending on varying contextual conditions and consequently affect the dimensions of the relationship, the perceived value of the relationship also changes.

Thus, relational performance was measured by relational rents over time, based on the RV (Dyer & Singh, 1998; Dyer et al., 2018) and two dimensions proposed by Biggemann and Buttle (2012): financial and knowledge rents. Knowledge rents refer to the generation of new ideas and knowledge provided by the relationship, while financial rents involve economic satisfaction and the financial or monetary results obtained from the relationship.

2.2 Contextual factors: power asymmetry and demand uncertainty

Governing BSRs is not an easy task for managers on both sides. Contextual factors may influence the choice between formal and informal mechanisms (Bonatto et al., 2022). Power asymmetry, whereby one party is recognized as more influential and can exert control over another, is likely common in BSRs (Jia et al., 2024). Reducing power asymmetry through buyer intervention may allow for the greater use of informal governance mechanisms and greater relational rents (Cislaghi et al., 2022). Although much of the literature emphasizes the negative effects of power asymmetry (Brito & Miguel, 2017), others perceive asymmetry as a natural part of relationships and, when properly managed, it can benefit both sides (Cuevas et al., 2015).

Empirical studies explore formal and informal governance mechanisms in supply chain relationships exposed to uncertainty, such as political, economic, social, and industry risks. Increased uncertainty in demand leads to difficulties in forecasting future demand (Huang et al., 2014) and causes adverse effects on BSRs (Tarifa-Fernandez & De Burgos-Jiménez, 2017). Therefore, different combinations of formal and informal governance mechanisms may be used to deal with contextual factors. Context is an important antecedent in shaping organizational practices and can also influence how the relationship between partners evolves (Aslam et al., 2022). Evidence shows that the higher the level of uncertainty, the more types of governance arrangements will be used (Schnaider et al., 2022).

Therefore, contextual factors such as power asymmetry among partners and demand uncertainty may influence decisions about which governance configuration should be used in BSRs. According to Kirwan et al. (2017), the context of food supply chains is characterized by uncertainty related to perishability, quality, safety, seasonality, and lack of standardization, among other factors. These contextual factors pose risks to competitive criteria, such as supply conformity (Castka et al., 2023).

3 Method

In recent years, QCA has been employed in numerous studies on a variety of topics, including the winery industry (Rodríguez et al., 2021), open innovation adoption (Saridakis et al., 2022), and global obstacles to female entrepreneurship (Wu et al., 2019). QCA is a case-oriented, comparative approach that aims to identify the logical associations between combinations of causal conditions that produce a specific outcome.

It also allows for the establishment of set-theoretical relationships that enable the examination of the causal complexity of social phenomena, which are often characterized by nonlinearities and asymmetries (Parente & Federo, 2019). Unlike traditional statistical methods such as regression, which assess the average effects of isolated variables, QCA is based on the premise of conjunctural causality: social and organizational phenomena are often driven by multiple combinations of factors, meaning different causal pathways (equifinality) can lead to similar

outcomes (Rönkkö et al., 2025). Consequently, the use of asymmetrical procedures grounded in the logic of complexity theory, such as QCA, to rigorously analyze and accurately describe real-world organizational phenomena through a configurational approach, has been increasingly endorsed (Kumar et al., 2022). This approach is making significant contributions to advancing the fields of industrial management and marketing (Saridakis et al., 2022).

Specifically, food supply chains are marked by high causal complexity such as perishability, quality, and seasonal variability, among others (Kirwan et al., 2017). Under such conditions, regression-based methods that estimate average effects are insufficient. QCA, however, enables the identification of equifinal governance configurations that combine formal and informal mechanisms in distinct ways to generate relational rents.

Originally applied in studies with small samples, QCA has increasingly been extended to contexts involving different sample sizes (Wegner et al., 2022). This study employs a sequential application of two comparative methods. First, as a preliminary step, we applied MDSO/MSDO analysis (most different cases with similar outcomes and most similar cases with different outcomes), as recommended by Ragin (2014), to identify "key" conditions. The MDSO/MSDO procedure is used to reduce the number of causal conditions in QCA. Second, we used csQCA to understand the governance configurations adopted in BSRs to generate financial and knowledge rents for food and beverage suppliers. In addition, we explicitly incorporated analyses of necessity and sufficiency to test whether specific conditions were indispensable for the outcomes, or if multiple equifinal combinations could produce similar results, in line with recommendations for configurational research (Maaßen et al., 2025; Ragin, 2014).

