

Original Article

# Institutionalization of the sustainable development goals in agro-industries

Institucionalização dos objetivos de desenvolvimento sustentável em agroindústrias

Bianca Bigolin Liszbinski<sup>I</sup> , Maria Margarete Baccin Brizolla<sup>II</sup> ,  
Tiago Zardin Patias<sup>II</sup> 

<sup>I</sup> Federal University of Santa Maria, Santa Maria, RS, Brazil

<sup>II</sup> Universidade Regional do Noroeste do Estado do Rio Grande do Sul, Ijuí, RS, Brazil

## ABSTRACT

**Purpose:** To analyze the relationship between the institutionalization process by isomorphic mechanisms and the adhesion of agro-industries to the sustainable development goals.

**Methodology:** This is a descriptive study, with quantitative application, operationalized through a survey in a sample with 254 agri-food industries in the State of Rio Grande do Sul and by adopting the structural equation modeling technique for the measurement model and the structural model analysis.

**Results:** The hypothesis that institutionalization through isomorphic mechanisms is positively associated with the implementation of sustainable development goals is confirmed, with an emphasis on the significance of all isomorphic variables analyzed, that is, coercive, normative, and mimetic isomorphism.

**Research limitations and implications:** Despite the important observations found, this research has limitations regarding the adopted quantitative method, with the common method bias and the overfitting being necessary to validate the estimated model. Regarding implications, the research results contribute to the theoretical and practical subject field, opening up new possibilities for analyzing the engagement of organizations with the sustainable development goals from the institutional theory perspective.

**Originality:** The study on the engagement of companies with the sustainable development goals is considered recent and lacking progress in the literature; thus, this study moves forward in understanding this phenomenon, especially on institutional issues that are decisive for the involvement of agro-industries in this sustainable development agenda.

**Keywords:** Institutionalization; Sustainable development goals; Agro-industries

## RESUMO

**Objetivo:** neste artigo tem-se o propósito de analisar a relação entre o processo de institucionalização por mecanismos isomórficos e a adesão de agroindústrias aos objetivos de desenvolvimento sustentável.

**Metodologia:** trata-se de um estudo descritivo, de aplicação quantitativa, operacionalizado por meio de uma survey em uma amostra de 254 agroindústrias alimentares do Estado do Rio Grande do Sul e adotando-se a técnica de modelagem de equações estruturais para fins de análises do modelo de mensuração e do modelo estrutural.

**Resultados:** confirma-se a hipótese de que a institucionalização por meio de mecanismos isomórficos associa-se positivamente com a implementação dos objetivos de desenvolvimento sustentável, com destaque para a significância em todas as variáveis isomórficas analisadas, ou seja, isomorfismo coercitivo, normativo e mimético.

**Limitações e implicações da pesquisa:** embora as importantes observações constatadas, esta pesquisa apresenta limitações quanto ao método quantitativo adotado, destacando-se o common method bias e o overfitting necessário para validação do modelo estimado. Sobre as implicações, entende-se que os resultados da pesquisa contribuem no campo teórico e prático da temática, abrindo novas possibilidades de análises do engajamento das organizações aos objetivos de desenvolvimento sustentável sob a perspectiva da teoria institucional.

**Originalidade:** o estudo do engajamento das empresas aos objetivos de desenvolvimento sustentável é considerado recente e carente de avanços na literatura, dessa forma, este estudo avança na compreensão deste fenômeno, especialmente sobre questões institucionais determinantes para o envolvimento de agroindústrias nesta agenda de desenvolvimento sustentável.

**Palavras-chave:** Institucionalização; Objetivos de desenvolvimento sustentável; Agroindústrias

## 1 INTRODUCTION

In 2015, under the United Nations (UN) coordination, government leaders, non-governmental organizations, academic experts from different areas, and the business sector adopted 17 Sustainable Development Goals (SDGs), which cover a series of social, economic, and environmental issues aiming at fostering sustainable development at the global level. Structured from 169 goals, achieving the set of SDGs requires synchronized actions and efforts from companies, governments, and other stakeholders at local, regional, national, and international levels (Mombeuil & Diunugala, 2021).

Since the SDG creation, much has evolved, with progress in reducing poverty, maternal and child health, access to electricity, and gender equality; however, it is believed that by 2030 this will not be enough to achieve the initially proposed goals. Considering the current moment experienced worldwide, other vital areas, including reducing inequality, reducing carbon emissions, and fighting hunger, have shown paralyzed or reversed progress. However, with global solidarity regarding the commitment to adhere

to the SDG agenda by all stakeholders, there is still hope for countries to meet the agreement initially signed on sustainable development (UN, 2021).

Therefore, the private business sector role in promoting sustainable development is reinforced. According to Van Zanten and Van Tulder (2020), due to their impacts on the set of SDGs, the economic activities carried out by organizations are crucial for the progress in this agenda. Nevertheless, it is a fact that the involvement of companies in implementing the SDGs is voluntary (Van der Wall & Thijssens, 2020) and related to several factors, both organizational (Heras-Saizarbitoria et al., 2022; Liszbinski et al., 2023; Pedersen, 2018; Rosati & Faria, 2019b) and institutional (Cubilla-Montilla et al., 2019; Leal Filho et al., 2023; Liszbinski et al., 2023; Rosati & Faria, 2019a; Van Zanten & Van Tulder, 2018).

Considering the determining institutional factors for the SDG implementation by companies, it should be noted that the discussions involving this study delimitation are still recent and in small numbers. The main explanations are related to the legitimacy issue; that is, companies adopt actions related to the sustainable development goals aiming to be positively recognized for this by society (Fleming et al., 2017; Van der Waal & Thijssens, 2020; Van Zanten & Van Tulder, 2018).

Issues regarding the institutional configuration of each country are also identified as intervening in the implementation of the SDGs by companies, especially due to the presence of solid governments that effectively intervene in the SDG achievement through political will for regulatory quality, reduction of inequalities, and corruption control (García-Sánchez et al., 2021). In addition, the institutional pressures of the environment in which the company is inserted, reflecting on influences from its own sector, competitors, suppliers, or consumers in order to direct companies to support and align with the SDGs (Cubilla-Montilla et al., 2019; García-Sánchez et al., 2021; Van der Waal & Thijssens, 2020). And, finally, the institutionalization issue is presented, that is, how organizations internalize the SDGs (Van Zanten & Van Tulder, 2018).

