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Influence of green customer demand and eco-control on eco-innovation and on the sustainable growth of beef sector companies

IInfluência da demanda verde de clientes e do eco controle na ecoinovação e no crescimento sustentável das empresas do setor da carne bovina

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Keywords
Green customer demand.
Eco-control.
Eco-innovation.
Sustainable growth.
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Abstract

The research examines the influence of green customer demand and eco-control on eco-innovation and on the sustainable growth of companies in the beef sector. To achieve the goal, we applied a questionnaire to managers of 95 companies of that sector in Brazil. Data were analyzed through structural equation modeling (PLS-SEM). The results show that eco-control affects positively and significantly eco-innovation and sustainable growth, and green customer demand and eco-innovation influence the sustainable growth of beef companies. We also show that eco-innovation plays an essential role in the relationship between eco-control and sustainable growth. In addition, not only do eco-controls improve sustainable growth, but eco-innovation can bring important complementary results to environmental management. This study advances the literature by showing that eco controls help in the adoption of environmental innovations, and lead to sustainable growth.

Palavras-chave
Demanda verde de clientes.
Eco controle.
Ecoinovação.
Crescimento sustentável.
Carne bovina.

Resumo

A pesquisa tem por objetivo analisar a influência da demanda verde de clientes e do eco controle na ecoinovação e no crescimento sustentável em empresas do setor de carne bovina. Para atingir o objetivo foi aplicado um questionário com gestores de 95 empresas do setor da carne bovina do Brasil. Os dados foram analisados por meio da modelagem de equações estruturais (PLS-SEM). Os resultados mostram que o eco controle afeta positivamente e significativamente a ecoinovação e o crescimento sustentável. A demanda verde do cliente e ecoinovação influenciam no crescimento sustentável das empresas de carne bovina. Ainda mostramos que ecoinovação exerce um papel importante na relação entre eco controle e crescimento sustentável. A pesquisa contribui ao mostrar a importância de fatores como, demanda verde de clientes e eco controles na ecoinovação, e principalmente no crescimento sustentável. Além disso, os resultados demonstram que não apenas os eco controles melhoram o crescimento sustentável, mas também que a ecoinovação pode trazer resultados complementares importantes na gestão ambiental. Este estudo avança na literatura ao mostrar que os eco controles auxiliam na adoção de inovações ambientais, e consequentemente no crescimento sustentável.

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Practical implications

The results of the study contribute by showing the need for company managers in the beef sector to approach and better understand customer demands for greener processes and products. They also reveal the importance of eco-control to guide the companies in their search for innovative processes and products.

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1 INTRODUCTION

Climate change and the emergence of unpredictable sustainability risks affect sustainable growth continually (Wijethilake & Lama, 2018). Hence, environmental issues have become an integral part of the management agenda in several industrial sectors, including agribusiness, due to its considerable dependence on natural resources, and the significant volume of pollutant emissions like carbon (Amara & Chen, 2022). Brazil's main export product is animal protein, and in 2022, the country exported 1.996 million tons of fresh beef, 28% more than in 2021 and 15.7% above the record, achieved in 2020 (Canal Rural, 2023). Therefore, beef production is an important creator of wealth and jobs for the country, in addition to contributing to food security by reducing hunger in the world. On the other hand, the sector uses a lot of natural resources, which is a concern, due to the impacts they have, especially on global warming (BBC, 2021).

In order to reduce their impact on the environment, companies can use eco-innovations, which are conceptually comparable to sustainable, environmental, or green innovation (Alyahya et al., 2023, Wang et al., 2022). Eco-innovation is related to environmental preservation, reducing emissions and producing renewable energy, such as wind and solar (Töbelmann & Wendler, 2020), which decrease companies' environmental impact (Santos et al., 2019). Furthermore, it aims to achieve economic progress by addressing environmental problems and preventing natural resources' degradation (Amara & Chen, 2022). Eco-innovation guides companies to reduce their consumption of natural resources and create new sustainable forms, processes, methods, and products (Amara & Chen, 2022; Labelle et al., 2017), which provide environmental and economic gains (Cai & Li, 2018; Astuti et al., 2018) and have a positive impact on competitiveness (Musaad et al., 2020), performance, and sustainable business growth (Zhu et al., 2012). Despite its importance, little is known about the factors that drive eco-innovation (Chistov et al., 2023), specifically eco-controls and green customer demand.