3.1 Empirical case selection

We collected data from organic suppliers operating in Brazil and included in a database organized by the Brazilian Ministry of Agriculture. We opted for this subsector because it is representative of the sustainable standards currently enforced in the most sophisticated consumer markets. Our focus on supplier perceptions stems from the fact that these actors' perspectives have received less attention in supply chain research (Miguel & Tonelli, 2023). The database includes over 26,000 Brazilian organic farmers (Brasil, 2022). We selected cases that met the following criteria: (i) organic farmers with third-party certification (TPC); (ii) organic farmers with participatory guarantee systems (PGS); and (iii) organic farmers with links to the food or beverage industries, that is, those who sold their raw materials to agribusinesses, livestock producers, wineries, and others. A total of 181 participants agreed to participate in the survey via phone conducted between August 8 and October 17, 2018. The respondent was the person who interacted with the buyer. In cases where a supplier had partnerships with multiple buyers, we asked them to consider their most significant partnership when answering the survey. The study included representatives of suppliers with relationships ranging from less than one year to over 25 years.

With regard to certification, 54.7% of respondents held third-party audit certifications, while 45.3% operated under participatory guarantee systems. In terms of certification costs, 44.2% of suppliers reported that certification was paid for by the buyer, while 55.8% covered the costs themselves (Supplementary Data 1 – Database). The data collected were organized in an Excel worksheet and then transferred to the fsQCA package (Ragin & Davey, 2017).

3.2 Causal conditions and outcomes

The causal conditions in this study include formal and informal governance mechanisms and their respective subdimensions (Cislaghi et al., 2022). The outcomes of interest in this research are the relational rents acquired by the suppliers, which are further classified as financial or knowledge rents.

Chart 3 provides a summary of all the causal conditions and outcomes.

3.3 Calibration

The causal conditions and outcomes were measured using a five-point scale ranging from 1 (totally disagree) to 5 (totally agree). However, to apply the MDSO/MSDO and csQCA, the data must be dichotomized into 0s and 1s. The dichotomization of Likert scale scores has been employed in previous studies, such as that of Song et al. (2022). A score of 1 indicates the presence of a condition or outcome, while a score of 0 indicates its absence. Responses with Likert scale values of 1, 2, or 3 were assigned a score of 0, since these values suggest disagreement with the assessment required by the item or uncertainty regarding the presence of a causal condition. Conversely, Likert scale values of 4 or 5 were assigned a

Chart 3
Causal conditions and outcomes

	Causal conditions	Statements	QCA code
Formal coordination	Incentive systems	The buyer uses financial incentives to improve our relationship.	IS
	Supplier qualification	The buyer carries out qualification programs for suppliers.	SQ
	Supplier assessment	The buyer constantly evaluates our performance.	SA
	Contractual coordination	Written documents outline the production objectives and procedures we must follow.	CC
	Technical visits	The buyer makes technical visits to help us with production procedures.	TVis
Formal control	Relationship governed by contract	Our relationship with the buyer is primarily governed by written contracts.	WC
	Standard procedures	The contract describes requirements such as raw material quality standards, established prices, and the buyer's commitment to purchase the products.	SProc
	Monitoring / Supplier monitoring	The buyer monitors whether the certifier's requirements are being met.	MON
	Sanctions / Sanctioning practices	The buyer applies sanctions if we fail to comply with production standards.	SAN
	Performance metrics	The buyer has defined metrics to control our production performance.	PMet
Informal coordination and control	Visits and training	The buyer follows our daily routine through visits and training.	VTrain
	Relationship without pressure	The buyer coordinates our relationship without putting pressure on it.	RWP
	Open relationship	Our relationship allows us to make changes to previous agreements.	OpenR
	Flexible relationship	Our relationship is flexible enough to adapt to changes.	FlexR
	Regular conversations	The buyer periodically discusses our performance appraisal.	PConv
Informal cooperation	Information sharing	The exchange of information with the buyer company works very well.	InfoS
	Joint responsibilities	Any problems that arise are treated as joint responsibilities, not the responsibility of each party.	JointR
	Buyer-supplier collaboration	Both the buyer and we are committed to improvements that can benefit the relationship.	BSC
	Trust	Our relationship with the buyer company is characterized by a high level of trust.	TRU
Informal social	Mutual learning	We learn from each other in our relationship.	ML
	Way of acting	Both the buyer and we act in a similar way.	WOA
	Loyalty	The buyer is loyal in our relationship.	LOY
	Good reputation	The buyer has a good reputation.	GRep
	Family extension	We are considered part of the buyer's family.	FAM
Factors	**Contextual factors** - Power asymmetry	The buyer has considerable power in our relationship.	PWR
	Contextual factors - Demand	The demand in our business sector is subject to significant fluctuations.	DEM
Outcome	**Relational rents -** Knowledge rents	Our relationship with the buyer allows the generation of new ideas.	KR
	Relational rents - Financial rents	We are satisfied with the financial rents obtained in our relationship with the buyer.	FR