Given the exposed factors, it is possible to relate them to the assumptions of institutional theory. This theory explains that, through institutions and their

observation, organizations seek to position themselves in society in order to achieve efficiency in their businesses, considering that “institutions consist of formal rules, informal constraints (norms of behavior, conventions, and self-imposed codes of conduct), and the enforcement characteristics of both” (North, 1995, p. 13).

Within the institutional theoretical framework, the internalization of a given institution in organizations is known as institutionalization, a process that is continuous and gradual until the organization becomes accustomed to the rule. An institution can undergo transformations over time according to the needs or interests of those involved, generating the need for the organization readaptation in the face of this change. Institutionalization, therefore, translates into the adoption of predominant cognitive or normative models in the sector or environment in which the organization is inserted, occurring through the process of isomorphism (Kelm et al., 2014), which can be differentiated into three mechanisms: Coercive, normative, and mimetic (DiMaggio & Powell, 2005).

Given the context, analyzing the SDGs in light of the institutional theory assumptions, especially regarding their institutionalization in the context of organizations, becomes possible. Thus, this article aims to analyze the relationship between the institutionalization process through isomorphic mechanisms and the adherence of agro-industries to the SDGs. For this study, the SDGs are recognized as an institution and analyzed based on the conceptual structure proposed by Rede Brasil (2016), which links these goals to guiding principles for private companies in the food production sector in the Brazilian context, thus directing them to contribute to the sustainable development.

The SDG analysis from the institutionalization process perspective, through mechanisms of isomorphism, can be considered original in the literature. Previous studies have already related the SDG agenda with the institutional perspective, as previously highlighted, although the discussions are different from this proposition. In addition to the differentiated theoretical delimitation, this study proposes to analyze a group of agri-food industries in the State of Rio Grande do Sul, highlighted by their

relevance in economic and social terms and significance in the collaboration for meeting the SDGs, either by acting in the food production, employment and income generation, promotion of sustainable industrialization, among other factors that link this activity to the SDG Agenda (UN, 2015).

With this study purpose, we seek to contribute to the progress in the empirical understanding on the involvement of companies in the SDGs, a fact mentioned as lacking in depth in the literature (Heras-Saizarbitoria et al., 2022). Furthermore, with the use of institutional theory as a basis for the analysis, we seek to provide robustness to the study, while considering the SDGs as an institution and examining their institutionalization through the different mechanisms of isomorphism.

## **2 THEORETICAL BACKGROUND**

### **2.1 Institutional Theory and Organizations**

In terms of the organizational field, institutional theory has been discussed with greater emphasis since the 1970s (Tolbert & Zucker, 1999). This theory gains space and strength in studies of organizations because it provides means of understanding the implicit patterns and diversity within organizations. Furthermore, the application of institutional theory to organizational studies is characterized by reacting to organizational models centered on rationalization, highlighting the existing relationships between the organization and its environment, in addition to valuing the role of culture in its formation (Carvalho & Vieira, 2003).

In his reflections, North (1995) already stated that all organisms in society are guided by institutions, which are identified as the rules of the game. The mentioned bodies include any political (e.g., political parties and regulatory agencies), market (companies), social (churches or clubs), and educational (schools and universities) organization that is linked to a common activity. As he explains, regarding organizations (companies), they would be on the margins of institutions, which assume the role of

establishing, through rules, any incentive or restriction for business. In other words, institutions can be seen as rules created with the aim of reducing uncertainties and inherent transaction and production costs in a given business or activity.

Rules arising from institutions, inherent to organizational activities, can be differentiated as formal or informal (North, 1995). In summary, the formal rules are recognized by the laws, statutes, or constitutions and are usually imposed by the government or any agent that has coercive power. Meanwhile, the informal rules have as examples the conventions, rituals, or codes of behavior, being considered common in society and reflections of cultural heritage and formal rules themselves, since an adverse understanding of a formal rule ends up creating informality (Macagnan, 2013).

According to Perrow (1986), the most significant contribution of institutional theory is its emphasis on the organizational environment. Institutional theoretical traits argue that values, symbols, and myths guide organizations, and, therefore, the environment that surrounds them, causing these mechanisms to be shared and internalized in organizations. This type of approach is related to understanding the history and social functions of organizations, created and maintained due to the legitimation and institutionalization degree that they are capable of acquiring in the face of the environment (Goulart et al., 2005).

Thus, the environment is an intervening factor on the structure, that is, organizations also respond to environmental influences such as institutionalized values and myths, and not only to tangible factors such as size and technology (Meyer & Rowan, 1977). In other words, Carvalho and Vieira (2003, p. 111) state that “the environment represents not only a source of material resources (technology, people, finance, raw materials), but also a source and destination of symbolic resources (social recognition and legitimation).”

In order to identify an institutional context of reference for a given segment or organization, the environmental levels – local, regional, national, and international – of its insertion are observed and fully delineated only from an empirical analysis, allowing

to highlight that context that best suits each case. This referential framework would be composed of elements (rules) originating from people, groups, other organizations, social, political, cultural and power conditions with which the organization exchanges and which constitute its legitimation space (Goulart et al., 2005; Machado-Da-Silva et al., 1999; Machado-Da-Silva & Fonseca, 2010; Scott, 1987).

The way organizations internalize a given reference context is called institutionalization, which is defined by Selznick (1972) as a process that occurs over time in an organization, reflecting its historical characteristics, the people who work there, the groups and interests created, and the way it relates to the environment. From another point of view, institutionalizing means instilling value, that is, it is the social process where individuals – and organizations – come to accept a (new) shared definition of social reality, which is taken for granted and translates the way things must be done (Scott, 1987). Additionally, certain institutionalization processes are considered as vectors of organizational changes, especially due to the incorporation of new practices or due to the adoption of new social requirements (Kelm et al., 2014).

Carvalho and Viera (2003) state that institutional theory places the issue of isomorphism at the center of its interpretation regarding organizational reality as a vital factor for its continuity. Institutional isomorphism concerns the forces that pressure organizations in their choices, that is, the forces that lead them to the institutionalization of a certain rule, and the “concept of institutional isomorphism constitutes a useful tool to understand the politics and ceremonial that permeate a considerable part of the modern organizational life” (Dimaggio & Powell, 2005, p. 77).

Through institutional isomorphism, organizations assimilate institutional rules or standards, becoming more homogeneous and consistent with their field of activity. The models established in a sector are adopted by the majority, which leads to the homogenization of these structures after a certain time, until another structure/rule is implemented and feeds back this cycle (Kelm et al., 2014).