The effects of eco-control (the use of environmental performance indicators, rewards, and budget) on environmental and economic performance have been studied for decades (Abdel-Maksoud et al., 2021; Lunkes et al., 2020; Abdel-Maksoud et al., 2016; Henri & Journeault, 2010). These studies show that eco-controls help companies face their environmental responsibilities and achieve economic benefits, by reducing costs or improving their image and community relations (Abdel-Maksoud et al., 2016). Therefore, the environmental control system translates environmental goals and activities into competitive advantages and, ultimately, superior financial performance (Henri & Journeault, 2010; Guenther et al., 2016; Gomez-Conde et al., 2019). However, little is known about its effects on eco-innovation, such as the use of technology to reduce resource consumption and material recycling. Another relevant factor is consumer demand for sustainable products (Chen, 2008; Rabadán et al., 2019; Amara & Chen, 2022). According to Chen (2008) and Amara and Chen (2022), companies are motivated to adopt sustainable processes or products in order to develop a good reputation with their customers. Thus, in the context of Brazilian agribusiness, we sought to understand the factors that push managers to adopt these processes or products. Considering these research gaps, we proposed to answer the following question: what is the influence of factors related to green customer demand and eco-control on eco-innovation and sustainable growth, in the beef sector?

Based on the above, this study analyzed the effect of green customer demand and eco-control on eco-innovation and sustainable growth in that sector. The hypotheses were tested by using structural equation modeling (PLS-SEM), with data collected from 95 beef companies in Brazil. The main results include: i) a positive relationship between eco-control and eco-innovation and sustainable growth; ii) green customer demand and eco-innovation also influence the sustainable growth of beef companies; and iii) eco-innovation plays an important role in the relationship between eco-control and sustainable growth.

Among the theoretical contributions of the study, we highlight knowledge expansion on the antecedents of eco-innovation, more specifically green customer demand and eco-control. It also advances on previous research on eco-control (Henri & Journeault, 2010; Abdel-Maksoud et al., 2016; 2021), which investigated its generic effects on environmental and economic performance, by providing specific evidence on its role in the use of sustainable processes such as technologies, resources, and materials. Other theoretical contributions regard the driving forces of eco-innovation and their impact on sustainable business growth. There are also practical contributions, showing that managers are not attentive to customers' demands for more sustainable processes and products. The findings suggest that managers need to approach customers and understand their demands better. In addition, they reveal the importance of using environmental performance indicators, rewards, and budget to manage environmental issues and guide the company in its search for innovative processes and products, and therefore, increase competitiveness. The use of innovative technologies and processes helps to reduce negative environmental impacts in beef production.

This paper was motivated by the fact that Brazilian agribusiness is economically relevant, but also

generates significant environmental impacts. To handle this paradox, international institutions have emphasized the urgency of a global awareness, including the UN, which in 2015 established the 17 Sustainable Development Goals (SDG). Among the agendas raised is the "Action Against Global Climate Change", which was identified as critical for achieving sustainability. However, the sustainability of the meat production sector is complex and dynamic, and the interaction between its ecosystem and management practices is not well understood yet.

2 THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 Green customer demand, eco-control and eco-innovation

Eco-innovation or sustainable innovation is defined as the development of new ideas, behaviors, products, and processes that contribute to reducing negative impacts on the environment (Przychodzen & Przychodzen, 2015; Rennings, 2000; Fernandes et al., 2020; Rhaiem & Doloreux, 2022; Ávila et al., 2022). Green product innovation refers to modifying a product or changing to a new one to reduce its impact on the environment and improve its energy efficiency (Lin et al., 2013). Green process innovation, in turn, aims to reduce energy consumption in the production or recycling process (Xie et al., 2019). The beef sector is no different from others, with the adoption of new technologies and development of new products, but it also innovates through new services and new organizational forms (Araújo & Bueno, 2008; Leo et al., 2022).

Previous studies suggest that financial issues are just one among many drivers of eco-innovative activities. Other drivers include external pressures from environmental regulations, green customer demand, green behavior of competitors, external networks, companies' organizational capabilities, and implementation of voluntary certificates of quality management (Kesidou & Demirel, 2012; Amara & Chen, 2022). Customer demands for green products have influenced entrepreneurs' decisions to engage in eco-innovations (Rabadán et al., 2019; Amara & Chen, 2022).