score of 1, as they denote significant or complete agreement with the assessment requested by the scale item.

Although dichotomization may imply loss of information, this procedure is consistent with csQCA requirements and is widely recognized in the literature (Ragin, 2014; Schneider & Wagemann, 2012). Moreover, by treating the midpoint (3) as an absence of the condition, we follow the logic that equivocal or undecided responses do not provide evidence of the presence of the condition.

4 Results

This section presents the use of MDSO/MSDO and csQCA. It also presents the results obtained at each step for financial and knowledge rents.

4.1 MDSO/MSDO analysis

MDSO/MSDO analysis reduces causal conditions through pairwise assessments of the most similar cases

with dissimilar outcomes and the most dissimilar cases with similar outcomes. MDSO/MSDO is mainly used when studying numerous conditions (Dias & Dias, 2022).

4.1.1 *MDSO/MSDO analysis for knowledge rents*

This analysis focuses on Brazilian food and beverage suppliers and uses knowledge rents as the outcome (1 = success, 147 cases; 0 = failure, 34 cases). By comparing maximum difference pairs with an outcome of 1, we identified the following causal conditions that provided a better explanation: information sharing (InfoS, 23 similarities between pairs compared – SBPC), good reputation (Grep, 20 SBPC), mutual learning (ML, 17 SBPC), loyalty (LOY, 17 SBPC), way of acting (WOA, 16 SBPC), buyer-supplier collaboration (BSC, 10 SBPC), trust (TRU, 9 SBPC), sanctions (SAN, 8 SBPC), contractual coordination (CC, 7 SBPC), supplier monitoring (MON, 7 SBPC), and joint responsibilities (JointR, 7 SBPC).

For the next stage, we selected the 11 most frequent causal conditions. As the software only allowed a maximum of 11 causal conditions, we used this number in the MDSO/MSDO analysis. This decision was made due to the software's limitation in analyzing more variables (Supplementary Data 2 – Codebook). These causal conditions were sufficient to explain the differences between success and failure concerning the knowledge rents of producers.

4.1.2 *MDSO/MSDO analysis for financial rents*

The analysis of financial rents showed that 139 out of the 181 cases were successful, while 42 were failures. Through the comparison of maximum difference pairs with outcome 1, the explanatory conditions for financial rents were determined. These conditions are good reputation (GRep, 41 similarities between pairs compared – SBPC), flexible relationship (FlexR, 27 SBPC), information sharing (InfoS, 26 SBPC), open relationship (OpenR, 24 SBPC), buyer-supplier collaboration (BSC, 24 SBPC), trust (TRU, 24 SBPC), incentive systems (IS, 11 SBPC), contractual coordination (CC, 9 SBPC), mutual learning (ML, 8 SBPC), loyalty (LOY, 8 SBPC), and way of acting (WOA, 7 SBPC).

4.2 Analysis of necessity

We examined the conditions obtained in the MDSO/MSDO analysis to determine which are necessary for generating knowledge and financial rents. A condition is considered "necessary" or "almost necessary" when the consistency value is equal to or greater than 0.90, indicating that the outcome cannot occur if the condition is absent (Schneider & Wagemann, 2012; Merguei, 2022). Coverage values above 0.5 also ensure that conditions are relevant (Dias & Dias, 2022).

