IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN:2278-487X, p-ISSN: 2319-7668. Volume 25, Issue 11. Ser. 6 (November. 2023), PP 01-08
www.iosrjournals.org

The Impact of Green Innovation on Sustainable Competitive Advantage

Maria Emília Camargo[1], Aprigio Teles Mascarenhas Neto[2], Maria Do Socorro Cruz Linhares[3], Walter Priesnitz Filho[4], Mariane Camargo Priesnitz[5], Marta Elisete Ventura Da Motta[6], Beatriz Lúcia Salvador Bizotto[7]

[1,4]*Postgraduate Program In Professional And Technological Education (PPGEPT), Federal University Of Santa Maria (Ufsm), Brazil*
[2,3]*Postgraduate Program In Intellectual Property Science (PPGPI), Federal University Of Sergipe (UFS), Brazil*
[5]*Federal University of Santa Maria (UFSM), Brazil*
[6]*sobral College (FASOL), Brazil*
[7]*FACVEST University Center - UNIFACVEST, Brazil*

Abstract:
This study aimed to investigate the influence of green process and product innovation on competitive advantage, having as its antecedent the creation of knowledge in the beef production chain in the state of Rio Grande do Sul. The research was quantitative, exploratory, and descriptive in nature. operationalized through a cross-sectional survey. The population was made up of beef producers from the state of Rio Grande do Sul. The sampling process was non-probabilistic due to easy access, with the final sample comprising 190 respondents. Data collection was carried out using a questionnaire made available electronically via Google Doc's and by telephone. The data were processed using descriptive statistics and structural equation modeling (SEM), using SPSS 22.0 and Smart PLS4.0. With the development of this study, a representative model of the relationships between knowledge creation, green process and product innovation and the sustainable competitive advantage of the beef production chain was obtained, in the link of producers in Rio Grande do Sul, Brazil. The three latent variables (knowledge creation, green process innovation and green product innovation) explain 60.20% of the formation of sustainable competitive advantage. Thus, there is a gap for future studies to find other variables that can explain the missing 39.80%.

Key Word*:Knowledge creation; Green innovation; Sustainable Competitive Advantage.*

Date of Submission: 14-11-2023 Date of Acceptance: 24-11-2023

I. Introduction

Knowledge is an abstract and immaterial resource that is separate from the material world, playing a vital role in the operational efficiency of companies (NUPAP, 2022). Innovation is understood as the process of making new and improved products or services, marketing or organizational, available to society (OECD; EUROSTAT, 2018). It is not a homogeneous process, but several economic, social, and cultural aspects impact this process (MANOGNA, 2021).

Green innovation is essential to address current and future environmental challenges. It not only contributes to the protection of the environment, but also offers opportunities for economic growth, improved quality of life and the promotion of a more sustainable world, providing the internalization of companies. Therefore, encouraging and supporting green innovation is a fundamental part of the global effort to create a more sustainable and resilient future (HAO; FU; ALBITAR, 2023; OLIVEIRA, 2023).

Competitive advantage is defined as a set of attributes that enable an organization to stand out, gaining a favorable position in the market, providing greater value from the customer's perspective, differentiating itself from the competition and, consequently, obtaining an advantage. It can be established as the superiority of an organization in relation to its competitors, whether through the introduction of new products or the valorization of existing products (PORTER, 1993).

For Cao et al. (2022), competitive advantage is characterized as the ability of a company to produce greater economic value than the economic value of its rivals.

In this context, this article aimed to verify the influence of green innovation on competitive advantage, having as antecedent the creation of knowledge.

II. Theoretical Reference

Knowledge Creation

Knowledge creation can be defined as the process of expanding and organizationally shaping the knowledge generated by individuals within an organizational knowledge network, as described by Takeuchi and Nonaka (2004). Furthermore, it can be defined as the process of continuous improvement of the existing knowledge base, as opposed to the incorporation of previously unknown knowledge, while maintaining its accessibility and usefulness, as explained by Tyagi et al. (2015).