The institutionalization by isomorphism process can occur according to three different mechanisms, originally typified by DiMaggio and Powell (1983): Coercive, normative, and mimetic isomorphism. Coercive isomorphism concerns compliance with formal and informal pressures exerted by dominant organizations. According to DiMaggio and Powell (2005), this type of isomorphism derives from political influences and the problem of legitimacy, since these pressures can be understood as coercion, persuasion, or even an invitation to collusion.

Normative isomorphism is understood as resulting from professionalization by establishing a set of procedures for specific activities (DiMaggio & Powell, 1983). Professionalization is interpreted “as the collective struggle of members of a profession to define the conditions and methods of their work” (DiMaggio & Powell, 2005, p. 79) and it allows for common forms of interpretation and action in the face of organizational problems (Carvalho and Viera, 2003).

Mimetic isomorphism “occurs when managers imitate strategies and structural arrangements implemented by competitors, aiming to achieve the success they have achieved, in addition to reducing the risk of uncertainty caused by technological problems and conflicting objectives” (Kelm et al., 2014, p. 408). According to DiMaggio and Powell (2005), mimetic isomorphism is the result of uncertainties, which make organizations encourage imitation by taking others that they consider more legitimate or successful as a model.

## **2.2 Sustainable Development Goals and the Institutionalism**

The 2030 Agenda is an action plan created for people, peace, the planet, prosperity, and partnerships and is synthesized in the form of 17 integrated and indivisible Sustainable Development Goals, which balance the economic, social, and environmental dimensions of the sustainable development (UN, 2015). Although there are current perspectives that by 2030 the goals initially set will not be fully achieved, today the SDGs are more important than ever. They are the means to ensure the well-being of people, economies, society, and the planet (UN, 2021).



Considering the form of creation, structure, and essence of the SDGs, it relates them to the institutional theory. Initially, it is considered that the SDGs assume the characteristic of an institution, which is conceptualized by Macagnan (2013) as a restriction that regulates relations in organizational societies or between individuals, reflected through incentives and opportunities in their activities and operations.

From the conceptualization attributed by North (1995) to formal and informal rules, the SDGs are seen as an informal rule. Although it does not have characteristics of governmental imposition or imposition by any other agent with coercive power, it has its origin in qualified entities of society that proposed an agenda with the purpose of achieving the sustainable development at a global level, parameterizing the actions of several interested parties in this process, including the companies. In other words, the SDGs are the game rule for global sustainable development by the year 2030.

In terms of institutionalism, since not being determined by a legalistic imposition, the SDGs have voluntary adherence. In the context of companies, even voluntarily, there are indications of various organizational and institutional attributes that lead to the implementation of this agenda (Liszbinski et al., 2023). This implementation of the 2030 Agenda in companies means the internalization of sustainable development indicators, that is, the institutionalization of the SDGs.

Therefore, institutionalization means that companies are aligning with a certain model instituted and adopted by the majority of a sector (or environment), with the purpose of survival, tending to the homogenization of these structures after a certain time, until another innovation is established and feed back this cycle (Kelm et al., 2014). From the SDG perspective, it is no different, companies aim to adapt to this model, striving for their survival in the market and recognition for such involvement (Silva et al., 2022), until a new agenda or proposal for sustainable development replaces the current set of the SDGs.

As previously explained, institutionalization is at the center of institutional theory (Carvalho & Viera, 2003) and can occur from different so-called isomorphic

mechanisms: Coercive, normative, and mimetic (Dimaggio & Powell, 1983). In the SDG scenario, coercive isomorphism can be that arising from political influence and the legitimacy issue. According to Kelm et al. (2014), the imposition of organizational structures occurs from the force of legitimate authority, or even, through an authority symbolically perceived as legitimate, in this case, the authority would be the UN, for its elaboration and conduction of the SDG agenda.

When it comes to mimetic isomorphism – derived from uncertainties that lead organizations to imitate more legitimate or successful companies (Dimaggio & Powell, 2005) – SDGs can be institutionalized based on the organization's posture of minimizing itself vis-à-vis its competitors or sector in which it operates; that is, they mirror themselves in the involvement outside of sustainable development actions and seek to do the same. As for the normative isomorphism, "associated with the professionalization degree of the organizations" (Kelm et al., 2014, p. 408), from the perspective of the SDGs, it is related to the sharing and specialization of routines and individual work protocols, or of a certain sectoral area on actions guided around this sustainable development agenda.

Considering specific studies about the institutionalization of the SDGs in companies, the explanations suggest that the institutionalization of sustainable, responsible, and ethical business practices in any organization is not only achievable, but also morally imperative, so that the subsumed contract between companies and society for the effective functioning of both to be maintained (Sama et al., 2020). This observation is in line with the legitimacy factor, which is implicit in the coercive issue, addressed in studies that deal with the SDG implementation by companies seeking recognition in society; that is, this adherence not only helps the collective in terms of sustainable development, but also strengthens the company image in order to maintain its operations (Fleming et al., 2017; Van der Waal & Thisjssen, 2020).

In terms of the SDG internalization, although noting the identification of a study that clearly portrays the issue of isomorphism, Van Zanten and Van Tulder (2018)

stated that the industrial sector influences multinational companies in this field to institutionalize this agenda, which implies that mimetic isomorphism is reflected in this situation. On the other hand, in a recent study, Garcia-Sanchez (2021) contradict the idea that industrial affiliation can substantially affect the implementation of the SDGs by mimicry; however, they state that education and training of managers around sustainable issues can influence awareness and the organization's involvement in the SDGs, a fact that can be related to normative isomorphism.

Given the expositions in the introductory section and theoretical review about the SDGs and their relationship with the institutional theory, in particular the institutionalization of the SDGs, in addition to the unit of analysis proposed for this study, the following hypothesis guides this empirical research:

H1: Institutionalization, through isomorphic mechanisms, is positively associated with the implementation of the SDGs by agro-industries

Therefore, it is believed that by examining institutionalization, according to the different mechanisms of isomorphism, it would be possible to expand knowledge on this topic, in order to identify possible motivations of companies to internalize the SDG agenda in their operations. In the next chapter, the procedures and method adopted to develop the proposed analysis are described.

### **3 METHODOLOGY**

To meet what was proposed in this study, a descriptive research of quantitative application was carried out. The classification according to this precept considers that it seeks to describe a phenomenon based on observations and analysis of data and indicators related to the proposal (Matias-Pereira, 2019). As for the quantitative approach, this involves testing theories by examining the relationship between variables, which are measured by statistical procedures (Creswell, 2010).

As a research strategy, the survey method was adopted. According to Baptista and Campos (2018), in this method, the data is directly reported by the people who

respond to the researcher's requests and is usually obtained through a research instrument, commonly a questionnaire.

Table 1 – Analysis variables

<b>Institutionalization by Isomorphic Mechanisms</b>			
<b>Variable</b>	<b>Description</b>		<b>Affirmation</b>
Coercive isomorphism	Rule internalization mechanisms according to coercive, normative, or mimetic isomorphism		02
Normative isomorphism			01
Mimetic isomorphism			02
<b>Sustainable Development Goals</b>			
<b>Variable (PEAA)</b>	<b>Description</b>	<b>Related SDG</b>	<b>Affirmation</b>
1) Promotion of food security, health, and nutrition	Food supply security, food safety through assurance of product quality and health, food waste	2, 3, 12	06
2) Environmental responsibility	Water management, climate change, waste and effluent, preservation of fauna and flora and soil biodiversity, environmental safety	2, 6, 7, 12, 13, 14, 15	07
3) Economic viability and shared values	Improvement in performance, direct purchases, appreciation of producers, responsible consumption, management of suppliers and third parties	8, 9, 12	03
4) Respect for human rights, decent work, and helping communities	Human rights, diversity and inclusion, professional development, occupational health and safety, local development	1, 2, 4, 5, 8, 9, 10, 11	15
5) Encourage good governance and accountability	Clear functional responsibilities, avoid conflicts of interest, good relationship with stakeholders, fight against corruption, risk and fraud prevention, relationship and communication with public entities and agents, regulation, and compliance	16	06
6) Promoting access and transfer of knowledge, skills and technology	Dissemination of knowledge, transfer of technology and expertise	1, 2, 9, 17	03

Source: Dimaggio & Powell (1983) and Rede Brasil (2016)

The research instrument developed involves 45 questions structured in an ordinal scale assumed as a Likert interval (Hair et al., 2014) of five points, which are distributed in two blocks, as shown in Table 1. The first block contains five statements and involves

aspects of “institutionalization,” built from institutional theory assumptions. The second block, in turn, has 40 statements about the SDGs and was structured based on the Business Principles for Food and Agriculture (PEAA), prepared by Rede Brasil (2016), to facilitate the adoption of solid management strategies by private companies in the food sector, in addition to motivating them to contribute to the 2030 Agenda (UN, 2015) in the Brazilian context. In addition to each PEAA being associated with certain SDGs, this framework explains its area of activity and presents indicators that companies can assume, which facilitates subsequent measurement.

The population involved in this study comprises food agro-industries in the State of Rio Grande do Sul. Feix and Leusin (2019) understand agro-industries as the industry for the transformation of agricultural raw materials (for example, food, biofuels, tobacco), specifying agribusiness as the combination of agriculture, livestock, forestry and vegetable exploration, and fishing activities. These activities include: a) agriculture: cultivation of cereals, sugar cane, soybeans, fruits, coffee, and other products from temporary and permanent crops; b) livestock: raising cattle, pigs, poultry, and other animals and production of derivative products on the rural property; c) forestry and forest exploitation: production of firewood, logs, pulpwood, and other products from forest exploitation; d) fishing: production of fresh fish.

Considering the sectorial scope of this type of industry, we decided to include in this study only the food agro-industries that were registered with the State’s control and inspection bodies. Thus, the population was defined as those agro-industries that are officially registered with the Department of Agriculture, Livestock and Rural Development, with the Divisions of Family Agriculture and Agro-industry and the Inspection of Products of Animal Origin, totaling 3,611 agro-industries.

To calculate the minimum sample size considered acceptable for analysis of modeling and structural equations, the statistical power of the sample size was used via G\*Power software (Faul et al., 2007). The *a priori* calculation criterion was adopted, observing the test power parameters ( $\text{Power} = 1 - \beta_{\text{error prob. II}}$ ) with values of 0.80, effect

size ( $f^2$ ) of 0.15, significance level of 0.05 (5%) for 1 predictor (Hair et al., 2014). Thus, the minimum sample calculated for data collection was 55 cases; however, Bido and Silva (2019) suggest that this value should be doubled or tripled to ensure validity to the estimated model. Thus, the minimum sample for structural equation modeling analyzes would be at least 155 cases.

The approach to the study population occurred electronically. After an initial contact explaining the study motivation and inviting participation, the online questionnaire was sent to the agro-industries, obtaining 254 responses that make up the sample of this study.

After data collection, Microsoft Excel 2019 software (for data tabulation) and SmartPLS 3.3.3 (for analysis of the measurement model and structural model) were used for data analysis, interpretation, and validation by adopting the Structural Equation Modeling (PLS-SEM) technique. The adoption of this technique is justified as per Hair et al. (2014), where the use of PLS-SEM enables estimates and parameters that maximize the explained variance ( $R^2$  values) of the defined models. Still, another justification for using the PLS-SEM method is the flexibility regarding assumptions about data distribution, such as normality, use of interval scales, and large samples (Mateos-Aparicio, 2011).

The adjustment procedures adopted for the PLS-SEM technique, both in the measurement model validation stage (factor loading, AVE, cross loadings, Fornell-Larcker criterion, and composite reliability), and in the structural model validation stage (evaluation of Pearson's coefficient of determination ( $R^2$ ), effect size ( $f^2$ ), predictive validity ( $Q^2$ ), and Student's t-test followed the guidelines by Ringle et al. (2014).

The first stage of the analyzes ensured the validity of the collected data, examining them through the process that encompassed the following steps: a) verification of missing data (missing values), where there was no missing data; b) data encoding and transformation stage and data entry into the software where the analyzes will take place (Hair et al., 2014), in this case the data was tabulated and imported into the SmartPLS software. Subsequently, a reflective model was defined (Hair et al., 2014), as shown in the next section.

## 4 RESULT ANALYSIS

### 4.1 Validation of the Measurement Model

A second-order reflective model was used, and a technique for repeating indicators of first-order latent variables was adopted to form the variables of the structural, second-order model (Bido & Silva, 2019). The validation analyzes of the measurement model began based on the criterion selected as ideal for the values of the indicator factor loadings, values  $>0.7$  (Bido & Silva, 2019). However, as this is an exploratory study, indicators with “values greater than or equal to 0.4 and less than 0.7 are removed only when there is a significant increase in the composite reliability of the latent variable and when other criteria of discriminant and convergent validity of the model are not affected.” (Hair et al., 2014, p. 104). Therefore, in this validation process, the factor loading coefficients were observed for each indicator of latent variables, in which indicators with factor loading  $<0.6$  were eliminated (Bido & Silva, 2019), since lower values would affect the subsequent validation criteria.