4.2.1 *Necessary conditions for knowledge rents*

We identified eight necessary conditions (consistency above 0.90) indicating the presence of knowledge rents. Two are formal governance mechanisms: contractual coordination (consistency = 0.95) and supplier monitoring (0.96). The other six necessary conditions are informal governance mechanisms: information sharing (0.94), buyer-supplier collaboration (0.99), trust (0.97), mutual learning (0.95), loyalty (0.94), and good reputation (0.99). All the necessary conditions have coverage between 0.816568 and 0.869565, which can be considered nontrivial.

4.2.2 *Necessary conditions for financial rents*

We found nine conditions necessary for financial rents with a consistency above 0.90. One of these conditions is a formal governance mechanism, specifically contractual coordination (consistency = 0.96). The other eight conditions are informal and include flexible relationship (0.96), open relationship (0.91), information sharing (0.97), buyer-organic farmer collaboration (0.97), trust (0.96), mutual learning (0.91), loyalty (0.94), and good reputation (1.00). The coverage values for all the necessary conditions range from 0.782609 to 0.817610, which suggests that they are nontrivial.

4.3 Analysis of sufficiency

We employed the fsQCA software, utilizing the truth table algorithm to analyze the sufficient conditions. A condition is considered sufficient if it is present in every case where the outcome is also present (Schneider & Wagemann, 2012). To eliminate paradoxical configurations (those that display both negative and positive results for the performance outcome), we adhered to Schneider and Wagemann's (2012)

recommendation and applied a 90% consistency criterion. After changing the truth table, this limit was increased to 92.95%, a value considered high by researchers employing the QCA procedure (Raab et al., 2015).

To address the limited diversity in our dataset, we performed the minimization procedure with standard analysis, which is a suitable approach in such cases (Schneider & Wagemann, 2012). We treated all necessary conditions as causal conditions that had to be present, and we did not select any causal condition or prime implicant that conflicted with the necessary conditions (Schneider & Wagemann, 2012). As a result, there were no prime implicants that could be added. Without adding any prime implicants, the only answer option was the complex solution, which the fsQCA software presented to us.

4.3.1 *Analysis of sufficiency for knowledge rents*

The findings (Table 1) reveal three configurations with consistency levels greater than 85%. The symbol + represents the logical operator "or"; * denotes the logical operator "and"; ~ denotes the logical operator "absence" or "opposite," and → represents the logical implication operator (Dias & Dias, 2022; Wegner et al., 2022). The solution coverage is 0.829932, and the solution consistency is 0.897059.

These three configurations are expressed in the Equation 1 below, allowing us to identify the governance mechanisms that generate knowledge rents for organic farmers.

$$CC * MON * BSC * TRU * ML * LOY * GRep * (IndoS * JointR + InfoS * WOA + SAN * \sim JointR * WOA) \rightarrow KR \quad (1)$$

The findings demonstrate that the two configurations (1 and 2) exhibit significantly greater raw coverage. This suggests that most BSRs with knowledge rents adopt one of these governance configurations. Specifically, the raw coverage reveals that 77.55% of cases with knowledge rents conform to the first configuration, 78.91% to the second, and only 4.08% to the third.

An analysis of the solutions indicates that the common conditions are contractual coordination, supplier monitoring, buyer-supplier collaboration, trust, mutual learning, loyalty, and good reputation. These conditions are present in all configurations and lead to knowledge rents when combined with either the presence of information sharing and joint responsibilities, or the presence of information sharing and way of acting, or the presence of sanctions, the absence of joint responsibilities, and the presence of way of acting.

4.3.2 *Financial rents*

Table 2 shows two configurations of governance mechanisms adopted by organic BSRs that present financial rents. Together, these configurations achieve a solution coverage of 0.870504, with a solution consistency of 0.858156. The unique coverage for the first equation was 0.0575539, while for the second equation it was 0.81295.

These two configurations are expressed in the Equation 2 below, allowing us to identify the governance mechanisms present in BSRs that generate financial rents.

$$CC * FlexR * InfoS * GRep * \left(\begin{matrix}\sim IS * OpenR * \sim WOA + \\ BSC * TRU * ML * LOY * WOA\end{matrix}\right) \rightarrow FR \quad (2)$$

The analysis of solutions shows that four common conditions are present in all configurations: contractual coordination, flexible relationship, information sharing, and good reputation. To generate financial rents, these common conditions need to be combined with the absence of incentive systems, with the presence of open relationship, and with the absence of way of acting, or with the presence of buyer-supplier collaboration, trust, mutual learning, loyalty, and way of acting.