Amara and Chen (2022) found that demand has a positive effect on entrepreneurs' motivation to adopt innovation strategies. This finding confirms Chen (2008), who identified that companies are motivated to adopt an innovation strategy in order to develop a good reputation with their stakeholders, in order to improve their competitiveness. Rabadán et al. (2019) suggest that the innovation strategy can lead to differentiation, by improving green products.

In line with green demand, eco-control also influences eco-innovation (Nuhu et al., 2022). Eco-control provides information on the potential benefits of implementing practices and for decision-making, ensuring the positive effect of these environmental practices on organizational performance (Henri & Journeault, 2010; Gomez-Conde et al., 2019; Lunkes et al., 2020). Eco-control can also align corporate decisions and employees' behaviors and actions with environmental goals, and improve the identification of emerging threats and opportunities (Guenther et al., 2016).

For Abdel-Maksoud et al. (2016), eco-control has three main components: the use of environmental performance indicators, rewards, and budget planning. Rewards show the extent to which environmental performance indicators are part of employees' performance evaluation. Therefore, these indicators reflect the achievement of the goals related to this topic. Budget planning, in turn, measures the degree of integration of environmental goals into the budget planning process, highlighting environmental expenses and investment (Abdel-Maksoud et al., 2016; Lunkes et al., 2020).

Chiou et al. (2011) found that customers are increasingly concerned about the environment, looking for products that are efficient and ecological. Thus, innovation, especially green product innovation, is being adopted to meet market demand and achieve competitive advantage (Lin et al., 2013). Customers are the company's most critical external stakeholders, and their demand for high-quality green products and ecological environment is a key factor for motivating companies to implement eco-innovation (Yuan & Cao, 2022), along with eco-control (Abdel-Maksoud et al., 2016). Hence, we developed the following research hypotheses:

H_{1a}: Green customer demand has a positive influence on eco-innovation.

H_{1b}: Eco-control (use of environmental performance indicators, rewards, and budget) has a positive influence on eco-innovation.

2.2 Eco-innovation and sustainable growth

Eco-innovation leads to "win-win" opportunities, that is, at the same time it reduces pollution and increases companies' competitiveness (Rabadán et al., 2019; Amara & Chen 2022). This competitive advantage can be achieved by reducing costs, such as minimizing energy and water consumption, or increasing benefits, through greater customer satisfaction, corporate image, or brand loyalty (Rabadán et al., 2019; Musaad et al., 2020), and sustainable business performance and growth (Zhu et al., 2012; Amara & Chen, 2022). Firms can also gain a competitive advantage (Chistov et al., 2023) by decreasing costs and increasing revenues (Rabadán et al., 2019).

Literature shows that managers are more likely and motivated to adopt and develop products or processes when innovation and sustainability contribute to the sustainable growth of their businesses. In other words, sustainable growth helps improving economic performance, while protecting the environment (Amara & Chen, 2022). Thus, we expected that the adoption of eco-innovation would positively influence the sustainable growth of businesses. To this end, we formulated the following research hypothesis:

H_2: Eco-innovation has a positive influence on sustainable growth.

2.3 Mediating role of eco-innovation

Companies that adopt eco-innovation are more likely to understand and apply best business practices and develop networks with different stakeholders, in order to increase knowledge and skills for growth (Amara & Chen, 2022). In addition, eco-innovation helps companies meet the current needs of customers and society, in terms of sustainable products and services (Rabadán et al., 2019).

Previous studies found that customer demands for sustainable products influence entrepreneurs' decisions to engage in eco-innovations (Kesidou & Demirel, 2012; Rabadán et al., 2019). There is also a growing request for organic products, recognized as greener when compared to products from conventional agribusiness (Hughner et al., 2007; Souza et al., 2013; Feil et al., 2020). Gunarathne and Lee (2020) suggest that eco-control is a useful tool for overcoming financial challenges and integrating sustainability management practices into the routine processes of agribusiness companies.

Hence, we propose that agribusiness companies that take into account customer demands for green products and use eco-control, are more likely to adopt eco-innovation, which will improve their sustainable growth. Companies that embrace eco-innovation are more likely to achieve competitive sustainable growth. Therefore, eco-innovation is expected to mediate the relationship between the factors 'green customer demand' and 'eco-control' and competitive sustainable growth. Hence, we drew the following research hypotheses:

H_{3a}: Eco-innovation mediates the relationship between green customer demand and competitive sustainable growth;

H_{3b}: Eco-innovation mediates the relationship between eco-control and competitive sustainable growth.

