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SUSTAINABILITY AND CORPORATE GOVERNANCE MECHANISMS IN MEXICAN BEEF PRODUCTION

SUSTENTABILIDAD Y MECANISMOS DE GOBERNANZA CORPORATIVA EN LA PRODUCCIÓN DE CARNE DE RES EN MÉXICO

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ABSTRACT

Sustainability is a topic that has experienced a growing interest in recent years within the academic world, and at the same time, it manifests itself as a particular inconsistency of the business sector, who use it as a means to improve their image, setting aside its vision of great significance. In order to achieve the fundamental purpose of sustainability, the corporate governance model has been an evolving subject in recent years. This is due to the fact that even though the mechanism still endures, it has little to do with the balance of social and environmental benefits. In Mexico, cattle ranchers have faced several problems, such as the difficulty of marketing with intermediaries. In response, this quantitative study has been carried out in order to identify a possible relationship between sustainability and corporate governance, through the testing of six hypotheses. The findings show a positive correlation between corporate governance mechanisms (formal and efficiency) and sustainability dimensions (economic, social, and environmental). This provides further evidence of the complexity of sustainability and corporate governance issues.

KEYWORDS:

Sustainability, Corporate governance. Livestock

RESUMEN

La sostenibilidad es un tema que ha experimentado un creciente interés en los últimos años dentro del mundo académico, y al mismo tiempo, se manifiesta como una inconsistencia particular del sector empresarial, que la utiliza como medio para mejorar su imagen, dejando de lado su visión de gran trascendencia. Para lograr el propósito fundamental de la sostenibilidad, el modelo de gobierno corporativo ha sido un tema en evolución en los últimos años. Esto se debe a que, aunque el mecanismo aún perdura, poco tiene que ver con el equilibrio de los beneficios sociales y ambientales. En México, los ganaderos se han enfrentado a varios problemas, como la dificultad de comercializar con intermediarios. En respuesta, se ha realizado este estudio cuantitativo para identificar una posible relación entre la sostenibilidad y el gobierno corporativo, a través de la comprobación de seis hipótesis. Los resultados muestran una correlación positiva entre los mecanismos de gobierno corporativo (formales y de

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eficiencia) y las dimensiones de sostenibilidad (económica, social y medioambiental). Esto proporciona una prueba más de la complejidad de los temas de sostenibilidad y gobierno corporativo.

PALABRAS CLAVE

Sostenibilidad, Gobierno corporativo. Ganadería

1. INTRODUCTION

Livestock farming in Mexico faces several difficulties, such as the high cost of inputs and services, animal mortality, lack of training and technical assistance, low prices for its products, difficulty in marketing due to intermediaries, insecurity, and so on. In addition, it should be added that only 9.9% have access to credit (National Institute of Statistics and Geography [INEGI], 2018).

The rural area of Mexico is important to the national economy, but it has problems associated with poverty, social exclusion, lack of access to public services, and an ageing population. To this end, the issue of sustainability is important because it is associated with economic growth and prosperity (Bosworth, McElwee, & Smith, 2015). However, this concept is theoretically unstable due to the differences in interpretation that exist across organizations (Wilkinson, 2013). Another obstacle is the incongruity that is caused by business leaders who only use politically correct language regarding sustainability (Tregidga, Milne, & Kearins, 2014). This incongruity excludes the possibility that sustainable economic development will promote social welfare (Haavisto & Kovács, 2014).

Studies on sustainability have identified different benefits, as it is related to innovation and cooperation with stakeholders (Arenas, Fosse, & Murphy, 2011). This is considered extremely important as the stakeholders are decisive in the success or failure of an organization (Pedersen, 2013); sustainability promotes transparency and consensus among stakeholders, which can result in constructive and effective dialogue (Perego & Kolk, 2012) and awards, that improve corporate image and legitimacy (Dhanda, 2013; Gomes-Trujillo, et al. 2021) However, the benefits are seen mainly as internal, i.e., as producing better economic performance when it is included in a business model (Maffini-Gomes, Marques-Kneipp, Kruglianskas, Barbieri-da-Rosaa, & Schoproni-Bichuetia, 2015; Aldowaish, et al. 2022). In contrast, sustainability as a strategy leads to exploiting external opportunities (Strand, 2014), which encourages the support of high-level management and structural and social alignment (Parisi, 2013). Because the implementation of sustainability supports employees in expressing their needs, concerns, and possible solutions (Haapasaari & Kerosuo, 2014), it is a useful tool in the generation of change and improvements in both the value chain and the institutional context (Pesonen & Horn, 2013; Rodriguez-Guevara, 2018). Moreover, production systems could be improved if knowledge was available to evaluate the risks and benefits of sustainability (Speiser et al., 2013).