Table 1
Configurations of governance mechanisms adopted by BSRs that generate knowledge rents for suppliers

	Configurations	Raw coverage	Unique coverage	Consistency
1	CC*MON*BSC*TRU*ML*LOY*GRep* InfoS* JointR	0.77551	0.0272109	0.897638
2	CC*MON*BSC*TRU*ML*LOY*GRep*InfoS*WOA	0.789116	0.0136054	0.892308
3	CC*MON*BSC*TRU*ML*LOY*GRep*SAN*WOA*~JointR	0.0408163	0.0136054	0.857143
	Solution coverage: 0.829932			
	Solution consistency: 0.897059			

Source: fsQCA software (Ragin & Davey, 2017).

Table 2
Configurations of governance mechanisms adopted by BSRs that generate financial rents for suppliers

	Configurations	Raw coverage	Unique coverage	Consistency
1	CC*FlexR*InfoS*GRep* OpenR*~WOA*~IS	0.057554	0.0575539	0.888889
2	CC*FlexR*InfoS*GRep*BSC*TRU*ML*LOY*WOA	0.81295	0.81295	0.856061
	Solution coverage: 0.870504			
	Solution consistency: 0.858156			

Source: fsQCA software (Ragin & Davey, 2017).

5 Discussion

Although the combination of formal and informal governance in BSRs has been widely studied (Gold et al., 2020; Bonatto et al., 2022), previous research rarely examined how these mechanisms interact or substitute each other to generate relational rents, particularly in food and beverage supply chains. To address this gap, we adopted QCA to identify which governance configurations produce relational rents in BSRs.

Our findings reveal that three governance configurations produce knowledge rents, and two governance configurations produce financial rents for suppliers (Chart 4). In the first three configurations, suppliers whose BSRs are governed through two formal governance mechanisms, contractual coordination (CC) and supplier monitoring (MON), combined with informal governance mechanisms, report knowledge rents. These informal mechanisms confirm their role in fostering knowledge exchange and learning (Hernandez-Espallardo et al., 2010; Cislaghi et al., 2022).

While informal governance mechanisms are expected to generate knowledge rents for suppliers, including formal mechanisms such as contractual coordination (CC) and monitoring is surprising, as they are not typically associated with knowledge exchange and learning. One explanation for the role of CC in fostering knowledge rents is that it contributes to relationship stability and increases partners' confidence in the relationship to the point that both sides feel comfortable sharing information and strategic knowledge (Alvarez et al., 2010; Lumineau & Henderson, 2012).

The role of supplier monitoring (MON) in fostering knowledge rents is also counterintuitive since it may imply controlling partners (Hernandez-Espallardo et al., 2010). However, it can work as a strategy to verify whether the best practices and information shared by the buyer have been effectively adopted or used by the suppliers. Studies show that "[…] monitoring is [...] an important part of maintaining effective buyer-supplier links, especially with the increasing need for transparency" (O'Connor et al., 2020, p. 3). Here, monitoring does not aim to closely supervise performance, but rather, it works as a process to share critical knowledge for success (Cousins et al., 2008).

Our results also highlight that specific governance mechanisms are combined with the seven common mechanisms in all three configurations: joint responsibilities (JointR) for buyers and suppliers (configuration 1) and a similar way of acting (WOA) (configuration 2) help to create an environment conducive to information sharing and knowledge exchange. Surprisingly, however, the third configuration relies on way of acting (WOA), the absence of joint responsibilities (~JointR), and the presence of sanctions (SAN).

The literature on BSRs associates sanctions with control and pressure on parties that do not follow defined rules and strategies (Lumineau & Henderson, 2012). One possible explanation for the presence of sanctions (SAN) and the absence of joint responsibilities (~JointR) in configuration 3 is that the suppliers involved in these relationships require greater coordination and sanctions to execute joint strategies and learn from the collaboration, unlike those in configurations 1 and 2. Therefore, buyers may face the difficult task of identifying their suppliers' profiles in order to define the governance configuration that best fosters knowledge rents.