Based on these hypotheses, Figure 1 shows the theoretical research model and its paths.

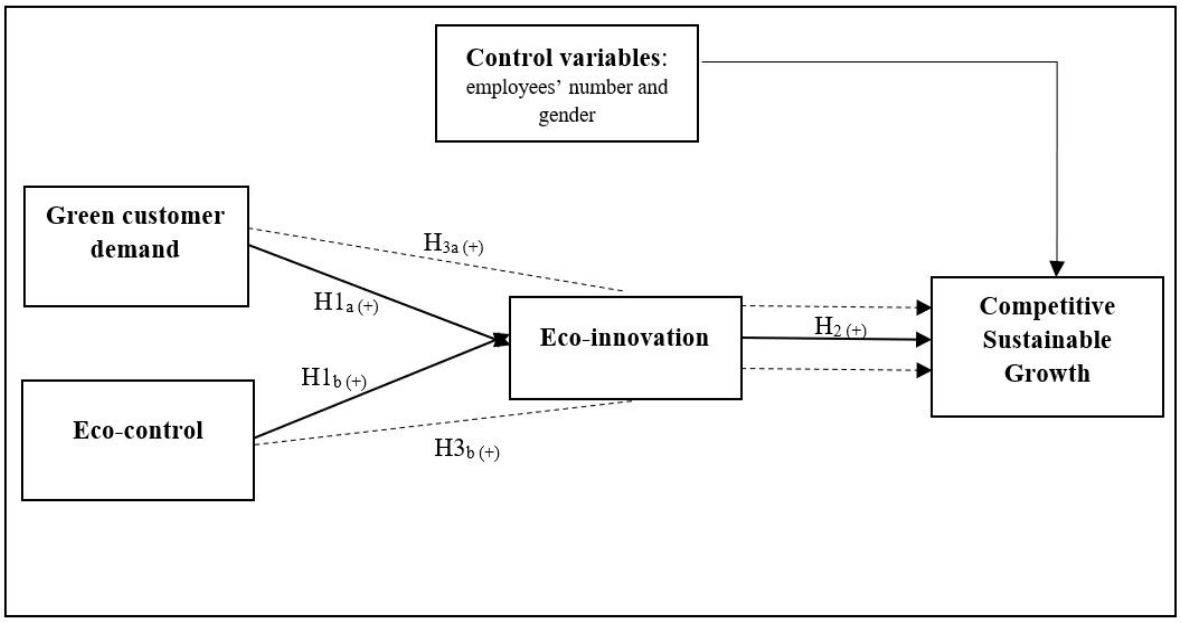

Figure 1. Theoretical research model

Direct effect

Indirect effect

3 METHODOLOGY

3.1 Collecting data and preparing the analysis tool

The study population comprised the 398 beef companies registered at the Federal Inspection Service (SIF) of the Ministry of Agriculture, Livestock, and Supply (MAPA). After the initial collection of information, such as fantasy and company names, CNPJ (national register of legal entities), and address, we sought the firms' e-mail addresses and telephone numbers on their websites. From that total, we contacted 180 firms to take part in the survey.

For data collection, we prepared a questionnaire based on the literature. Regarding the variable 'green customer demand', we used Amara and Chen's study (2022); for eco-innovation, we used the paper by Cai and Li (2018), and the construct for eco-control was based on Henri and Journeault (2010) and Abdel-Maksoud et al. (2016). For sustainable growth, we used the papers by Amara and Chen (2022), Delmar et al. (2003), and Love and Roper (2015), adapted to the Brazilian agribusiness context. Two control variables were used in the model - number of employees and gender. We validated the questionnaire with professors in the area of Management, to check their understanding of the research tool. The survey questions are described in Appendix A.

As proposed by Dillman et al. (2014), data collection included sending a cover letter requesting participation in the survey, as well as the survey link. Later, we got in touch with the companies by telephone. Ninety-six questionnaires were duly answered, which corresponds to 53% of the population. This percentage is comparable to the rates reported in previous studies on the same subject (Brüggemann et al., 2022; Monteiro et al., 2021; Lunkes et al., 2020). Data collection took place in March 2023.