Thus, knowledge creation involves strategies that aim to generate new knowledge or acquire existing knowledge, both from internal and external sources. This also covers the use of intellectual resources available in the organization, encompassing individual and collective reflection on new work methods, products and services developed by the company (CLAVER-CORTÉS, et al., 2018; JALILI, 2020; ROCHA et al., 2020; AL-ABBADI; ALSHAWABKEH; RUMMAN, 2020). According to Aboelmaged & Hashem (2019), the creation of knowledge, specifically green knowledge, is related to the acquisition, extraction, and organization of knowledge by companies related to environmental protection. Environmental resources and technology can be enriched to protect the natural environment (WANG et al., 2020).

Green Innovation

Innovation is a fundamental concept that plays a crucial role in the development and progress of society, economy, and technology. It refers to the creation and implementation of new ideas, methods, products or processes that create value, improve efficiency and drive growth. Innovation is a driver of constant change and is essential for competitiveness, sustainability, and continuous improvement in all sectors of contemporary life (DAMANPOUR, 1991; CAMISÓN; FORÉS, 2010; MOLINA; MARTINEZ, 2010; SANTOS, 2022). Green innovation involves the creation and implementation of products, services, processes, or technologies that have a positive environmental impact, reducing the consumption of natural resources, minimizing waste, and contributing to environmental sustainability. This may include adopting ecological practices such as renewable energy, recycling, energy efficiency and eco-friendly products (RIBEIRO; STEINER, 2021).

Sustainable Competitive Advantage

Competitive advantage is a condition that allows a company to outperform its competitors in its industry or market. It can be achieved through lower costs, product differentiation, access to exclusive resources or, more recently, through green innovation (MORAES; ZILBER, 2022). Competitive advantage increasingly depends on the company's ability to manage the entire system (PORTER, 1989). In this context, the global management of value systems plays an important role in cooperation networks in a competitive context, which can be achieved by reducing costs, producing goods and services with higher quality, speed and flexibility in negotiation and delivery. (VENTURA; MERLOT, 2013).

Connections between the three constructs

Knowledge creation and green process innovation are fundamental concepts that play a crucial role in transforming traditional business practices into more sustainable and efficient models. Knowledge creation, often associated with the term "knowledge management", involves the generation, capture, sharing and application of knowledge within an organization, while green process innovation concerns improvements in business operations that aim to reduce environmental impact (ABBAS; KHAN, 2023). Effective knowledge creation allows companies to capture and leverage internal and external knowledge related to green innovation. This helps accelerate the adoption of sustainable practices, avoids reinventing the wheel, and makes it easier to share best practices across the organization. By integrating knowledge about green innovation into their operations, companies can obtain a competitive advantage by standing out in the market (ARAÚJO JÚNIOR; CÂNDIDO, 2020; AKABANE; DONÁ, 2022).

Green innovation can provide a significant competitive advantage, according to Qui et al (2020), green product innovation is actively associated with a competitive advantage. Consumers are increasingly aware of the environmental impact of their purchasing choices and want to support companies that demonstrate a genuine commitment to sustainability. The ability to offer more sustainable products and services can attract customers and, at the same time, reduce long-term operational costs, such as saving energy and materials, so companies' green processes and product innovation positively affect competitive advantage (GÜRLEK, TUNA, 2018; MUISYO et al., 2022; RADONS; GROHMANN, 2012; RIBEIRO; STEINER, 2021).

Hypotheses

Knowledge creation and green process innovation are fundamental concepts that play a crucial role in transforming traditional business practices into more sustainable and efficient models. Knowledge creation, often associated with the term "knowledge management", involves the generation, capture, sharing and application of knowledge within an organization, while green process innovation concerns improvements in business operations that aim to reduce environmental impact (GAUTHIER; ZANG, 2020; SPEROTTO; TARTARUGA; MONTENEGRO, 2023). Thus, knowledge creation plays a critical role in an organization's ability to innovate towards greener processes. Sharing and applying internal knowledge allows companies to identify opportunities for improvement and implement sustainable practices in their operations. Green process innovation is essential for reducing environmental impact and meeting society's growing demands for more responsible business practices (GAUTHIER; ZANG, 2020).

In this context, the following hypothesis can be stated:
H_1: The creation of green knowledge has an influence on green process innovation.

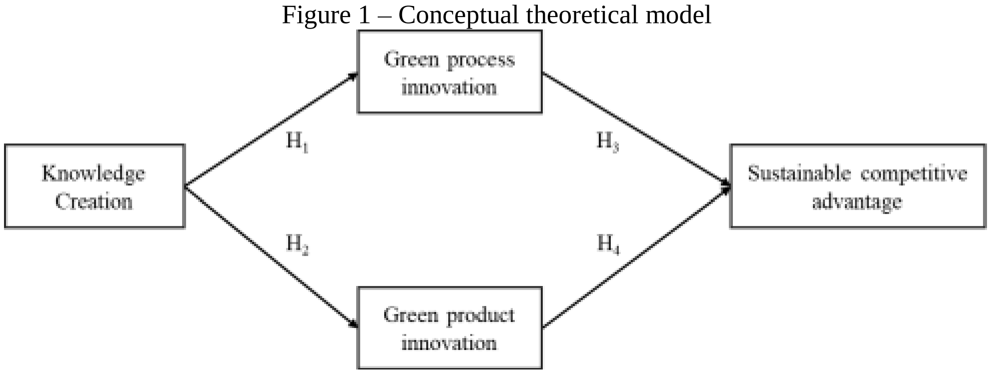
Knowledge creation plays a central role in green product innovation, providing information, insights and direction for companies that want to develop more sustainable products in line with society's environmental concerns. The application of this knowledge throughout the product development cycle is essential for the success of green innovation and to meet the growing demands for more ecologically responsible products (ABBAS; SAQSAN, 2019; ARICI; UYSAL, 2022). This relationship is vital to companies' ability to meet growing consumer demands for environmentally friendly products, while also contributing to reducing environmental impact and promoting sustainability (GAUTHIER; ZANG, 2020; WU; GAO, 2022). Thus, the following hypothesis can be stated:

H_2: Knowledge creation has an influence on green product innovation.

Both process and product green innovation practices play an important role in increasing a company's global competitiveness within an industry (SHAFIQUE et al. 2017). Green innovation, both process and product, has received widespread attention as a source of competitive advantage for a company (BARCELOS; MAGNAGO, 2023; FATOKI, 2021; MUISYO et al., 2022b; ZAMEER et al., 2022; WALCHHUTTER; HANNA; SILVA SOUZA, 2019).

H_3: Green process innovation influences sustainable competitive advantage.
H_4: Green product innovation influences sustainable competitive advantage.

Figure 1 – Conceptual theoretical model



Source: Prepared by the authors based on literature (2023)

III. Methodological procedures

Aiming to achieve the outlined objective while responding to the research problem, we designed this descriptive and quantitative study based on a population composed of small and medium-sized rural producers in the beef segment in the southern region of Brazil (MALAFAIA; MACIEL; CAMARGO, 2009).

Target population and measuring instrument

This study focuses on the beef production chain. The questionnaire items were adapted from different studies. The knowledge creation, green innovation, and competitive advantage items were taken from Chen (2008) and Chen, Lai, & Wen (2006). Initially, a pilot test was carried out with 30 producers participating in the beef production chain, participants to ensure internal consistency and contextual accuracy. Initial responses indicated internal consistency of the studied constructs ranging from 0.77 to 0.91, adequately compatible with Hair et al. (2010), whose suggested minimum value is 0.7.

Based on the initial survey result, a comprehensive survey was initiated on a five-point Likert scale (1 representing strongly disagree and 5 representing strongly agree), data collection was through telephone calls and email depending on the preference of the participants. In the end, 190 respondents were obtained. To characterize the sample respondents, the following variables were analyzed: gender, education level and age of the research participants.

Regarding the sex of the respondents, 100% were male. Regarding the assessment of the respondents' level of education, 30% have completed higher education, 20% have incomplete higher education, 25% have completed an undergraduate degree, 15% have an incomplete undergraduate degree and 10% have completed high school. Regarding the age group, 17% are up to 30 years old, 66% are in the age group of 31 to 50 years old and 17% are in the age group of 51 years old or more.

Statistical analyzes for instrument validation

The analysis of the collected data was analyzed using a multivariate statistical technique using SPSS v.22, followed by structural equation modeling using the SmartPLS 4.0 software. According to Hinkin (1998), before the factor analysis is carried out, the absence of multicollinearity, adequacy of the sample size and common bias of the method must be ensured. Sample adequacy was analyzed using the Kaiser–Meyer–Olkin test, which indicated a value of 0.872, which met the minimum value of 0.6 suggested by Kaiser and Rice (1994).

Harman's single-factor test was performed to identify bias problems in the data collected (PODSAKOFF et al., 2003). In this case, the common variance method was applied, as suggested by Podsakoff et al. (2012). Harman's single-factor test, which assumes that a large amount of variance comprised by a single factor may indicate potential common method bias (PODSAKOFF et al., 2012). The test comprises an exploratory factor analysis with all independent and dependent variables. The results of this test showed that the first factor was responsible for 17.33% of the observed variance, and the expected value for this test is a value below 50%. Therefore, this suggests no problem of sample bias.

Based on the initial results found, it can be stated that the data are suitable for applying factor analysis. Other tests related to reliability and validity are presented in the item presentation and analysis of results.

IV. Analysis and Discussion of Results

Internal consistency, convergent and discriminant validity

The reliability (internal consistency) of the model was tested using the Cronbach's Alpha (α), composite reliability (ρc) and average variance extracted (AVE) tests, presented in Table 1.

Table 1 – Cronbach's Alpha (α), composite reliability (ρ_c) and Average Variance Extracted (AVE)

Dimensions	α	ρ_c	AVE
Green process innovation	0.769	0.847	0.590
Green product innovation	0.912	0.934	0.740
Knowledge Creation	0.865	0.899	0.600
Sustainable competitive advantage	0.906	0.926	0.641

Source: SmartPLS from survey data (2023)

For both tests, results range from 0 to 1, with higher values indicating greater reliability. Both coefficients must exceed 0.7 (Hair et al., 2014). As shown in Table 1, Cronbach's Alpha values (α) range from 0.769 to 0.912 and composite reliability values (ρ_c) range from 0.847 to 0.934, so all indicators met the suggested levels. To determine convergent validity, the average variance extracted (AVE) was initially calculated, as also shown in Table 1. The values for the constructs must be greater than 0.5 to be considered satisfactory (Hair et al., 2014). According to Table 1, all values exceed the limit, indicating convergent validity of the model.

To evaluate the discriminant validity of the measurement model, the following were used: the Fornell-Larcker criterion; Heterotrait-Monotrait Ratio Criterion (HTMT) and the cross-load matrix (HAIR et al., 2014), presented in Tables 2 and 3, respectively.

Table 2 – Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT)

Dimensions	$\sqrt{AVE}$	Green process innovation	Green product innovation	Knowledge Creation	Sustainable competitive advantage
Green process innovation	0.768	1			
Green product innovation	0.861	0.392	1		
Knowledge Creation	0.775	0.504	0.593	1	
Sustainable competitive advantage	0.801	0.498	0.604	0.738	1
UL(HTMT)$_{97,5\%}$					
Green process innovation		1			
Green product innovation		0.477	1		
Knowledge Creation		0.571	0.662	1	
Sustainable competitive advantage		0.556	0.653	0.832	1

*UL - Upper Limit
Source: SmartPLS from survey data (2023)

The assessment of discriminant validity using the Fornell-Larker and Heterotrait-monotrait ratio (HTMT) criteria using the boostrapping method) (Table 3). For the square root criterion, the AVEs are greater than the correlations of the other dimensions ($r_{ij}$for $i \neq j$). As for the HTMT criterion, using the bootstrapping method for 5,000 subsamples, it is observed that the upper limits for 95% confidence are lower than 1. As both criteria had their assumptions confirmed, the model presents convergent validity, as shown in Table 3.

Table 3 – Crossed Factor Loadings (CFC)

Dimensions	Green process innovation	Green product innovation	Knowledge Creation	Sustainable competitive advantage
GProcI_01	**0.526**	0.326	0.180	0.196
GProcI_02	**0.746**	0.235	0.279	0.290
GProcI_03	**0.883**	0.331	0.508	0.468
GProcI_04	**0.864**	0.341	0.463	0.477
GProdI_01	0.281	**0.798**	0.465	0.437
GProdI_02	0.351	**0.887**	0.510	0.490
GProdI_03	0.353	**0.906**	0.534	0.528
GProdI_04	0.339	**0.877**	0.540	0.544
GProdI_05	0.354	**0.830**	0.498	0.585
KCrea_01	0.379	0.386	**0.695**	0.503
KCrea_02	0.343	0.353	**0.677**	0.447
KCrea_03	0.415	0.448	**0.752**	0.618
KCrea_04	0.379	0.470	**0.811**	0.631
KCrea_05	0.409	0.543	**0.868**	0.609
KCrea_06	0.416	0.528	**0.827**	0.603
SCAdv_01	0.367	0.472	0.535	**0.801**
SCAdv_02	0.401	0.554	0.566	**0.800**
SCAdv_03	0.415	0.515	0.634	**0.850**
SCAdv_04	0.443	0.483	0.635	**0.858**
SCAdv_05	0.377	0.469	0.614	**0.817**
SCAdv_06	0.365	0.314	0.545	**0.695**
SCAdv_07	0.419	0.533	0.606	**0.773**

Source: SmartPLS from survey data (2023)

Thus, we can move on to the analysis of the Structural Model.

Structural Model Assessment

The structural model describes the relationships between the constructs (HAIR et al., 2014). The first step is the evaluation and assessment of multicollinearity was carried out using the Variance Inflation Factor (VIF), in which the values were lower than 5 (HAIR Jr. et al., 2017) confirming that there is no multicollinearity. The size of the effectf^2, was also verified $f^2$and if ($0,02 \leq f^2 \leq 0,075$) it is considered a small effect, if it is between ($0,02 \leq f^2 \leq 0,075$), medium effect ($0,075 \leq f^2 \leq 0,225$) and large effect ($f^2 > 0,225$), are presented in Table 4.

The constructs Green Process Innovation and Sustainable Competitive Advantage f^2 =0,036, thus can be considered with a small effect, that is, ($0,02 \leq f^2 \leq 0,075$), for adjusting the equation model, and Green Product Innovation and Advantage sustainable competitivef^2= 0,083, considered a medium effect, that is, ($0,075 \leq f^2 \leq 0,225$), that is, they presented a medium effect for the model adjustment, Knowledge Creation → Green product innovation; while there were three relationships (Knowledge Creation → Green process innovation; and Knowledge Creation → Sustainable competitive advantage) with $f^2 > 0,225$, being considered a large effect.

Table 4 – Variance Inflation Factor (VIF) and effect size

Dimensions	*VIF*	f^2
Green process innovation → Sustainable competitive advantage	1.181	0.146
Green product innovation → Sustainable competitive advantage	1.181	0.356
Knowledge Creation → Green process innovation	1.000	0.341
Knowledge Creation → Green product innovation	1.000	0.543

Source: SmartPLS from survey data (2023)

The explanation coefficient and predictive relevance are presented in Table 5.

Table 5 – Explanation coefficient and predictive relevance

Endogenous dimensions	R^2	Q^2
Green process innovation	0.254	0.233
Green product innovation	0.352	0.341
Sustainable competitive advantage	0.446	0.453

Source: SmartPLS from survey data (2023)

Table 5 presents the R^2explanation coefficients, whose values are greater than 0.031 and significant ($p < 0.05$), that is, they present effects in the range from weak to strong. As for the prediction values $Q^2 = 1 - (SSE/SSO)$, where: *SSO* = Sum of Squares Observed, *SSE* = Sum of Squares of Errors, the model is relevant, as the values of Q^2 are greater than zero and greater than 0.016, that is, indicators classified as moderate to strong (CHIN, 2010; HAIR et al., 2017).

Hypothesis testing

The structural equation modeling technique was used to analyze the proposed hypotheses. Table 6 presents the structural coefficient and the t test, and p values. The structural equation modeling technique was used to analyze the proposed hypotheses.

The analysis of knowledge creation on green process innovation showed a positive and significant impact with $\beta = 0.504$ and value $p = 0.000$, leading to the acceptance of H_1, that is, knowledge creation is a significant predictor of organizational green innovation in process. This result is in line with the findings of (GAUTHIER; ZANG, 2020; SPEROTTO; TARTARUGA; MONTENEGRO, 2023). The analysis of knowledge creation on green product innovation showed a positive and significant impact with $\beta = 0.593$ and value $p = 0.000$, leading to the acceptance of H_2, that is, knowledge creation is a significant predictor of green product innovation. This result is in accordance with (GAUTHIER; ZANG, 2020; SPEROTTO; TARTARUGA; MONTENEGRO, 2023). Green process innovation has a positive and significant impact with $\beta = 0.309$ and p value = 0.000, thus H3 is accepted, that is, green product innovation is a significant predictor of sustainable competitive advantage.

Green product innovation has a positive and significant impact with $\beta = 0.483$ and value $p = 0.000$, thus H_4 is accepted, that is, green product innovation is a significant predictor of sustainable competitive advantage. These results found for the relationship between green process innovation and green product innovation are in line with the results found in their research studies (FATOKI, 2021 , MUISYO et al., 2022b , SHAFIQUE et al. 2017; ZAMEER et al., 2022).

Table 6 – Hypothesis testing

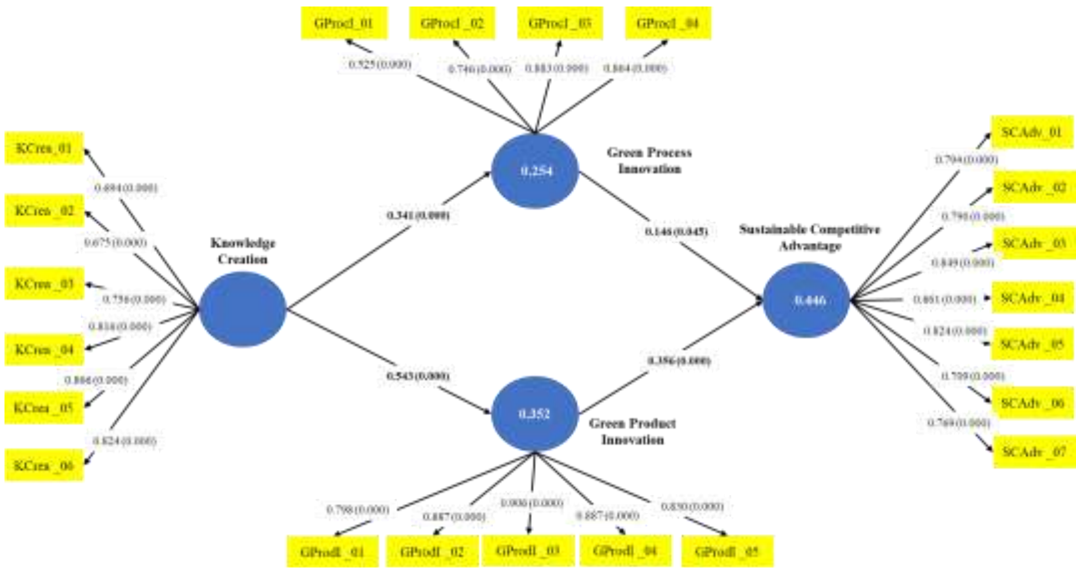
Dimensions	β	t test	p-values
Knowledge Creation → Green process innovation	0.504	8.143	0.000
Knowledge Creation → Green product innovation	0.593	14.412	0.000
Green process innovation → Sustainable competitive advantage	0.309	3.982	0.000
Green product innovation → Sustainable competitive advantage	0.483	6.991	0.000

Source: SmartPLS from survey data (2023)

The analysis of knowledge creation on green process innovation showed a positive and significant impact with $\beta = 0.504$ and value $p = 0.000$, leading to the acceptance of H_1, that is, knowledge creation is a significant predictor of organizational green innovation in process. This result is in line with the findings of (GAUTHIER; ZANG, 2020; SPEROTTO; TARTARUGA; MONTENEGRO, 2023). The analysis of knowledge creation on green product innovation showed a positive and significant impact with $\beta = 0.593$ and value $p = 0.000$, leading to the acceptance of H_2, that is, knowledge creation is a significant predictor of green product innovation. This result is in accordance with (GAUTHIER; ZANG, 2020; SPEROTTO; TARTARUGA; MONTENEGRO, 2023). Green process innovation has a positive and significant impact with $\beta = 0.139$ and value $p = 0.045$, thus H_3 is accepted, that is, green product innovation is a significant predictor of sustainable competitive advantage.

Green product innovation has a positive and significant impact with $\beta = 0.228$ and value $p = 0.000$, thus H_4 is accepted, that is, green product innovation is a significant predictor of sustainable competitive advantage. These results found for the relationship between green process innovation and green product innovation are in line with the results found in their studies (FATOKI, 2021, MUISYO et al., 2022b, SHAFIQUE et al. 2017; ZAMEER et. al., 2022). In Figure 2, the structural model is presented.

Figure 2 - Structural model



Source: SmartPLS from survey data (2023)

V. Final Considerations

This study aimed to investigate the influence of green process and product innovation on competitive advantage, having as its antecedent the creation of knowledge in the beef production chain in the state of Rio Grande do Sul, for which 4 hypothesized relationships were constructed. All hypotheses were confirmed, that is: The creation of green knowledge has an influence on green process innovation; knowledge creation influences green product innovation; green process innovation influences sustainable competitive advantage; green product innovation influences sustainable competitive advantage.

With the development of this study, a representative model of the relationships between knowledge creation, green process and product innovation and the sustainable competitive advantage of the beef production chain in Rio Grande do Sul, Brazil, was obtained. The three latent variables (knowledge creation, green process innovation and green product innovation) explain 60.20% of the formation of sustainable competitive advantage. Thus, there is a gap for future studies to find other variables that can explain the missing 39.80%. Given the findings of this study, future work suggests analyzing the mediating effect of performance between knowledge management, considering in addition to knowledge creation, knowledge sharing and transfer and green competitive advantage.

References

Abbas, J.; Khan, S. M. Green Knowledge Management And Organizational Green Culture: An Interaction For Organizational Green Innovation And Green Performance. Journal Of Knowledge Management, V. 27, N.7, 1852-1870, 2023.

Akabane, G. K.; Doná, C. M. Gestão Do Conhecimento Na Criação Da Vantagem Competitiva Em Uma Empresa Prestadora De Serviços De Ti: The Knowledge Management In Creating Competitive Advantage In A It Company Service Provider. Brazilian Journal Of Business, V. 4, N. 4, P. 2774-2786, 2022.

Araújo Júnior, R. H.; Cândido, A. C. (2020). Vantagem Competitiva E Gestão Do Conhecimento: Abordagens Gerenciais Em Unidades De Informação. Incid: Revista De Ciência Da Informação E Documentação, V. 11, N. 1, P. 93-113, 2020.

Bahry, C. P.; Tolfo, S. D. R. A Gestão De Competências E A Obtenção De Vantagem Competitiva Sustentável Em Organizações Bancárias. Ram - Revista De Administração Mackenzie, V. 5, P. 37-54, 2022.

Barcelos, R. L.; Rosetto, C. R.; Magnago, R. F. Mental Models And Organizational Routinas: A Discussion On Absorptive Capacity And Sustainability, 2023.

Cao, C.; Tong, X.; Chen, Y.; Zhang, Y. (2022), How Top Management's Environmental Awareness Affect Corporate Green Competitive Advantage: Evidence From China. Kybernetes, V. 51, N.3, P. 1250-1279, 2022. Doi: 10.1108/K-01-2021-0065.

Chen, Y. S. The Driver Of Green Innovation And Green Image–Green Core Competence. Journal Of Business Ethics, V. 81, N.3, P. 531-543, 2018. Doi: Http://Dx.Doi.Org/10.1007/S10551-007-9522-1.

Chen, Y. S.; Lai, S. B.; Wen, C. T. The Influence Of Green Innovation Performance On Corporate Advantage In Taiwan. Journal Of BusinessEthics, V. 67, N.4, P. 331-339, 2006.

Fatoki, O. Environmental Orientation And Green Competitive Advantage Of Hospitality Firms In South Africa: Mediating Effect Of Green Innovation. Journal Of Open Innovation: Technology, Market, And Complexity, V. 7, N. 4, P. 223, 2021.

Gürlek, M.; Tuna, M. Reinforcing Competitive Advantage Through Green Organizational Culture And Green Innovation. The Service Industries Journal, V. 38, N.7-8, P. 467-491, 2018.

Hao, X.; Fu, W.; & Albitar, K. Innovation With Ecological Sustainability: Does Corporate Environmental Responsibility Matter In Green Innovation?. Journal Of Economic Analysis, V. 2, N. 3, P. 21-42, 2023.

Henseler, J.; Hubona, G.; Ray, P. A. Using Pls Path Modeling In New Technology Research: Updated Guidelines. Ind. Manag. Data Syst., V. 116, P. 2-22, 2016. Https://Doi.Org/10.1108/Imds-09-2015-0382

Henseler, J.; Ringle, C. M.; Sarstedt, M. Testing Measurement Invariance Of Composites Using Partial Least Squares. International Marketing Review, V. 33, N. 3, P. 405–431, 2016. Https://Doi.Org/10.1108/Imr-09-2014-0304.

Hu, L. T.; Bentler, P. M. Fit Indices In Covariance Structure Modeling: Sensitivity To Underparameterized Model Misspecification. Psychological Methods, V. 3, N. 4, P. 424-453, 1998. Https://Doi.Org/10.1037/1082-989x.3.4.424.

Malafaia, G. C.; Maciel, A. C.; Camargo, M. E. Atitudes De Coordenação De Produtores Rurais Na Cadeia Da Carne Bovina: O Caso Do Cite 120. Organizações Rurais & Agroindustriais, V. 11, N. 3, P. 393-406, 2019.

Manogna, R. L. (2021). Innovation And Firm Growth In Agricultural Inputs Industry: Empirical Evidence From India. Journal Of Agribusiness In Developing And Emerging Economies, V.11, N.5, P. 506–519, 2021.

Moraes, C. A.; Zilber, M. A.Estratégia E Vantagem Competitiva: Um Estudo Do Setor Petroquímico Brasileiro. Ram - Revista De Administração Mackenzie, V. 5, P. 165-195, 2022.

Muisyo, P. K. Et Al. (2022). The Role Of Green Hrm In Driving Hotels' Green Creativity. International Journal Of Contemporary Hospitality Management, V. 34, N. 4, P. 1331-1352, 2022.

Oecd, Organization For Economic Cooperation And Development; Eurostat, E. U. Oslo Manual 2018: Guidelines For Collecting, Reporting And Using Data On Innovation. 4. Ed. Oecd, 2018.

Oliveira, J. I. C. Aspectos Regionais Da Inovação Verde E Da Internacionalização: Um Estudo Em Empresas Brasileiras, 2023.

Podsakoff, P. M.; Mackenzie, S. B.; Podsakoff, N. P. (2012). Sources Of Method Bias In Social Science Research And Recommendations On How To Control It. Annual Review Of Psychology, V. 63, P. 539-569, 2012.

Radons, D. L.; Battistella, L. F.; Grohmann, M. Z. (2012). Vantagem Competitiva Das Empresas: Qual A Influência Da Inovação Verde?. Revista Brasileira De Administração Científica, V. 3, N. 3, P. 97-111, 2012.

Ribeiro, O. C. D. R.; Steiner, P. J. Vantagem Competitiva Sustentável E Inovação Verde: Uma Revisão Sobre Proposições De Escalas Conjuntas. Gestão & Produção, V. 28, 2021.

Sperotto, F. Q.; Tartaruga, I. G. P.; Montenegro, R. L. G. As Interações De Conhecimento E O Desenvolvimento De Inovações Verdes No Brasil, 2023.

Walchhutter, S.; Hanna, E. K.; Silva Souza, W. (2019). Inovação Verde: Produtos E Processos Como Fator De Vantagem Competitiva: Products And Process As Factor Of Competitive Advantage. Revista Observatório, V. 5, N. 5, P. 797-820, 2019.

Zameer, Et Al. Green Innovation As A Mediator In The Impact Of Business Analytics And Environmental Orientation On Green Competitive Advantage. Management Decision, V. 60, N. 2, P. 488-507, 2022.