In addition, participatory management initiatives to improve the environment in regions with high levels of poverty are often inadequate (Hamelin & Nwankwo, 2013), specifically operational and tactical strategies that put more emphasis on ecology (Rossing, Jansma, De Ruijter, & Schans, 1997), while sustainability can improve product quality and encourage product consumption (Schacht, 2010). Finally, sustainability has a relationship link with corporate governance when managers consider sustainability as a means to increase the value of the organization (Klettner, Clarke, & Boersma 2014), which satisfies stakeholders (Gnan, Hinna, Monteduro, & Scarozza 2013) and reduces costs to increase profits (Lacy & Hayward, 2011).

Currently, there is an increased pressure from government (local and regional) and non-governmental organizations (NGOS) to develop new and improved sustainability practices; therefore, policy change is demanded by both groups to ensure sustainability in the future (Dadhich, 2015; Mohieldin & Shehata, 2021). Sustainability has gained increasing attention from academics and practitioners (Hasan, 2013). However, the dominant remaining drivers are cost reduction and profit maximization (Glover, 2014). Management practices such as flexible transportation, flexible sourcing, ISO 14001 certification and reverse logistics do not have a significant impact on sustainability (Govindan, 2014). Consequently, it is essential to begin with high-level managers which includes all of the actors in the supply chain (Dey, 2011) to transfer the necessary knowledge and skills so that they can become leaders (Cheung & Rowlinson, 2011), as such sustainable practices contribute to business success (Zailani, 2012). The priorities of corporations in the future will include greater collaboration and education, as well as the measurement of performance and monitoring of suppliers (Morali, 2013). Sustainability will likely be proposed to management to improve corporate image and increase sales (Zhang, Shah, Wassick, Helling, & Egerschot, 2014). In addition, sustainability and governance should be addressed, given that there is a knowledge gap due to few studies having been carried out on the impact of its mechanisms. Finally, there is a growing interest within the scientific and professional community to contribute to the theory and practice of sustainability (Formentini & Taticchi, 2015; Li, Zhao, Shi, & Li, 2014).

This document is integrated by a literature review that compiles the main theoretical foundations and hypotheses to undertake the research work. Consequently, it establishes the methodology developed that integrates the information from the participants and the measurement instrument. The results of the hypothesis tests are provided, and their statistical basis are then shown, followed by a discussion that analyzes the results and establishes their repercussions. Finally, the document concludes with a reflection by the authors with the aim of highlighting the contributions and limitations of the research.

2. THEORETICAL FRAMEWORK

2.1 Sustainability

Thomas Malthus was a visionary who first prognosticated global overpopulation and the increasing scarcity of resources during 1826, similar to the Club of Rome's recognition (1972) two centuries later. Subsequently, the Brundtland Commission in 1987 and the Rio Declaration in 1992 called for sustainable development (Morris, 2012). Latin America has been influenced by these declarations because of the close relationship of this region with the United States of America (USA), a commercial partner that buys a substantial portion of its exports. Importantly, this region seeks to comply with the international mandates of the United Nations (UN) through the inclusion of sustainability in public policies to ensure the competitiveness of the region in a globalized world (Gutierrez-Garza, 2008).

The Brundtland Commission or report of the World Commission on Environment and Development (WCED), called *Our Common Future*, defines sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their needs (WCED, 1987). This concept is multifaceted and is the subject of research around the world. The Brundtland Commission notes that sustainable economic growth reduces poverty, promotes social equity and improves the environment.

There are several definitions of sustainability, such as “conducting a practice derived from the combination of economic, social and environmental results corresponding to a holistic approach designed to indicate the integration of types of performance” (Chardine-Baumann & Botta-Genoulaz, 2014, p. 139). Sustainability “as the ability to conduct business with a long-term goal of maintaining the well-being of the economy, environment and society” (Hassini, Surti & Searcy, 2012, p. 70). A “sustainable economy is the product of sustainable development, including the conservation of the production base of natural resources, and a sustainable society is one that can continue to develop by adapting and increasing knowledge, organization, technical efficiency and wisdom” (United Nations, quoted by Fava and Thomé, 2008, p. 50). For practical purposes and in order to address this research, sustainability is considered as the management aimed at conserving natural resources, meeting the material needs of the population in general and achieving the economic benefit that allows it to remain in the market.

Sustainability goes beyond being a scientific concept in its concern about the future. According to Dunphy and Benveniste (2012), sustainability is the result of activities such as ensuring that the planet is maintained and that its biosphere is renewed. Additionally, sustainability protects species, improves the ability of society to solve its greatest problems, maintains an acceptable level of well-being for present and future generations, and extends the productive life of organizations and allows them to maintain high levels of organizational performance.

Globalization has increased the volume of trade, which increases corporate power. Moreover, the Keynesian benefactor model has been replaced with a neoliberal paradigm that has prospered with the development of privatization and liberalization policies (Crouch, 2009, quoted by Kudlak & Low, 2015). Since the end of the twentieth century, companies have used corporate sustainability as a justification for projects that could provide a commercial benefit (Salzmann, Ionescu, & Steger, 2005). Corporate sustainability, for many industry leaders, is a valuable tool that reduces costs, manages risk, creates new products, and promotes change (Azapagic, 2003).