The three configurations for generating knowledge rents also show that, in addition to the necessary conditions, others act as substitutes. For instance, managers can choose between joint responsibilities (JR) (configuration 1) and way of acting (WOA) (configuration 2). This means that these governance mechanisms are substitutes for each other in fostering knowledge rents.

Our results also identified two governance configurations adopted by BSRs that generate high

Chart 4
Governance configurations that foster knowledge and financial rents for suppliers

Causal condition	Knowledge rents			Financial rents	
	Config. 1	Config. 2	Config. 3	Config. 1	Config. 2
Formal - incentive systems (IS)				◦	
Formal - contractual coordination (CC)	●	●	●	●	●
Informal - flexible relationship (FlexR)				●	●
Formal - suppliers' monitoring (MON)	●	●	●		
Formal - sanctions (SAN)			•		
Informal - open relationship (OpenR)				●	
Informal - information sharing (InfoS)	●	●		●	●
Informal - buyer-supplier collaboration (BSC)	●	●	●		●
Informal - trust (TRU)	●	●	●		●
Informal - good reputation (GRep)	●	●	●	●	●
Informal - mutual learning (ML)	●	●	●		●
Informal - loyalty (LOY)	●	●	●		●
Informal - way of acting (WOA)		•	•	◦	•
Informal - joint responsibilities (JointR)	•		◦		

Note: ● Necessary condition present; • Non-necessary condition present; ○ Necessary condition absent; ◦ Non-necessary condition absent.

financial rents for suppliers. Both configurations include contractual coordination flexible relationship, information sharing, and good reputation.

The first configuration (CC*FlexR*InfoS*GRep *~IS*OpenR*~WOA) also relies on an open relationship (OpenR) and the absence of a way of acting (~WOA) and incentive systems (~IS). BSRs governed by flexible relationships seem to rely on freedom and a lack of incentives to tighten both parties, i.e., the suppliers have the right to move to other relationships in search of better results. Although it may seem counterintuitive, a lack of incentives, control, and sanctions leads to an open relationship that stimulates the buyer to offer better business conditions, generating higher financial rents for suppliers.

The second configuration (CC*FlexR*InfoS*G Rep*BSC*TRU*ML*LOY*WOA) is based on informal governance mechanisms (trust, mutual learning, loyalty, and a similar way of acting). Its effectiveness seems to rely on close relationships with suppliers to foster financial rents. Again, these two distinct configurations highlight the difficulty buyers face in identifying their suppliers' profiles and characteristics to design a sound governance system. While the first configuration focuses on open relationships, the second focuses on the strong relationships between buyers and suppliers to produce high financial rents.

The two configurations that foster financial rents also reveal causal conditions that act as substitutes. An open relationship (OR) (configuration 1) can be substituted with buyer-supplier collaboration (BSC), trust (TR), mutual learning (ML), and loyalty (LOY) (configuration 2). Moreover, the absence of a way of acting (WOA) in configuration 1 must be compensated for by the presence of a way of acting (WOA) in configuration 2. These results show that different causal conditions can be substituted for one another to achieve the same outcome and confirm that there are different ways for suppliers to achieve financial rents in BSRs.

Finally, an in-depth analysis of all five configurations reveals that two governance mechanisms are always present: contractual coordination (CC) and good reputation (GRep). Contrary to the RV recommendation to move from formal to informal and relational governance to foster relational rents (Dyer & Singh, 1998), our study shows that contracts matter. Although they may not be the ultimate source of coordination, since they are combined with informal governance mechanisms in all configurations, they seem to play an important role in BSRs. We argue that they may provide stability and predictability for both parties, especially in developing countries such as Brazil, where social, political, and economic changes constantly affect businesses (Brito & Miguel, 2017).

The results also highlight the role of a good reputation in fostering relational rents for suppliers. While this is not surprising, it reinforces the idea that buyers

must pay attention to their reputations. Establishing good relationships with suppliers is important for achieving positive outcomes. Previous studies have already shown that reputation can positively impact business relationships (Dyer & Singh, 1998).

Finally, the five configurations do not include the contextual factors analyzed in this study: power asymmetry and demand uncertainty. Contrary to the findings of Bonatto et al. (2022), this result indicates that power asymmetry did not play a relevant role in configuring governance in the sampled BSRs. As proposed by Schnaider et al. (2022), we expected that demand uncertainty would require different governance configurations, but this did not emerge from the data. The five governance configurations allow suppliers to extract relational rents from the relationship, regardless of power asymmetries and demand uncertainty. One possible explanation for this result is that the characteristics of organic production, such as a short supply chain and buyer-supplier proximity, eliminate the effects of power asymmetry and demand uncertainty.