Regarding the respondents, 55% are female, representing the majority of the sample. In terms of position, 40% of the respondents are quality managers, 33% are quality/sustainability coordinators, 20% are quality supervisors, and 6% are environmental analysts.

3.2 Measuring variables and procedures for analysis

As proposed by Dillman et al. (2014), data collection included sending a cover letter requesting participation in the survey, as well as the survey link. Later, we got in touch with the companies by telephone. Ninety-six questionnaires were duly answered, which corresponds to 53% of the population. This percentage is

comparable to the rates reported in previous studies on the same subject (Brüggemann et al., 2022; Monteiro et al., 2021; Lunkes et al., 2020). Data collection took place in March 2023.

Table 1. Research variables

Variables	Definition	References
Green customer demand	To identify the degree of customer demand	Amara e Chen (2022)
Eco-innovation	To identify the degree of eco-innovation implementation	Cai e Li (2018)
Eco-control	To check the extension of use of the environmental control system	Henri e Journeault (2010); Abdel-Maksoud et al. (2016)
Sustainable development	To identify the sustainable growth of firms	Amara e Chen (2022), Delmar et al. (2003); Love e Roper (2015)

The collected data were placed in electronic spreadsheets, and we used SPSS® and SmartPLS4.0® software for statistical treatment. Then, we carried out descriptive statistics and exploratory factor analysis to validate measurement constructs. Finally, we applied structural equation modeling (Hair et al., 2016). Among the main reasons for using PLS-SEM was the minimum sample size, non-normal data (no assumption of normality for data distributions), and scale measurement (the use of different types of scale) (Hair et al., 2012).

4 RESULT ANALYSIS

4.1 Measurement model

To assess the measurement model, we used the PLS algorithm technique. At that stage, we checked the reliability and validity of constructs. Table 2 shows the results of the measurement model.

Table 2. Measurement model

Panel A - Reliability and convergent validity				
Construct	CR	AVE	R^2	
Green customer demand	0.789	0.689		
Eco-control	0.918	0.607		
Eco-innovation	0.874	0.800	0.600	
Sustainable growth	0.885	0.685	0.442	
Panel B - Discriminant validity				
Construct	1	2	3	4
1. Green customer demand	0.830	0.708	0.562	0.614
2. Eco-control	0.632	0.779	0.855	0.627
3. Eco-innovation	0.535	0.778	0.894	0.699
4. Sustainable growth	0.568	0.581	0.624	0.828

Note: Composite reliability (CR) >0.70; Average Variance Extracted (AVE) >0.50; Variance Inflation Factor (VIF) <5.00. In panel B, we have the Fornell and Larcker Matrix, and on the other side, Heterotrait-Monotrait ratio (HTMT). SRMR= 0.088.

Table 2 shows that the constructs had composite reliability above the threshold of 0.70 (Hair et al., 2017). The eco-control construct had the highest reliability. For convergent validity, constructs showed AVE above 0.50, as suggested by these authors. To reaffirm validity, the Fornell and Larcker and HTMT criteria were also in line with these authors' suggestion, thus meeting the convergent and discriminant validities. VIF indicated that the model did not show multicollinearity, and SRMR showed that it was properly adjusted; hence, we proceeded to the structural model.

4.2 Structural model

The structural model evaluates the hypotheses proposed in the theoretical model. To do that, 5,000 subsamples were submitted to the bootstrapping technique (Hair et al., 2017). Table 3 shows the relationships between the variables.

Table 3. Relationship between variables

	β	T	P value	IC: 2.5%	IC: 97.5%	f^2	Hypothesis
Direct effect							
Green Customer Demand → Competitive Sustainable Growth	0.303	2.251	0.024	0.004	0.527	0.102	----
Green Customer Demand → Eco-innovation	0.071	0.791	0.429	-0.092	0.259	0.008	H_{1a}
Eco-control → Competitive Sustainable Growth	0.071	0.378	0.705	-0.259	0.467	0.003	----
Eco-control → Eco-innovation	0.734	6.710	0.000***	0.456	0.899	0.825	H_{1b}
Eco-innovation → Competitive Sustainable Growth	0.401	3.084	0.002**	0.147	0.664	0.116	H_2
Employees → Competitive Sustainable Growth	0.016	0.228	0.819	-0.122	0.155	0.000	----
Gender → Competitive Sustainable Growth	0.097	0.608	0.543	-0.238	0.393	0.004	----
Indirect effect							
Green Customer Demand → Competitive Sustainable Growth	0.028	0.775	0.438	-0.032	0.109		H_{3a}
Eco-control → Competitive Sustainable Growth	0.294	2.637	0.008***	0.093	0.523		H_{3b}
	R^2		R^2 Adjusted				
Competitive Sustainable Growth	0.471		0.442				
Eco-innovation	0.609		0.600				

Note: Significance at levels *p<0.10; **p<0.05; ***p<0.01. CI = Confidence interval, Sustainable business growth = ESBG.