The concept of sustainability is related to the term Corporate Social Responsibility (CSR), which was addressed by Freeman (1984), giving relevance to the Stakeholders as actors that should be considered in the management of companies, so that not only the Shareholders are considered in the benefits that they can generate in society. Carroll (2004) defines CSR as those company activities that include economic and legal aspects that society expects at a given point in time. McWilliams and Siegel (2001) consider that in essence CSR are those actions that bring companies closer to society beyond the legal aspects to which they are obliged. CSR is also a concept that can be connected with corporate governance, especially with those elements that are related to managers making important decisions that affects society (Khan, et al., 2022). Although these two concepts (Sustainability and CSR) have similarities in terms of their practical application by focusing on not privileging economic profits as the sole objective of companies, both concepts have been developed in the literature, each in its own field of study, with diverse practical applications.

The topic of sustainability becomes more relevant when it is related to other concepts, which allows for a broader understanding of the phenomenon and also the scope of its practical implications. For this reason, the analysis of governance mechanisms and their relationship with the dimensions of sustainability represents an effort to better understand the dynamics present in the livestock industry.

2.2 Corporate Governance

Corporate governance refers to an environment of trust, ethics, moral values, and confidence created by the synergic efforts of all stakeholders, including the government, the public, professional/service providers and the corporate sector (Aras & Crowther, 2009). Corporate governance is a necessary form of financial regulation and establishes organizational behaviour when there are imperfect relationships between market forces and institutional factors in relation to ethical responsibilities (Choudhury and Harahap, 2007). Additionally, corporate governance represents a system in which companies are directed and controlled to organize the relationships among high-level managers, shareholders, and interest groups within the framework of corporate transparency and to protect the rights of stakeholders (Arslantas & Findikli, 2013, Lee, 2022). Corporate governance manifests as a system that includes laws, rules, and factors that control the operations of a company (Gillan & Starks, 1998).

Corporate governance has different definitions, “the term comprises all international and national values and principles aimed at the good and responsible management of a company” (Rosen, 2007, p.30). Additionally, “corporate governance, under the stakeholder theory model, is a ‘balancing act’ that takes place because all stakeholders, including advocacy groups, are considered to have the right to be heard. Thus, the connotative meaning of ‘corporate governance’ is the nexus of the stakeholder agreement” (L’Huillier, 2014, p. 311). It is also defined as “leadership systems, managerial control protocols, property rights, decision rights, and other practices that give organizations their authority and mandates for action” (Tihanyi, Graffin, & George, 2015, p. 1). According to the above definitions and in terms of this research paper, corporate governance is considered as the management of an organization that takes into account stakeholders in decision making in order to maintain a balance in the achievement of objectives under the principles of justice, honesty, trust and professional ethics for the prosperity and continuity of both parties. Governance in relation to the management of sustainability in the supply chain has gained increasing attention. There are economic patterns that do not contribute to the achievement of environmental and social goals (Formentini & Taticchi, 2015). The Organization for Economic Cooperation and Development (OECD) disseminates best practices for corporate governance to discipline the behaviour of its actors, including owners, directors, and executive management (Guo, Smallman, & Radford, 2013). The study of corporate governance has resulted in several academic perspectives. Interest has come from researchers in the areas of economics, finance, law, administration, and accounting (Bebchuk & Weisback, 2012). Although the corporate governance literature is characterized by an economic and financial emphasis and a consideration of mostly large companies (Ciampi, 2015), recently, some pioneers have analyzed the mechanisms of corporate governance and have defined the relationship between organizational management and stakeholders (Gnan et al., 2013).

Corporate governance includes multiple elements at the global level. Importantly, Anglo-Saxon economies are based on and operate according to market dynamics through dispersed shareholders and a board of directors that aligns with the interests of the majority of shareholders. Additionally, financial information is crucial. Asian corporations are characterized by family ties or financial alliances that develop in capital markets and an aversion to public procurement. In Latin America, there is a lower use of investments, in contrast to the majority of Europe and the USA, and there is pressure for the transparency of the information that is provided to shareholders, which is generated by laws or codes of good practice (Yeoh, 2007).

In Latin America, the ownership structure is highly concentrated, and lies mainly in the hands of family shareholders who control the firm, while the civil-law origin of their institutional frameworks provides relatively little legal protection of investors’ rights (Jara et al., 2019). In addition, in 2006, representatives of UN member countries contributed to the publication of a guide to good corporate governance practices to

promote corporate transparency and accountability, which could ultimately improve investor confidence. Despite the above, the national corporate governance codes of Chile and Mexico are not congruent with the UN guidelines; however, Argentina, Brazil and Colombia are (Santos, Crispim, Oliva, & Dornelles, 2020), which means that there is no homologation between the international guide and the national codes of Latin America, but rather differences among the member countries.

On the other hand, Jara et al. (2019) argue that in countries such as Argentina, Chile, Colombia and Mexico, corporate governance of companies has particular aspects due to the role played by the distribution of power among a large number of shareholders (contestability), which is even more evident in family businesses from these countries. Another important element is the role played by the regulation and legal framework of these countries, which in general can be considered as not very strict.

In the case of the livestock industry in Latin America, there are several challenges for its main actors, mainly regarding the improvement of processes that promote sustainability, as well as the care of animal health, as the basis for improving the quality of their products (FAO, 2021). These challenges can be better addressed if corporate governance schemes are in place to help direct the actions of livestock companies towards the resolution of specific problems affecting the sector in general.

2.3 Hypotheses

According to the growing number of studies on the governance models that are based on participatory approaches, collaborative governance is a strategic key to increase sustainable development (Tencati & Zsolnai, 2008, quoted by Vurro, Russo, & Perrini, 2009). De Marchi, Di Maria and Ponte (2013) identify the mechanisms of governance that contribute to environmental sustainability. Moreover, Formentini and Taticchi (2015) included economic and social dimensions and created three profiles of sustainability with four mechanisms of governance: collaboration and non-collaboration and formal and informal mechanisms. Additionally, Li et al. (2014) propose two mechanisms of governance, namely, efficiency and legitimacy, to achieve sustainability.

Formal Mechanisms and Sustainability

Formal mechanisms are present when there are established procedures that help resolve conflicts and overcome obstacles in the operation and administration of a company, so that interaction with other organizations such as its suppliers or customers can be improved (Formentini & Taticchi, 2015).

In this regard, Lu and Xu (2018) in a study involving 117 Chinese manufacturing companies through structural equation analysis found that, contractual, relational and equity governance mechanisms are mediators between Extended Producer Responsibility practices and the impact they have on market performance, achieving a better social image, expanding the market and increasing sales. They suggest, in turn, that the increase in environmental performance is mediated by the contractual

governance mechanism, i.e., for companies seeking to reduce environmental impact, cooperation through formal mechanisms such as specific contracts is desirable. The authors argue that the objectives of the organizations will delimit the type of governance mechanism to choose for the adjustment of their operations.

On the other hand, Awan, Kraslawski and Huiskenen (2018) developed their research of 239 manufacturing companies in Pakistan to analyze the relationship between contract governance and collaboration, taking cultural intelligence as a moderating variable. The findings demonstrate a relationship between contract governance as both a formal mechanism and form of collaboration, and as such, finds this relationship impacting social sustainability. This proposes that companies which maintain stipulated obligations and rights for the achievement of their objectives are strengthening collaboration among stakeholders and impacting social sustainability for the benefit of workers' health and safety as well as social welfare.

Additionally, Morcillo-Bellido and Duran-Heras (2020), taking into consideration the existing gap between the sustainability governance mechanisms identified in the literature and those used in the current practical situation of companies, conducted a case study with retail companies in Spain. The results indicate that in the companies, formal governance mechanisms are present, which are related to the actual achievement of integral sustainability, in two groups; the first group was called enablers, that is, their presence allows achieving sustainability without generating an impact on competitive advantage, while the second group called differentiators, has the potential to generate competitive advantage. Finally, they emphasize that companies that develop in both groups with internal and external cooperation skills, achieve sustainable processes.

Accordingly, the research hypotheses are as follows.

H_{1a} : The formal mechanisms of corporate governance have a positive relationship with the social dimension of sustainability.

H_{1b} : The formal mechanisms of corporate governance have a positive relationship with the environmental dimension of sustainability.

H_{1c} : The formal mechanisms of corporate governance have a positive relationship with the economic dimension of sustainability.

Efficiency Mechanisms and Sustainability

Efficiency mechanisms occur when a company collaborates with one or more partners with technical support for the management or operation, in addition to the exchange of information that represents a mutual benefit (Li et al., 2014).

In this regard, Yang and Lien (2018) in a study with 969 manufacturing firms in 17 countries, addressed contractual and relational governance mechanisms as mediators between asset specificity and environmental uncertainty for environmental performance improvement. The results show that contractual governance and the two levels of efficiency-oriented relational governance (problem-solving cooperation and information sharing) positively impact environmental

performance when it mediates the relationship between asset specificity and environmental uncertainty. Therefore, delimiting responsibilities, rules, and norms through contracts, together with cooperation and good communication, is a fundamental condition for achieving environmental development.

Meanwhile, Hussain, Rigoni, and Orij (2018) concluded that efficiency-oriented governance mechanisms are related to environmental and social sustainability performance, mainly a board with greater independence, presence of women on the board, and a committee assigned to social responsibility.

Vazquez-Brust, Souza, Sousa, Trotta, and Carvalho (2020) identified three dimensions of corporate governance: hierarchical, formalization and centrality. The first deals with two main arrangements: captive, where the dominant partner monitors and establishes the processes and rules; and relational, where rules and processes are defined jointly between partners through interactions and trust. The formalization dimension consists of formal and informal contracts that stipulate collaboration between stakeholders and, as a last dimension, centrality refers to whether there is centralized coordination between stakeholders to achieve common goals.

Accordingly, the research hypotheses are as follows.

H_{2a} : The efficiency mechanisms of corporate governance have a positive relationship with the social dimension of sustainability.

H_{2b} : The efficiency mechanisms of corporate governance have a positive relationship with the environmental dimension of sustainability.

H_{2c} : The efficiency mechanisms of corporate governance have a positive relationship with the economic dimension of sustainability.

The testing of the hypotheses raised contributes to being able to clarify the role played by governance mechanisms in companies and how these mechanisms connect with the sustainability actions that companies can undertake in a given region.

Although there are studies that demonstrate the positive relationship between corporate governance and sustainability, it is necessary to identify which governance mechanisms are most related to each of the dimensions of sustainability in the context of emerging countries and particularly in Latin America.

3. METHOD

3.1 Participants

The research is quantitative and was carried out through a non-experimental design; moreover, it is cross-sectional, since data were only collected at a single point in time, and it uses a probabilistic sample in order to carry out a hypothesis test.

The study population was selected considering the companies in the southern region of the state of Sonora that are dedicated to livestock activity. For this purpose, information was obtained from the last agricultural, livestock and forestry census held in 2007, which reveals that there are 7,961 companies producing cattle in the municipalities of Alamos, Bacum, Cajeme, Etchojoa, Guaymas, Huatabampo,

Navojoa, Quiriego, Rosario Tesopaco and San Ignacio Rio Muerto in the Mexican State of Sonora (National Institute of Statistic and Geography [INEGI], 2007). The information was collected directly from primary sources, since the people to whom the questionnaire was applied were owners and general managers of these types of companies. It was carried out through a personal visit to the work facilities so that they could answer each of the questions raised.

To construct the probability sample of livestock producers, who are the object of this study, a statistical formula was used (Castañeda-Jimenez, 2011) that resulted in 366 subjects being interviewed.

$$n = \frac{Z^2 pq N}{e^2 + Z^2 pq}$$

Where:

n = Size of the sample

Z2 = Confidence level.

p = Positive variability.

q = Negative variability.

N = Population size.

e2 = Accuracy or error.

$$n = \frac{(1.96)^2 (0.5) (0.5) (7961)}{(7961) (0.05)^2 + (1.96)^2 (0.5) (0.5)} = 366$$

Nevertheless, due to time constraints and availability of the respondents, a total of 113 surveys were completed (See Table 1), which, according to Ho (2006), is sufficient for an exploratory analysis. The sample was simple random, considering that the participants have the same probability of being selected for the questionnaires' response.

Table 1

Demographic characteristics of the participants (n=113)

Characteristic	Number	%	Characteristic	Number	%
Experience (years)			Education		
1-10	24	21	Elementary school	21	19
11-20	42	37	Middle school	27	24
21-30	24	21	High school	39	35
31- or more	23	21	Bachelor's degree	26	23
Municipality			Cattle purchaser type		
Cajeme	48	43	Cattle producer	11	10
Huatabampo	35	31	Intermediary	21	19
San Ignacio Rio Muerto	12	11	Wholesale distributor	30	26
Other municipalities *	18	15	Butcher	48	42
			Other	3	3
Number of family members who are supported by livestock			Another activity in addition to Livestock		
0	10	9			
1-5	93	82	No	76	67
6-10	10	9	Yes	37	33

Note. Own elaboration

* Alamos, Bacum, Etchojoa, Guaymas, Navojoa, Quiriego and Tesopaco

3.2 Measuring Instrument

The questionnaires included the sustainability dimensions: economic, social, and environmental; also, the governance and its mechanisms: formal and efficient. The instrument contained a list of statements that were scored using a five-point Likert scale as follows: 1 (*never*); 2 (*most of the time no*); 3 (*sometimes yes, sometimes no*); 4 (*most of the time yes*); and 5 (*always*). Additionally, the options included 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither*), 4 (*agree*) and 5 (*strongly agree*).

The instrument used was developed based on a review of the literature considering experts in the topics of sustainability and corporate governance. To develop the concept of and questions regarding the three dimensions of sustainability, the work of several authors was consulted (Azapagic, 2003; Cetinkaya, Cuthbertson, Ewer, Klaas-Wissing, Piotrowicz, & Tyssen 2011; Closs, Speier, & Meacham, 2011. To develop the questions regarding corporate governance, the research from other authors were consulted (Formentini & Taticchi, 2015; Li et al., 2014).

The definitions of the dimensions of sustainability and governance mechanisms have been modified by using an exploratory factor analysis, and some items were removed. Therefore, new concepts were created based on the survey, with internal and external validity, as well as sufficient reliability (see Table 2).