Table 2 – Reliability validation of the estimated model

<b>Dimensions (1<sup>st</sup> Order)</b>	<b>AVE</b>	<b>Composite Reliability</b>
Know	0.670	0.802
Right_dev	0.536	0.774
Iso_coercive	0.675	0.806
Iso_mimetic	0.702	0.825
Iso_normative	1	1
Env_resp	0.601	0.857
Inst_resp	0.584	0.848
Food_sec	0.508	0.803
Eco_viab	0.722	0.837
<b>Dimensions (2<sup>nd</sup> Order)</b>		
Instituc_process	0.654	0.865
SDG_PEA	0.596	0.837

Source: Survey data (2023)

Afterwards, the convergent and reliability validity of the estimated model was evaluated based on the Average Variance Extracted (AVE) and the Composite Reliability

(CC) of the latent variables, as shown in Table 2. Hair et al. (2014) explains that the AVE measures the percentage of the total variance of the indicators, which is explained by the latent variable, whose value must be  $>0.50$ . According to Tabachnick and Fidel (2001), this reference value means that the latent variable explains more than half of the variance of its indicators. Fornell and Larcker (1981) point out that the Composite Reliability (CC) assesses how much the indicators support the latent variables, having  $>0.70$  as a reference.

Table 3 - Loadings of latent variables

	Know	Right_dev	Iso_ coercive	Iso_ mimetic	Iso_ normative	Env_ resp	Inst_ resp	Food_ sec	Eco_ viab
Know2	<b>0.879</b>	0.501	0.256	0.134	-0.014	0.196	0.525	0.327	0.347
Know3	<b>0.752</b>	0.281	0.099	-0.141	0.271	0.297	0.322	0.254	0.247
Right_dev	0.473	<b>0.616</b>	0.250	0.158	0.095	0.368	0.601	0.363	0.394
Right_ dev11	0.322	<b>0.711</b>	0.408	0.161	-0.043	0.134	0.448	0.187	0.239
Right_dev6	0.263	<b>0.709</b>	0.222	0.132	0.027	0.091	0.276	0.158	0.204
Press_ inst1	0.123	0.266	<b>0.816</b>	0.387	-0.127	0.069	0.303	0.193	0.200
Instituc1	0.253	0.337	<b>0.827</b>	0.190	0.127	0.267	0.521	0.409	0.271
Instituc2	-0.043	0.131	0.221	<b>0.810</b>	-0.131	-0.152	0.073	-0.024	-0.012
Press_ inst2	0.071	0.305	0.355	<b>0.865</b>	-0.260	-0.102	0.202	-0.027	0.127
Instituc3	0.128	0.020	0.002	-0.239	<b>1.000</b>	0.311	0.142	0.147	0.065
Env_resp3	0.308	0.276	0.273	0.058	0.214	<b>0.783</b>	0.384	0.331	0.327
Env_resp4	0.149	0.061	-0.012	-0.361	0.436	<b>0.692</b>	0.190	0.252	0.252
Env_resp5	0.083	-0.061	-0.052	-0.429	0.423	<b>0.584</b>	0.103	0.174	0.127
Env_resp6	0.080	-0.082	-0.064	-0.412	0.361	<b>0.564</b>	0.052	0.181	0.135
Inst_resp3	0.332	0.429	0.330	0.210	0.041	0.246	<b>0.748</b>	0.282	0.299
Inst_resp4	0.435	0.340	0.112	-0.138	0.232	0.337	<b>0.649</b>	0.380	0.327
Inst_resp5	0.386	0.367	0.484	0.225	0.065	0.366	<b>0.762</b>	0.462	0.451
Inst_resp6	0.392	0.364	0.520	0.178	0.040	0.353	<b>0.752</b>	0.615	0.453
Food_sec2	0.257	0.247	0.260	-0.005	-0.020	0.359	0.486	<b>0.807</b>	0.395
Food_sec3	0.242	0.147	0.174	-0.187	0.426	0.260	0.286	<b>0.490</b>	0.212
Food_sec4	0.185	0.148	0.353	0.078	0.074	0.237	0.371	<b>0.664</b>	0.298
Food_sec6	0.207	0.168	0.177	-0.198	0.227	0.390	0.394	<b>0.654</b>	0.435
Eco_viab1	0.174	0.266	0.158	0.138	-0.037	0.191	0.242	0.241	<b>0.660</b>
Eco_viab2	0.323	0.384	0.353	0.122	-0.052	0.382	0.513	0.474	<b>0.869</b>

Note 1: Cross loadings of each latent variable are highlighted in bold

Source: Survey data (2023)

All latent variables reached the minimum expected values for AVE and CC. Thus, we proceeded to the evaluation of the discriminant validity of the estimated model. According to Hair et al. (2014), an estimated model has discriminant validity when



each of the indicators has higher loads on its own constructs than on any other latent variable. Table 3 presents the cross loadings of the estimated model latent variables.

In this study, all indicators of latent variables showed higher values relative to the corresponding cross loadings, which ensures their discriminant validity. This result demonstrates that the statements used in each indicator are, in fact, observable indicators of the constructs proposed in the data collection instrument.

The next step of the discriminant validation adopted the Fornell-Larcker criterion, comparing the square roots of the AVE values from each latent variable with the correlations between the latent variables (Henseler et al., 2009). Table 4 presents the results of the correlation matrix and discriminant validity (Fornell-Larcker criterion)

Table 4 – Discriminant validation (Fornell-Larcker) of the estimated model

1 <sup>st</sup> Order	Know	Right_dev	Iso_ coercive	Iso_ mimetic	Iso_ normative	Env_ resp	Inst_ resp	Food_sec	Eco_ viab
Know	<b>1</b>								
Right_dev	0.502	<b>0.732</b>							
Iso_ coercive	0.229	0.391	<b>0.822</b>						
Iso_ mimetic	0.018	0.204	0.348	<b>0.839</b>					
Iso_ normative	0.133	0.049	0.003	-0.239	<b>1</b>				
Env_ resp	0.243	0.226	0.103	-0.291	0.436	<b>0.775</b>			
Inst_ resp	0.503	0.581	0.490	0.164	0.119	0.285	<b>0.764</b>		
Food_sec	0.311	0.310	0.339	-0.100	0.215	0.340	0.553	<b>0.713</b>	
Eco_ viab	0.308	0.373	0.325	0.147	-0.054	0.175	0.462	0.392	<b>0.850</b>
2 <sup>nd</sup> Order	Instituc_ process	SDG_ PEAA							
Instituc_ process	<b>0.808</b>								
SDG_ PEAA	0.358	<b>0.772</b>							

Note 1: The square root of the AVE is distributed along the main diagonal in bold.