6 Implications and conclusions

This study examined governance configurations in BSRs to generate relational rents among suppliers, using QCA on 181 Brazilian food and beverage suppliers partnered with buyers. The analysis identified three configurations that foster knowledge rents and two that foster financial rents. Our results contribute to the theory in several ways.

First, as a general implication, we contribute to the RV by offering a detailed understanding of BSR governance to help suppliers achieve higher levels of relational rents. While previous studies have focused on the substitutive or complementary nature of formal and informal governance, we move one level below to identify how specific formal and informal governance mechanisms can be combined to produce relational rents. We also show that although some mechanisms are present in all configurations, different configurations are available for suppliers to adopt to foster knowledge and financial rents. This means there is no single answer to how BSRs can produce relational rents.

Second, our study highlights the importance of contractual coordination and a good reputation, which are present in all five configurations identified. These mechanisms are important for generating relational rents, challenging the RV argument that effective governance should shift from formal to informal mechanisms. Conversely, our findings show that contractual coordination provides stability and predictability, fostering knowledge and financial rents. However, contractual coordination must be combined with informal governance mechanisms in all five configurations identified.

Third, irrespective of the role of contracts, our results show that BSRs rely heavily on a vast repertoire of informal governance mechanisms to generate relational rents. As proposed by previous studies and detailed in our study, a good reputation is key. Moreover, trust and information sharing were identified in four out of five configurations and play an important role in BSRs. While this finding is not new, since it has been exhaustively studied in previous research, the combination of these mechanisms with other formal and informal mechanisms makes our study original. Even monitoring and sanctions – two formal governance mechanisms associated with strong coordination and control – may play an important role when combined with soft informal mechanisms such as mutual learning, loyalty, and a good reputation. Thus, multiple modes of governance can coexist, as long as effective structures are designed to balance mechanisms and combine measures to deal with potential conflicts.

Our study also offers relevant practical insights. For example, suppliers can design a governance configuration that promotes collaboration and fosters relational rents. They can consider the role of contractual coordination, information sharing, and a good reputation, irrespective of which relational rent they wish to foster. Moreover, they can develop specific mechanisms, routines, and processes that stimulate trust, mutual learning, and loyalty. Finally, our results highlight that promoting relational rents requires an understanding of suppliers and the effective combination of governance mechanisms in BSRs. Food supply chains are characterized by high complexity and supply uncertainty, which can result in risks. In this study, we found evidence related to reputational risks, but the combination of governance mechanisms can also mitigate social and environmental risks in BSRs (Sousa Jabbour et al., 2024).

Financial and knowledge-based relational rents, facilitated by formal and informal governance mechanisms in BSRs, can motivate the expansion of the global food and beverage chains. For farmers, particularly in Brazil, these benefits provide strong incentives to transition from conventional to sustainable systems. Our practical

implications guide producers in defining which formal and informal mechanisms can improve collaboration and reduce reputational risks. Producing food and beverages according to sustainable standards can help achieve SDGs related to sustainable and healthy food production and reduce food insecurity. As Brazil is a major player in global food production and export, our findings demonstrate how the sector can make a transition to a more sustainable BSR. Using diverse forms of governance can lead to more equitable value appropriation and reduce reputational, social, and environmental risks.

Finally, we present the limitations of our study. We pinpoint two specific methodological boundaries: (1) our data were collected from only one respondent per supplier, which may result in interpretation bias. To minimize this limitation, we collected data from the person responsible for the partnership with the buyer, who has sufficient knowledge in this regard; (2) our data were collected solely from the perspective of suppliers, and we were unable to access the buyer counterpart in each relationship. Future studies could approach both sides of the relationship to gain a deeper insight into how governance configurations produce relational rents and reduce different kinds of risks for buyers and suppliers, moving toward a more sustainable business model. Although these are shortcomings of our research, we are confident that our results shed new light on BSR governance and offer relevant theoretical insights.

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SUPPLEMENTARY MATERIAL

Supplementary material accompanies this paper.
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