Table 2

Theoretical construction of the study variables

Variable	Definition
Economic	The economic mechanism contributes to the economic system through greater investments that result in increased sales, which increases profits from commercial activities. Additionally, it includes the efficiency and innovation that is necessary for a level of quality that results in customers who remain satisfied with the product and service (Azapagic, 2003; Cetinkaya et al., 2011; SNZ, 2008).
Environmental	The environmental mechanism contributes to the ecosystem and diversity through actions that improve the environment and attempts to increase recycling and reduce water consumption, the exploitation of land and the use of transportation (Azapagic, 2003; Cetinkaya et al., 2011; Closs et al., 2011; SNZ, 2008).
Social	The social mechanism provides sufficient training to ensure that workers have the knowledge and skills that are necessary for optimal performance. Additionally, it attempts to provide beneficial services and an adequate standard of living to workers through salaries that are greater than the minimum that is dictated by labour laws (Azapagic, 2003; SNZ, 2008).
Formal	The formal mechanism results in the establishment of procedures that increase the positive influence of a company on the operations of its business partners to improve their production processes, as well as procedures that aim to overcome obstacles and resolve conflicts through continued feedback (Formentini & Taticchi, 2015).
Efficiency	The efficiency mechanism occurs when an organization contributes to a commercial relationship with a partner through technical support and sharing information of mutual interest, particularly information concerning the economic sector to which they both belong. Additionally, to create solidarity, the organization improves the earnings of its trading partners (Li et al., 2014).

Note. Own elaboration

3.2.1 Validity and reliability

The present research used an exploratory factorial analysis to identify and replace the lost values, test the normality of the items, determine the suitability of the sample and calculate the internal validity and reliability. The determinant is equal to 2.80E-005 and a test of normality of each of the items found that asymmetry is from -1.96 to 1.96. The four factors (the mechanisms of governance, i.e., formal, and efficiency, and the dimensions of sustainability, i.e., environmental, social, and economic) explained 67% of the variance, which is acceptable because it is greater than 50%. The Kaiser-Meyer-Olkin statistical test is applied for sampling adequacy, which resulted in a value of .772. The following matrix shows the grouping of the variances of the items for the six factors (see Table 3).

Table 3

Rotated component matrix

Item	Factor Loading					
	1	2	3	4	5	6
S-ECO-1	0,762					
S-ECO-2	0,881					
S-ECO-3	0,800					
S-ECO-5	0,547					
G-FOR-5		0,707				
G-FOR-6		0,793				
G-FOR-7		0,723				
G-FOR-9		0,684				
S-AMB-1			0,588			
S-AMB-2			0,619			
S-AMB-3			0,652			
S-AMB-5			0,805			
S-AMB-8			0,658			
G-EFIC-2				0,850		
G-EFIC-3				0,783		
G-EFIC-4				0,661		
G-EFIC-5				0,717		
S-SOC-1					0,776	
S-SOC-4					0,847	
S-SOC-5					0,909	

Note. Own elaboration. The most representative factor loads are in bold. The method of extraction was a principal components analysis and a varimax rotation with Kaiser normalization.

Finally, the Cronbach's alpha was calculated for each factor, resulting in a coefficient above 0,70 for all factors. The value of 0,70 is regarded as the minimum for reliability according to Ho (2006). The survey has a reliability of 0,827 (see Table 4).

Table 4

Cronbach's alpha (n=113)

Variable	Cronbach's alpha	Number of items
Environmental	0,760	5
Social	0,856	3
Economic	0,824	4
Formal	0,772	4
Efficiency	0,776	4

Note. Own elaboration

4. RESULTS

4.1 Hypothesis Test

The standard deviation was within the range of normality (-1,96 to 1,96), and the average was approximately three (see Table 5).

Table 5

Means and standard deviations of the variables (n=113)

Variable	M	SD
Economic	3,9204	0,7260
Social	3,3156	1,2455
Environmental	3,4142	0,8391
Formal	3,5907	0,8087
Efficiency	3,0332	0,9935

Note. Own elaboration

Importantly, the formal mechanisms have a positive relationship with the economic and environmental sustainability dimensions, while the mechanism of efficiency has a positive relationship with the social dimension. The following table shows the Pearson correlations (see Table 6).

Table 6

Pearson correlations of the study variables

Variable	n	1	2	3	4	5
1. Economic	-	-				
2. Social	113	0,191*	-			
3. Environmental	113	0,442**	0,186*	-		
4. Formal	113	0,414**	0,114	0,403**	-	
5. Efficiency	113	0,124	0,316**	0,075	0,134	-

Note. Own elaboration. The coefficients are significant to * $p < 0,05$, ** $p < 0,01$.

These positive relationships are low because they fall in the range from 0,30 to 0,49 (weak 0,00-0,29; low 0,30-0,49; moderate 0,50-0,69; strong 0,70-0,89; and very strong 0,90-1,00). However, the exploratory nature of this study and the maturity of the theoretical variables of sustainability and corporate governance mean that the concepts and correlations are significant because they contribute to existing knowledge (Pett, Lackey, & Sullivan, 2003).

5. DISCUSSION

The mechanisms of governance that are conceptualized in the present study are analyzed from the perspective of stakeholders considering the viewpoint of Letza, et al. (2008) and Choudhury and Harahap (2007). The formal mechanisms lead to a positive influence on trading partners through the continuing improvement of production processes and the development of long-term, close relationships. Moreover, the mechanism of efficiency results in technical support, shared information, and an increase in the profits of the partner of a company. This mechanism corresponds to the concept of the circle of stakeholders proposed by Bourne (2005), which emphasizes the importance of power and influence, direct communication, and the monitoring of effectiveness.

The inclusion of the protection of stakeholder rights in the definition of corporate governance (Arslantas & Findikli, 2013) is essential to overcoming obstacles in negotiations as an indicator of the formal mechanism of governance, and the role of suppliers (livestock producers) must invariably be reconsidered when making agreements. In addition, corporations must have leadership (Tihanyi et al., 2015) and direct and indirect influence (Dignam & Lowry 2006, cited by Mostovicz, E.I., Kakabadse, N.K. & Kakabadse, E., 2011) through formal mechanisms, such as through intervention in the production processes of suppliers. Another dimension

is responsibility (Rosen, 2007) that uses the mechanism of efficiency to provide technical assistance and inform suppliers. Additionally, the mechanism of efficiency increases profits and through solidarity, increases trust (Aras & Growther, 2008) and results in mutual agreement (L'Huillier, 2014). Finally, the ability to make fundamental changes (Gillan & Starks, 1998) and influence suppliers because of the formal mechanism and the role of stakeholders in corporate governance (Organization for Economic Co-operation and Development [OECD] 2004, cited by Guo, 2013) accords with the mechanism of efficiency and provides continuous feedback between providers and organizations.

Additionally, Formentini and Taticchi (2015) propose a series of mechanisms of governance for a sustainable supply chain. These mechanisms were used to develop a quantitative instrument that showed that formal mechanisms contribute to the environmental dimension and to economic sustainability but do not contribute to the social dimension. Other collaborative and non-collaborative mechanisms were not included because they would have resulted in too many items on the survey.

Furthermore, building on the contributions of Li et al. (2014), this study found a positive relationship between the governance mechanism of efficiency and the social dimension of sustainability. The legitimacy mechanism was not included because it involved other actors in the chain, such as the government, NGOs and customers. Therefore, it was necessary to include only the mechanism of efficiency, which focuses on the relationship between the organization and its suppliers. Thus, formal and efficiency mechanisms contribute positively to the three dimensions of sustainability.

Previous studies have analyzed the correlation between corporate governance and sustainability but have not been able to demonstrate it (Aras & Crowther, 2008). It has also been demonstrated that sustainability is not integrated into individual business processes, especially by small and medium-sized enterprises (Krechovska & Prochazkova, 2013) and there is no significant correlation between corporate governance and sustainability (Sharma, 2014). On the other hand, corporate governance has been found to play a relevant role in the dissemination of sustainability reports (Michelon & Parbonetti, 2012) and low stakeholder engagement will negatively affect the achievement of sustainability objectives (Konadu, Ahinful & Owusu-Agyei, 2021). Additionally, it has been pointed out that sustainability can be achieved from the outside through pressure from government institutions on corporate governance mechanisms (Ortiz-de-Mandojana, Aguilera-Caracuel, & Morales-Raya, 2014) and within, as the larger a company's governing board, the greater the attention to sustainability issues (Janggu, Darus, Zain, Yussri, & Sawani, 2014). These results provide a diversity of evidence that is difficult to reconcile with each other, which prevents us from reaching a particular idea regarding the aforementioned issues but paves the way for further research to resolve the complexity between the two (see Table 7).

Table 7

Studies on the relationship between sustainability and corporate governance

Author	Region	Subject of the study	Results
Aras & Crowther (2008)	United Kingdom	Corporate governance policies of companies listed on the Financial Times Stock Exchange (FTSE100) were investigated.	It was not possible to demonstrate a relationship between sustainability and governance.
Michelon & Parbonetti (2012)	United States and Europe	57 U.S. and European organizations listed in the Dow Jones Sustainability Index (DJSI) were investigated.	Corporate governance plays a role in orienting the heterogeneity of sustainability disclosures
Krechovska & Prochazkova (2013)	Czech Republic	193 small, medium, and large companies	Sustainability is not integrated into individual business processes (especially by small and medium-sized enterprises)
Janggu et al., (2014)	Malaysia	100 public companies	The results imply that the larger the board the greater the influence it has on sustainability issues
Ortiz-de-Mandojana et al., (2014)	North America and Europe	210 companies from 14 countries in North America and Europe listed by Bloomberg	National institutional context influences the effectiveness of corporate governance mechanisms in encouraging environmental sustainability
Sharma (2014)	India	46 companies listed on the S&P CNX Nifty (Index from National Stock Exchange of India - NSE)	There is no significant correlation between corporate governance and sustainability
Konadu et al., (2021)	United States	Companies listed in the S&P 500 firms.	Low stakeholder engagement adversely impacts companies' bottom-line performance

Note. Own elaboration.

The corporate governance mechanisms that have been studied empirically lack concrete actions that would result in gaining the benefits of the three dimensions of sustainability, namely, the social, environmental, and economic dimensions. Therefore, new mechanisms are required to obtain these benefits. Moreover, experts in the field have created new concepts that are based on validity (external and internal) and reliability. In this way, researchers could contribute to meeting the objective of Aras and Crowther (2008), which is to better understand sustainability and governance to be better able to implement them. This objective is similar to the aim of Jorgensen and Knudsen (2006), that is to complete a study on the sustainable management of companies that explores opportunities for buyers to encourage providers to achieve sustainability. Finally, sustainability and corporate governance address the inadequacy of participatory management initiatives to improve the environment in regions characterized by poverty (Hamelin & Nwankwo, 2013).

Gnan et al. (2013) noted that there are organizations that fail to improve their corporate governance performance despite the implementation of OECD principles. The present study found that it is insufficient to only listen to stakeholders. Sustainability requires positively influencing the processes of commercial partners, providing feedback and having empathy for their situation. Additionally, organizations must provide technical support, share information and work to increase profits through governance by using formal and efficiency mechanisms to improve the three dimensions of sustainability. This corresponds to the suggestion by Turker and Altuntas (2014) to monitor suppliers in developing countries to increase both the performance inside the chain and the criteria for sustainability. Additionally, this finding fits within the framework of the cooperation that is required for the management of the life cycle of multiple stakeholders, which is also indispensable to the prioritization of sustainability issues (Balkau & Sonnemann, 2010) and organizational commitment, as indicated by Cheung and Rowlinson (2011). Moreover, this study supported the suggested mechanisms for the evaluation of suppliers and collaboration, which have positive and synergistic effects on environmental performance (Gimenez & Sierra, 2013). Additionally, this study found that the formal mechanism, which is characterized by its positive influence and the creation of agreements, has a positive relationship with the environmental dimension. This finding accords with the work of De Marchi et al. (2013) that delineates the two mechanisms of norm- and mentoring-driven mechanisms to improve both the environmental dimension of the production process and the final product. The formal mechanism has a positive relationship not only with the environmental dimension but also with the economic dimension, as stated by Klettner et al. (2014).

The primary topic of discussion between organizations and suppliers is price, as asserted by Krechovska and Prochazkova (2013), who emphasize that corporations concentrate on financial outcomes when they discuss sustainability and corporate governance. As suggested by Glover (2014), the dominant logic at the supply chain level is the reduction of costs and the maximization of profit.

There is evidence that sustainability is related to food quality (Bekele, Bosona, Nordmark, Gebresenbet, & Ljungberg 2012) and promotes transparency and consensus among the parties concerned (Perego & Kolk, 2012). Sustainability also maintains relationships of trust (Haywood, Hartley-Trotter, Faccar, & Colin-Brent, 2013) and the innovation and the cooperation of the organization with stakeholders (Arenas et al., 2011). This study created a conceptualization of sustainability and its corresponding dimensions and items, in addition to a conceptualization of corporate governance, including its formal mechanisms and efficiency. Finally, this study confirms the assertion of Morali and Searcy (2013) that organizations will prioritize greater collaboration and education, as well as the measurement of performance and monitoring of suppliers.

Finally, it is important to mention that the main practical implication of the results of this research is related to the fact that the strongest correlation between the variables studied is the one related to the environmental sustainability and the formal governance mechanisms. This implies that to the extent that companies establish these types of mechanisms in the management of their operations, this can promote sustainability through actions oriented to the care of the environment in each region.

6. CONCLUSION

This study found a low and positive correlation between the formal mechanisms of corporate governance and the economic and environmental dimensions of sustainability while showing that the mechanism of efficiency has a low and positive correlation with the social dimension.

The main contribution of this research is the identification of the role formal mechanisms play related to efficiency in sustainability dimensions in Latin American companies, which may have important implications on the practice of management, especially with decisions that may lead companies to contribute to sustainability in business.

This research used a quantitative paradigm, which found a positive relationship between the above variables. However, the results have limitations that could be addressed by increasing the sample size and surveying other regions of the world to test the reliability and internal validity of the survey. Additionally, other items could be added to the survey to gather new information regarding the studied variables. In addition, future studies could use a qualitative approach to aid in the creation of theories concerning the nature of the relationships between organizations and suppliers, as well as their roles and purpose. Finally, future studies could include other actors that have not been considered in the present study, such as the government, NGOs, customers and other stakeholders.

Sustainability is emerging as an essential goal for new organizations and for the continued operation of existing organizations. Sustainability not only involves benefits that result in improved company image which increases the sales of goods

and services, but also addresses the very survival of the human race. In this regard, it is essential to devise new forms of interaction among organizations, including corporate governance, which provides opportunities for solidarity, monitoring, training, the development of procedures, and the application of incentives and technical support to balance sustainability. Finally, sustainability and corporate governance have the potential to create productive actions that result in economic, social, and environmental benefits through the mutual commitment of organizations and their stakeholders under a framework of trust.

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