Note 2: Correlations equal to or greater than 0.166 are significant at 1%, the others at 5%

Source: Survey data (2023)

The results from the evaluation of the correlation matrix and discriminant validity indicate that the correlations in all latent variables were lower than the AVE square root, demonstrating the discriminant validity between them. Thus, since all

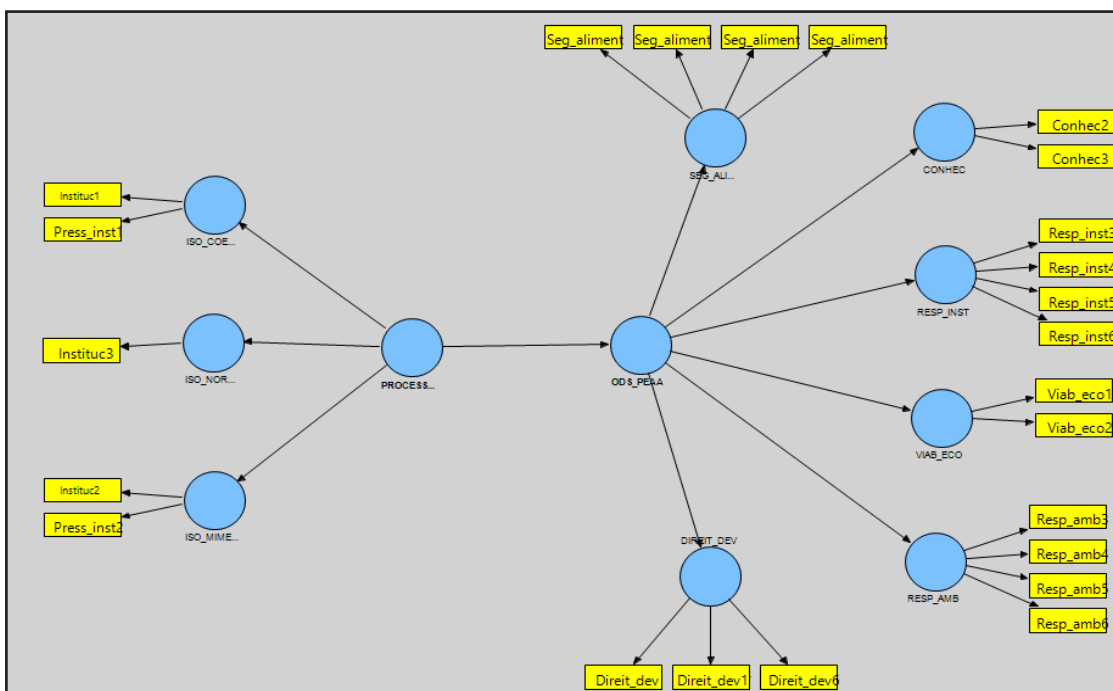
validation steps of the measurement model were verified and met, we proceeded to validate the structural model, which is presented in the next section.

### 4.2 Structural Model

To evaluate the explanatory power of the structural model, the values of the explained variance ( $R^2$ ),  $Q^2$ , and  $f^2$  of the latent variables from the estimated model were adopted. Figure 1 presents the estimated structural model.

Subsequently, the values of  $R^2$ ,  $Q^2$ , and  $f^2$  are analyzed. According to Cohen (1971), values of  $R^2 = 2\%$  are classified as a small effect;  $R^2 = 13\%$  as average effect, and  $R^2 = 26\%$  as a large effect; and in this study, the value of  $R^2$  was 0.429. The analysis of the effect size ( $f^2$ ), which assesses how important each VL is for the adjustment of the estimated model, showed that all VLs had medium and large effect sizes (Bido & Silva, 2019). For the predictive validity analysis of the estimated model, the Stone-Geisser indicator ( $Q^2$ ) was used, which evaluates the model accuracy, where all VLs presented values above the minimum expected value ( $Q^2 > 0$ ).

Figure 1 – Estimated structural model



Source: Survey data (2023)

Finally, for the structural model validation, the criteria for the structural relationships of the estimated model were evaluated (Hair et al. 2014). The structural coefficient (positive values) was evaluated, t-value, which is necessary to reach values  $>2.58$  for the estimated model to be suitable with a significance level of 1% or  $>1.96$  for the model to be suitable with a significance level of 5% for validation of the elaborated hypotheses.

Table 5 – Significance of structural relationships and hypotheses results

Structural Relationship (+)	Structural Coefficient	Standard Error	t-Value	p-Value	Hypothesis
PROCESS_INSTITUC -> SDG_PAAA	0.440	0.101	4.352	0.01	Confirmed

Source: Survey data (2023)