Hypothesis H_{1a} suggested that green customer demand had a positive influence on eco-innovation. The results showed a positive but non-significant relationship (p=0.429). As for H_{1b}, eco-control would have a positive influence on eco-innovation, and the findings showed a positive and significant relationship (p<0.01).

For H_2, the study suggested that eco-innovation was positively related to competitive sustainable development, and the results showed a positive and significant relationship (p<0.05). This evidence indicates that eco-innovation simultaneously reduces pollution and increases companies' competitiveness.

H_{3a} proposed that eco-innovation mediated the relationship between green customer demand and sustainable competitive growth. The results indicated a positive and non-significant relationship (p=0.438), and that green customer demand did not influence eco-innovation. Hypothesis H_{3b} suggested that eco-innovation mediated the relationship between eco-control and sustainable competitive growth. The findings indicated a positive and significant relationship (p<0.01), and that control variables - number of employees and gender - did not affect them.

5 DISCUSSION

The results show that green customer demand does not affect positively and significantly eco-innovation, thus hypothesis H_{1a} was not confirmed. This suggests that managers of companies in the beef sector do not see customers as important environmental demanders. The results do not confirm previous studies (Amara & Chen, 2022; Chen, 2008; Rabadán et al., 2019), so we recommend further research to better understand this phenomenon in the context of this sector.

Regarding H_{1b}, eco-control has a positive influence on eco-innovation. This shows that the use of environmental performance indicators, rewards, and budget affect the use of cleaner technologies, processes to reduce emissions of hazardous substances and waste, besides decreasing the use of raw materials. Although studies show that eco-controls affect environmental performance (Henri & Journeault, 2010; Abdel-Maksoud et al., 2021), little is known about their effects on environmental innovation. Therefore, our study brings important empirical evidence on the contribution of eco-controls to sustainable innovation processes.

The findings also indicate that eco-innovation is positively related to competitive sustainable development. Managers observed an increase in the company's market value, in sales, and in number of customers (Amara & Chen, 2022), as a result of adopting sustainable practices. The literature shows that being more sustainable tends to improve competitiveness (Zhu et al., 2012; Amara & Chen 2022). Managers should recognize the importance of adopting new ideas, behaviors, products, and processes that reduce negative impacts on the environment, since they improve companies' competitiveness. In Brazilian agribusiness, eco-innovation is introduced through the interaction of technology and environmental and economic gains (Fernandes et al., 2020). In addition, Ávila et al. (2022) mention that the use of technologies fosters biodiversity, preserves soil fertility, and contributes to animal welfare, in addition to decreasing production costs.

Finally, our findings do not confirm that eco-innovation mediates the relationship between green customer demand and sustainable competitive growth. This may be due to the fact that beef sector managers do not understand that customers are concerned about sustainability. This contradicts previous studies (Hughner et al., 2007; Feil et al., 2020; Souza et al., 2013), and may be due to the different contexts of this sector. For example, production is very export-oriented (much of the beef produced in Brazil is exported to different countries), leaving production and consumption more distant. In addition, production needs to meet importers' demands, not just in terms of the quality of the meat exported, but also regarding environmental investments (Araújo & Bueno, 2008).

On the other hand, eco-innovation mediates the relationship between eco-control and competitive sustainable growth. This shows that companies in the beef sector employ more sustainable practices, such as cleaner technology, manufacturing processes that effectively reduce the emissions of hazardous substances and waste, and the use of raw materials, since they observe an improvement in sustainable growth.

6 CONCLUSIONS

The purpose of the study was to analyze the influence of green customer demand for sustainable products and of eco-control on eco-innovation and sustainable growth. The hypotheses were tested by using structural equation modeling (PLS-SEM), with data collected from 95 companies in the Brazilian beef sector.