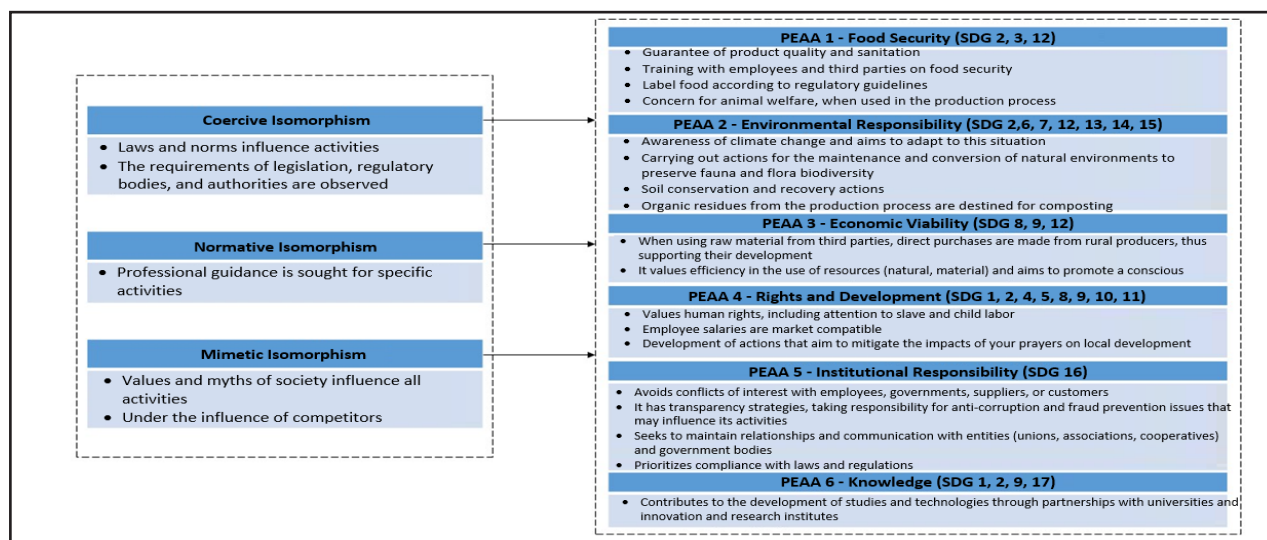
As shown in Table 5, the results from the structural relationship significance elucidate that all VLs presented positive and significant relationships, confirming the proposed structural relationships. Thus, it is observed that Hypothesis H1, that analyzes whether institutionalization through isomorphic mechanisms is positively associated with the implementation of the SDG-PEAA, was confirmed ( $\beta=0.440$ ;  $p>0.01$ ).

## 4.2 Discussion of Results

Considering the confirmation of Hypothesis H1, we proceed to explain the dimensions and indicators that remained for the final model of this study. As shown in Figure 2, the institutionalization of the SDGs by the agro-industries in the sample according to the different isomorphic mechanisms of DiMaggio and Powell (1983) was confirmed in the analysis. The influence of coercive isomorphism in this process was observed through the two initially proposed indicators, namely, laws and norms influence the activities of companies and observation of the requirements of legislation, regulatory bodies and other authorities for operations. Even though the SDGs are an institution that derives an informal rule, as there is no formal punishment for non-adherence, it is understood that the implementation by companies may be related to

the recognition issue of the legitimate authority who created the SDGs (UN), as well as for being a set of actions in search of sustainable development that is legitimized by society, as exposed by Liszbinski et al. (2023) and Van Zanten and Van Tulder (2018).

Figure 2 – Isomorphic mechanisms of SDG institutionalization



Source: Survey data (2023)

Thus, the agro-industry adherence to the SDGs from the coercive isomorphism perspective concerns their conformation with pressure exerted by the dominant organization (Dimaggio & Powell, 2005). This conformation, according to institutional precepts, is related to the search for legitimacy before society, that is, the company adheres to the SDGs because they originate from a legitimate agenda at a global level, thus, aiming to be positively recognized by society for this posture, in order to maintain the balance and continuity of its activities.

As for institutionalization through the normative isomorphic mechanism, the relationship between the variable “professional guidance is sought for specific activities” and the implementation of the SDGs by agro-industries was identified. According to Kelm et al. (2014), normative isomorphism is related to the degree of professionalization of organizations, in this study, confirmed by the search for professional advice for the development or specialization on food production activities, which can be exemplified

by the search for knowledge sharing with agronomists, nutritionists, chemical or food engineers, among others.

Regarding the institutionalization by mimetic isomorphism, the influence indicators of values and myths on the company's activities and the existence of competitor influence on the company bring relevance to this mechanism. According to Dimaggio and Powell (2005), mimicry concerns the company's posture in mirroring the actions of competitors, its activity sector, or even the general environment in which it operates. In this study context, the agro-industry sample demonstrates the reproduction of practices related to sustainable development that other companies carry out, or even following valuable actions for this field of activity, developed by other companies or others involved in the environment in which they are inserted. This evidence corroborates with Cubilla-Montilla et al. (2019), García-Sánchez et al. (2021), and Van der Waal and Thijssens (2020), who have already exposed the environmental pressures that companies receive and that direct them to adhere to the SDGs.

Although the institutional isomorphism was presented in general as significant to explain the institutionalization of the SDGs by the agro-industries in this study, on the opposite side, the structure of indicators initially proposed to analyze the implementation of the SDGs in its entirety was partially confirmed. The SDGs were analyzed based on their association with the PEAA (Rede Brasil, 2016), principles that were created specifically for Brazilian private companies in the food production sector.

The analysis proved that all six PEAA admit the influence of isomorphic mechanisms for their internalization by agro-industries, however, not all indicators were confirmed. As shown in Figure 2, in PEAA 1, which refers to actions taken on food security, four indicators indicate the association with SDGs 2 (zero hunger and sustainable agriculture), 3 (health and well-being), and 12 (responsible consumption and production).

Regarding the implementation of PEAA 2 indicators – associated with SDG 2 (zero hunger and sustainable agriculture), 6 (drinking water and sanitation), 7 (clean and accessible energy), 12 (responsible consumption and production), 13 (action against

global climate change), 14 (life in water), and 15 (terrestrial life) – the influence of isomorphism mechanisms was identified in four indicators related to the environmental responsibility of the agro-industries in the sample. PEAA 3, in turn, dealing with ensuring economic viability and sharing values, was related to institutionalization through two indicators, demonstrating the attention of agro-industries to SDG 8 (decent work and economic growth), 9 (industry, innovation, and infrastructure), and 12 (responsible consumption and production).

The isomorphic mechanisms influenced the internalization of three PEAA 4 indicators (respect for human rights, creation of decent work, and helping rural communities to prosper). These indicators reveal the involvement of the companies in the sample with SDG 1 (poverty eradication), 2 (zero hunger and sustainable agriculture), 4 (quality education), 5 (gender equality), 8 (decent work and economic growth), 9 (industry, innovation, and infrastructure), 10 (reducing inequalities), and 11 (sustainable cities and communities).

Regarding PEAA 5 – incentive to good governance and responsibility – we identified that the institutionalization processes were related to four indicators, associating agro-industries with the fulfillment of SDG 16 (peace, justice, and effective institutions). Finally, for PEAA 6 – promotion of access and transfer of knowledge, skills, and technologies – the indicator related to the contribution to the development of studies and technologies through partnerships with universities and innovation and research institutes was influenced by isomorphism mechanisms for its internalization by agro-industries. It should be noted the last principle is structured in a way that is associated with SDG 1 (eradication of poverty), 2 (zero hunger and sustainable agriculture), 9 (industry, innovation, and infrastructure), and 17 (partnerships and means of implementation).

It should be noted that even though the influence of institutionalization through isomorphic mechanisms (coercive, normative, and mimetic) is not identified in all SDG indicators, the agribusinesses analyzed seek to internalize sustainable development

actions from this agenda, since all PEAA were reflected in the institutionalization analysis and were associated with the entire set of SDGs. Such a partial implementation of the SDGs may be related to the voluntariness issue of the 2030 Agenda in the business context, which does not legally oblige them to adhesion. In addition, the words of Selznick (1972) should be highlighted, who argues that the institutionalization of any rule (formal or informal) is a process that occurs over time in an organization, reflecting its historical characteristics, the people who work there, the groups and interests created, and the way it relates to the environment, a fact that may be present in the context of the companies analyzed in this study and influencing the full institutionalization of the SDGs.

## **5 FINAL CONSIDERATIONS**

The aim of this study was to identify the relationship between institutionalization through isomorphism mechanisms and the adherence of agro-industries to the SDGs. The empirical application took place in a sample of food agro-industries in the State of Rio Grande do Sul, through a quantitative analysis and by using the structural equation modeling technique for the development of this proposal.

The analysis was theoretically based on the assumptions of institutional theory, especially regarding institutionalization through different isomorphic mechanisms, namely, coercive, normative, and mimetic. Such mechanisms were analyzed based on the measurement of indicators supported by the literature that could explain the motivation for internalizing the SDGs by companies. The SDGs, in turn, were analyzed based on their association with the PEAA (Rede Brasil, 2016) in order to motivate private Brazilian companies in the food production sector to adopt strategies that would contribute to the global process of the SDGs, in addition to strengthening its management.

The hypothesis formulated for this study was confirmed, demonstrating significance in all isomorphic variables analyzed. Initially, regarding the coercive isomorphism, a relationship was identified between the institutionalization and the

implementation of the SDGs due to the influence of norms on the activities of companies, in addition to the tendency to observe the requirements arising from regulatory bodies or authorities considered legitimate by the agro-industries. Such variables are related to the legitimacy issue, that is, companies aim to adhere to a certain institution/rule for the purpose of recognition in society, in this case, for adhering to an agenda that seeks the sustainable development. It is also suggested that the legitimacy attributed by society to the SDGs makes companies adapt to this proposal, seeking balance and continuity for their operations.

The significant agreement with the variable search for professional guidance for specific activities of agro-industries, attributes a relationship between the normative isomorphism and the internalization of the SDGs in this studied sample. In other words, the use of professional and specialized advice for the development of agro-industry operations is related to the incorporation of the SDGs, thus corroborating the assumptions of normative isomorphism that addresses the professionalization factor in the context of organizations.

As for the mimetic isomorphism mechanism, it was also confirmed as influential in the SDG internalization process. The study evidence points to a relation of influence regarding the practices developed by the competitors or other integral parts of the environment in which the company is inserted with the actions adopted by them, indicating the mirroring in strategies considered correct.

Although the study confirmed that institutionalization through isomorphic mechanisms is positively associated with the implementation of the SDGs, we observed that they are partially internalized by agro-industries. Among the forty SDG-PEAA indicators prepared for this research, eighteen were internalized by the companies. However, it should be noted that even considering the partial identification of SDG indicators related to isomorphism mechanisms, each of the six PEAA presented significant indicators. As each PEAA is associated with several SDGs, it is understood



that there is an internalization of the SDG set in this studied sample, especially because they are structured in an integrative and indivisible manner.

As highlighted in this study, the academic literature on the relationship of institutional issues and the involvement of companies with the SDGs is still at a very early stage and lacking in theoretical and empirical progress. Therefore, we understand that the results found in this research contribute to the progress in both the theoretical and practical field of this theme, mainly: The study practical application in a sample composed of companies from the same branch of activity (agro-industries); empirical use of the PEEA guide in the academic-scientific research context; theoretical consolidation of the relationship between institutional isomorphism and the SDGs; empirical identification of isomorphic indicators that influence the institutionalization of the SDGs; and development of research with this thematic delimitation in the Brazilian context, considered unpublished in this way until the moment.

As limitations of the quantitative method adopted in this study, we highlight the common method bias, as the sample selected for the analyzes only considered one respondent per organization. We can consider the overfitting necessary for the estimated model validation (overfitting of the estimated model – exclusion of several indicators). Regarding possibilities for future studies, there are opportunities for advancement in research in this field of knowledge, especially among companies from different regions of the country or among different types of activity fields. In addition to the institutionalization of the SDGs in private companies, the analysis of this phenomenon can be expanded to other stakeholders in the 2030 Agenda, contributing to the advancement of studies on sustainable development.

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## Authors

### 1 – Bianca Bigolin Liszbinski

Institution: Universidade Federal de Santa Maria, Campus Palmeira das Missões- Palmeira das Missões, Rio Grande do Sul, Brazil

Doctor of Regional Development from University Regional do Noroeste do Estado do Rio Grande do Sul

Orcid: <https://orcid.org/0000-0001-6390-7337>

E-mail: bianca.bigolin@ufsm.br

### 2 – Maria Margarete Baccin Brizolla

Institution: MMB Empreendimento e Gestão Ltda - Ijuí, Rio Grande do Sul, Brazil

Doctor of Accounting and Administration from University Regional de Blumenau

Orcid: <https://orcid.org/0000-0002-5120-0729>

E-mail: marga.brizolla@gmail.com

### 3 – Tiago Zardin Patias

Institution: Universidade Federal de Santa Maria, Campus Palmeira das Missões - Palmeira das Missões, Rio Grande do Sul, Brazil

Doctor of Administration from University Federal de Santa Maria

Orcid: <https://orcid.org/0000-0003-4560-6690>

E-mail: tiago.patias@ufsm.br

## Contribution of authors

Contribution	[Author 1]	[Author 2]	[Author 3]
1. Definition of research problem	√	√	
2. Development of hypotheses or research questions (empirical studies)	√	√	
3. Development of theoretical propositions (theoretical work)			
4. Theoretical foundation / Literature review	√		√
5. Definition of methodological procedures	√	√	√
6. Data collection	√		√
7. Statistical analysis	√		
8. Analysis and interpretation of data	√	√	√
9. Critical revision of the manuscript	√	√	√
10. Manuscript writing	√		
11. Other (please specify)			

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