The results show that eco-controls (use of environmental performance indicators, rewards, and budget) affect eco-innovation and sustainable growth. Green customer demand and eco-innovation influence the sustainable growth of beef companies. And eco-innovation plays an important role in the relationship between eco-control and sustainable growth.

The study provides theoretical implications by strengthening the understanding of the antecedents of eco-innovation, which suggests that green customer demand is not considered relevant in this sector as an antecedent, but rather eco-control. It advances on previous research (Henri & Journeault, 2010; Abdel-Maksoud et al., 2016; 2021), by providing new evidence on the impact of eco-controls on environmental innovation. It also brings theoretical contributions on the driving forces of eco-innovation and their impact on sustainable business growth.

As practical implications, the article shows the need for managers of companies in the beef sector to approach and better understand customer demands for more sustainable processes and products. They need to be more attentive to customers' needs and expectations. The results also reveals the importance of using environmental performance indicators, rewards, and budget to manage environmental issues and guide the company in the search of innovative processes and products. With this guidance, the use of innovative technologies and processes is fostered, for reducing environmental impacts in beef production. We also suggest the incorporation of less complex actions, such as ecological labels, renewable energy, subsidies and special guarantees, to minimize resource waste.

This study has some limitations that can serve as a basis for future research. First, it was limited to a certain context and period, so caution is needed when generalizing the results. Second, it was limited to the variables that influence eco-innovation and competitive sustainable growth; thus, future studies should analyze other variables like environmental strategy and the green innovation ecosystem. Third, two items from the eco-innovation construct, one from green customer demand and one from eco-control, did not load properly; therefore, we suggest that future research should pay attention to these constructs in the pre-test stage. In addition, future

studies should extend eco-innovation results by considering the social aspect. Regarding the method, future research should adopt other approaches such as fuzzy logic, as this could increase the understanding of managers' failure to take green demand into consideration.

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Appendix

Appendix A. Questionnaire

Enterprises' sustainable business growth (ESBG)	1	2	3	4	5	6	7
Evaluate to what extent sustainable practices have been adopted in your company for growth, using a scale of 1 (totally disagree) to 7 (totally agree).							
The enterprise's sale develops.							
The market value of your firm increases.							
Our sales developed compared to our competitors.							
The number of potential customers has increased.							
Return on green investment.							
Demand green client (CGD)							
On a scale of 1 to 7, indicate your level of agreement with the following statements, with 1 indicating total disagreement and 7 indicating total agreement.							
Our customers consider sustainability an essential issue.							
Our clients frequently bring up concerns related to the environment.							
Customer green demands stimulate us in our environmental efforts.							
Our customers have specific demands on environmental issues.							
Eco-innovation							
Indicate the extent to which your company uses sustainable processes for the following scale items: 1 (does not use) to 7 (constantly uses).							
Low energy consumption such as water, electricity, gas, and petrol during production/use/disposal.							
Recycle, reuse, and remanufacture material.							
Use of cleaner technology to create savings and prevent pollution.							
The manufacturing process of the firm effectively reduces the emissions of hazardous substances and waste.							
The manufacturing process of the firm reduces the use of raw material.							
Eco control							
Environmental performance indicators measure an enterprise's environmental performance in achieving broader objectives.							
Please indicate to what extent your company uses environmental performance indicators by selecting the appropriate scale items: 1 (does not use) to 7 (constantly uses).							
Monitor internal compliance with environmental policies and regulations.							
Provide data for internal decision-making.							
Motivate continuous improvement.							
Provide environmental data for external reporting.							
Rewards system. Regarding your company's reward system, indicate the following items on the scale: 1 (completely disagree) to 7 (completely agree).							
Environmental indicators are important in reward systems.							
Environmental performance indicators are weighted on par with economic performance indicators (e.g. operating profit margin, profitability, return on investment, etc.).							
Environmental performance objectives are included in the planning system budget.							
Budget. Please rate the level of detail that is provided for each item in your company's budget.: The items on the following scale ranged from 1 (not detailed at all) to 5 (extreme detail).							

Apêndice A. Questionário

Eco control	1	2	3	4	5	6	7
Environmental expenses.							
Environmental investment.							
Incomes from material scrap or recycled wastes.							

Respondent profile

1) Gender:

( ) Male

( ) Female

( ) Prefer not to say

2) What is your current position:

3) Number of company employees:

4) Number of company environmental certifications: