


FAMILY BUSINESSES AND SUSTAINABLE DEVELOPMENT GOALS: WHAT IS THE INFLUENCE OF FAMILY CONTROL AND MANAGEMENT?

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ABSTRACT

We analyzed the effect of family businesses participating in the Corporate Sustainability Index on adopting Sustainable Development Goals (SDGs). Our sample consisted of 43 Brazilian companies listed in the Corporate Sustainability Index (CSI) that totaled 126 observations from 2019 to 2021. We submitted the data to exploratory factor analysis to estimate the different dimensions of the SDGs (social, economic, and environmental) that, therefore, were analyzed using panel data regression. We found that family-run companies reduce practices linked to the social dimension of the SDGs. However, the fact that the company is family-owned or has family control does not influence practices linked to the SDGs in the social, economic, and environmental dimensions. We found that family-run companies are unrelated to adopting SDG practices in the economic and environmental dimensions. Our results contribute to discussions about the environment, sustainability, investments that value socio-environmental responsibility, the activities of family businesses, and adherence to the SDGs. Especially when showing that the different characteristics of family businesses in Brazil that make up the CSI generally do not imply an increase in practices related to the SDGs. Therefore, our findings can help investors, creditors, and regulatory bodies decide on adopting socio-environmental practices.

Keywords: Family businesses. Sustainable Development Goals. Corporate Sustainability Index.

Edited in Portuguese and English. Original version in Portuguese.

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Paper presented at Gecamb 2022, in 9th Conference on Environmental Management and Accounting, Portuguese CSEAR Conference, University of Aveiro, Aveiro, Portugal, November 4-5, 2022.

Received on 02/15/2023. Revised on 04/24/2023. Accepted on 05/19/2023 by Prof. Dr. Rogério João Lunkes (Editor-in-Chief).

Published on 06/15/2023.

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1 INTRODUCTION

In recent decades, environmental transformations have gained more evidence due to resource consumption and environmental pollution to compromise the needs of the next generations. Such concerns gained prominence, especially with the Stockholm (1972), Rio de Janeiro (1992, 2012), and Paris (2015) conferences. However, few concrete actions were observed, even with the ambitious pretensions agreed in the reports resulting from these conferences (Tiradentes, 2021).

The 2030 Agenda, prepared at the Paris Conference, stipulated 17 Sustainable Development Goals (SDGs) to be achieved by 2030 (United Nations [UN], 2015). However, halfway through the deadline, few advances were made (Sdg Tracker, 2022). In 2021, the Glasgow Climate Pact (COP26) was signed, which was aligned with the SDGs, and reinforced the need for energy transition and the reduction of CO₂ emissions by 2050. Despite this, COP26 presented a timid advance, insufficient to contain global warming, which is heading for more intense climate change than predicted by the 2030 Agenda (Harvey, 2021).

Given this scenario, the relevance of the role of organizations concerning the preservation of the environment and sustainability stands out. Corporate social responsibility can be seen as a relevant tool for companies' sustainability since it constitutes a business concept encompassing ethical values of respect for people, communities, and the environment. Thus, management conceived as socially responsible and committed to sustainable development presupposes ethical and transparent relations with its stakeholders and society in general, acting to preserve environmental and human resources (Kraemer, 2005).

Nevertheless, although there is the disclosure of information related to sustainability or even mention of the SDGs in corporate reports, one cannot say these companies would be committed to implementing the SDGs in their activities. Song et al. (2022) mention that the absence of tools that enable the evaluation and monitoring of actions developed aimed at sustainability in companies makes it difficult to conduct these activities effectively.

Although difficulties are perceived in evaluating the implementation of the SDGs, the organizational strategy concerned with the risks linked to the socio-environmental area reflects positively on the reputation of companies (Castro Neto et al., 2020). It is necessary to establish effective and efficient actions to support the decision-making of investors who want to invest their capital in companies that value actions aimed at sustainability and encourage more organizations to adopt practices aligned with the SDGs. Thus, some stock indices were constituted by companies that adhere to certain sustainable practices (Souza et al., 2019), such as the Corporate Sustainability Index (CSI), which presents investment options committed to issues that supplant mere profit, also having an evident socio-environmental responsibility (B3, 2022).

Although different companies participate in CSI, not all companies share the same characteristics, directly impacting short-, medium- and long-term decisions. These characteristics can act as factors that make it possible to intensify or even discourage adopting practices aligned with the objectives linked to the SDGs. Studies indicate an aspect that may be related to adopting or intensifying socio-environmental responsibility practices is that they are family companies (Westhead & Howorth, 2007; Oudah et al., 2018; Ferreira et al., 2021). This is because family members tend to establish actions that positively impact the company in the medium and long term. They seek to maintain the continuity of the company as a way to preserve the family's assets, especially in the company's transition to the next generations (Monteiro et al., 2019; Pestana et al., 2021). For this reason, implementing efficiently developed socio-environmental plans can be a way out of achieving these objectives, largely because they make it possible to achieve both economic benefits (Mason, 2021) as well as corporate reputation (Long & Mathews, 2011) and company survival (Ferasso et al., 2020; Ferreira et al., 2021).

Although it can be understood that family businesses tend to adopt more intensified socio-environmental practices, these companies relate differently to the family. Some companies, for example, despite being family-owned, do not have a majority of the voting capital controlled by family members; others do not have members who participate in the senior executive (Pestana et al., 2021). These aspects directly impact family businesses' decisions for profit from short, medium, and long-term goals. Thus, depending on the level of family involvement with the company, the level of adoption of the SDGs may be different. Therefore, this study analyzes the effect of family businesses participating in the Corporate Sustainability Index on adopting Sustainable Development Goals.

In this perspective, some justifications underlie the accomplishment of this work, such as: the growth of green markets; the greater interest of investors and consumers in companies with sustainable practices; and the creation of value and positive image conferred by adherence to a model of socio-environmental responsibility. Such factors constitute strategic elements to differentiate organizations and can imply economic and financial benefits for companies in the long term (Souza et al., 2019; Mason, 2021).

Another important point to be highlighted refers to involvement in decisions related to socio-environmental responsibility, which will occur differently in each company (Hsueh, 2018; Ferreira et al., 2021) since it depends on characteristics intrinsic to the company, such as whether the company belongs to a family or if it has family members participating in senior executive management (Westhead & Howorth, 2007; Oudah et al., 2018; Ferreira et al., 2021). This point is noteworthy and interesting for the expansion of the topic, especially in Brazil, whose capital market has a significant presence of family businesses.

Brazil is at the heart of discussions about the intrinsic aspects of the environment and the search for sustainable actions, as it is located in a large part of the Amazon Forest and has considerable potential to enjoy a zero-carbon economy. For these characteristics, promoting socio-environmental responsibility is a path that can generate long-term benefits for companies operating in the Brazilian territory, as seen in the studies by Adomako et al. (2019) and Mason (2021). This promotion can impact the long-term survival of companies and ensure the growth of their market share due to the credibility acquired vis-à-vis investors and consumers, points that are of interest especially to family businesses (Hsueh, 2018; Adomako et al., 2019; Ferasso et al., 2020).

2 LITERATURE REVIEW

2.1 Sustainability and Sustainable Development Goals

The 2030 Agenda consists of an integrated and global strategy policy, which aims to implement the Sustainable Development Goals (SDGs) to eradicate poverty, preserve the environment and climate, and safeguard peace and prosperity for all people. Adopted in 2015 by the 193 member countries of the United Nations Organizations, the 2030 Agenda provides for the 17 SDGs, which contemplate the three dimensions of sustainable development – economic, social, and environmental – and aim to lead humanity on a more sustainable and resilient path (UN, 2015).

In the mid-1990s, Elkington elaborated the concept of the “triple bottom line”, representing a conceptual framework linked to the idea of sustainability that aims to measure the economic, social, and environmental performance of companies (Elkington, 2018). The success or failure of sustainability objectives is not limited to concepts of profit/loss; they go further, encompassing the social (of people's well-being), economical (not limited to financial aspects, focused only on profit), and environmental (considering the health of the planet) (Azapagic, 2003; Jamali, 2006; Barbieri et al., 2010; Dyllick & Hockerts, 2002).

Implementing integrated management strategies in companies that align with social, economic, and environmental aspects is essential to achieve a balance of sustainability in the corporation (Munck et al., 2011). Corporate sustainability can be understood as a way of acting of the company in which the needs of different stakeholders are met without compromising the ability to meet the needs of future generations (Wced, 1987). A reflection of the concern with corporate sustainability is adherence to the SDGs, which aim to inspire engagement with sustainability in companies (Liszbinski & Brizolla, 2021).

Given this reality, the information disclosed voluntarily in corporate sustainability or social responsibility reports became more relevant (Lindgreen & Swaen, 2010; Calixto, 2013). Thus, these reports constitute how the economic, environmental, and social impacts of the company become public and, to the same extent, enable the efforts of organizations to comply with the SDGs to be measured and understood, allowing the stipulation of goals and disseminating socio-environmental information (Campos et al., 2013).

The relationship between the SDGs and corporate sustainability was addressed in several studies, demonstrating that their presence is a benchmark to assess the sustainability of companies (Toppo et al., 2017), strengthen adherence to sustainability (Schönherr et al., 2017; Rosati & Faria, 2019), provide investment opportunities (Schramade, 2017; Morioka et al., 2017), and highlight the success of organizations in the long term (Ortiz-de-Mandojana & Bansal, 2016).

The SDGs aim to lead humanity to sustainability, eradicate poverty and hunger, and ensure equality, dignity, peaceful living, and harmony with nature (UN, 2015). To this end, sustainable development demands new ways of organizing economies since the current system acts parasitic, leading to the depletion of existing resources. A sustainable economy presupposes the existence of resilient businesses capable of creating alternatives to face existing social and environmental problems and implementing sustainable innovations and strategic renewals (Mindt & Rieckmann, 2017).

Therefore, the business sector, whose importance is highlighted in the 2030 Agenda, plays an essential role in this process. Encouraging the adoption of sustainable practices and the consequent disclosure in the reports can be a relevant tool for creating value in organizations and contributing to their longevity (Adams, 2017).

2.2 Family businesses and Sustainable Development Goals

Family businesses often have origin, rise, and continuity related to a family and may have members of the same family at the senior executive level (Brenes et al., 2011). Family members are not necessarily in positions related to management, such as *Chief Executive Officer* and *Chief Financial Officer*, but may conduct activities such as management directors (Villalonga & Amit, 2006). Therefore, family members can directly affect the decisions of the company's directors, even if they are professional executives hired to manage the company.

In many companies, there is a separation between ownership and control. However, this behavior is not the most common in family businesses since the family tends to occupy senior management positions in the company. The main purpose of the presence of family members in the company's senior management is to ensure the continuity of the company, especially since the company is a family asset in the current generation and, when considering the objectives of the family that owns the company, it must be transferred in the current or better conditions to the next generations (Monteiro et al., 2019; Pestana et al., 2021). Consequently, in family businesses, some behaviors are different from non-family companies. For example, they have a lower level of indebtedness to third parties and adopt investments with a lower level of risk (Ampenberger et al., 2013; Mehboob et al., 2015). This fact also stems from the attempt not to

infringe on covenants and put at risk the level of power and influence that the family enjoys before the company (Platikanova, 2017).

Besides these characteristics, family businesses tend to worry, to a greater extent than others, about decisions that, in addition to providing returns in the short term, privilege economic benefits when considering the medium and long term. This behavior comes from the concern about continuity and survival in a highly competitive market (Ferasso et al., 2020). In this case, for long-term decisions, such companies prospect for the future and seek to adopt practices that mitigate any risk of non-survival in the long term.

With climate change due to global warming, environmental sustainability has become the core of discussions in meetings where different companies and/or countries are present. The Stockholm (1972), Rio de Janeiro (1992, 2012), and Paris (2015) conferences, as well as the agreement signed at COP26, were crucial for implementing goals and actions aimed at reducing greenhouse gas emissions. Companies' adherence to these agreements clearly signals to society that environmental sustainability and other social actions are long-term goals. At the same time, it is understood that the carbon emission reduction goals will also impact companies. Thus, precisely for these reasons, adopting practices related to sustainability represents a resource that companies can use to survive when considering the long term (Ferasso et al., 2020; Ferreira et al., 2021).

Depending on the companies' characteristics, this resource can be used at different intensities. Family companies, relative to non-family companies, tend to adopt practices related to socio-environmental responsibility more sharply (Westhead & Howorth, 2007; Oudah et al., 2018; Ferreira et al., 2021; Kazancoglu et al., 2021; Haddoud et al., 2021). This behavior is because socio-environmental responsibility is necessary for the company's survival. Therefore, there is an interest in the partners for such practices to be adopted more intensively since the company will have a competitive advantage in the market where it operates, thus allowing the preservation of heritage for the next generations (Adomako et al., 2019; Ferasso et al., 2020).

Regarding socio-environmental responsibility practices, the SDGs stand out, which can be adopted by family companies as a way to incorporate socio-environmental responsibility practices and indicate to investors, consumers, and other market agents, conducts of social respect and to the environment (Ferreira et al., 2021). Thus, intensifying the adoption of SDGs can be a way to gain a competitive advantage and credibility (Hsueh, 2018).

Although adherence to the SDGs is a beneficial practice for the company, family companies may not behave similarly in adopting these objectives. This happens because the company may be familiar. However, for different reasons, it may not have control over the voting capital of the company, for example. Moreover, not all family businesses have members of their family nucleus at the senior executive level. These two mentioned points justify why family businesses may have different intensities regarding adopting the SDGs. In this sense, it is observed that family businesses tend to adopt, more significantly, practices related to the SDGs. However, some characteristics intrinsic to these companies, such as the shareholding control being in the hands of the family or the company having family members at the senior executive level, can boost the level of this adoption.

3 METHODOLOGY

3.1 Sampling and data collection

This is descriptive research with a quantitative approach and, concerning the procedures, a documentary. The population of this study was initially composed of the 48 companies listed in the B3 Corporate Sustainability Index (CSI) of June 2022. The choice of this portfolio is justified because this index is related to companies committed to adopting best sustainability practices (B3, 2022). However, some companies could not be observed due to the lack of information on

socio-environmental responsibility practices resulting from the non-publication of Sustainability Reports or lack of presentation of this information in the Management Reports. Thus, to define the study's final sample, five financial companies were removed, resulting in a sample composed of 43 companies, with a total of 126 observations.

Concerning data collection, information on the 17 SDGs was extracted from the Management Reports and the Sustainability Reports, which must be made available annually by all companies participating in the CSI. These documents were obtained on the Brazilian Securities and Exchange Commission (CVM) website and on the companies' website - in the field of Investor Relations. Furthermore, information regarding the classification of characteristics of companies, such as: (i) family business; (ii) company with family control; and (iii) company with family management, were extracted from the Fundamentus® website and the Reference Form. The economic and financial data of the companies, used as control variables, were obtained through the Refinitiv Eikon® database. The period stipulated for study selection analysis comprised from 2019 to 2021.

3.2 Sustainable Development Goals

The Sustainable Development Goals cover the economic, environmental, and social perspectives and are divided into 17 goals. The information was collected through the analysis of the content of the reports, using as keywords: SDG, Sustainable Development Goals, SDG 1 – No poverty, SDG 2 – Zero hunger and sustainable agriculture, SDG 3 – Good health and well-being, SDG 4 – Quality education, SDG 5 – Gender equality, SDG 6 – Clean water and sanitation, SDG 7 – Affordable and clean energy, SDG 8 – Decent work and economic growth, SDG 9 – Industry, innovation, and infrastructure, SDG 10 – Reduced inequalities, SDG 11 – Sustainable cities and communities, SDG 12 – Responsible consumption and production, SDG 13 – Climate action, SDG 14 – Life below water, SDG 15 – Life on land, SDG 16 – Peace, justice, and strong institutions, and SDG 17 – Partnerships for the goals.

To measure the disclosure index, the value 1 (one) was considered if the company performed any action aimed at any SDG, and 0 (zero), if no action was identified. To fulfill the study objective, the logic presented by Queiroz et al. (2021) regarding the submission of the results to exploratory factor analysis was followed, considering that many of the objectives are correlated with each other and, when analyzed together, can be grouped into dimensions linked to social, environmental, and economic issues (Queiroz et al., 2021).

Subsequently, the 17 variables related to each SDG were submitted to Exploratory Factor Analysis (EFA), verifying the formation, initially, of four factors. However, the fourth factor presented only one variable (SDG 17). For this reason, it was decided to exclude it from the analysis, thus leaving three factors. Sequentially, the remaining 16 variables were submitted to exploratory factor analysis. The results of Bartlett's test of sphericity ($X^2 = 875.55$; p -value < 0.000) and Kaiser-Meyer-Olkin's test of sphericity (0.838) indicated that the data are adequately fitted to the EFA, as suggested by Hair et al. (2009). Concerning the orthogonal rotation procedure, the Varimax method was used as it allows the grouping of variables into highly correlated factors, facilitating the interpretation and identification of the common characteristics of the variables that make up the factors (Fávero & Belfiore, 2017), which have a variance extracted greater than 0.30. The results of the EFA rotated by the Varimax method are in Table 1:

Table 1
Factor extraction by Varimax method

Variable	Factor 1	Factor 2	Factor 3	Communality
SDG 1	0.3081	0.7216	0.1224	0.6306
SDG 2	0.0991	0.7626	0.0664	0.5963
SDG 3	0.6058	0.3311	0.2312	0.5315
SDG 4	0.5823	0.0189	0.2087	0.383
SDG 5	0.7885	0.2423	0.0426	0.6822
SDG 6	0.2500	0.7372	0.1625	0.6324
SDG 7	0.2985	0.3776	0.4910	0.4727
SDG 8	0.8318	0.1006	0.1796	0.7343
SDG 9	0.3384	0.0904	0.5658	0.4427
SDG 10	0.4881	0.4218	0.2740	0.4913
SDG 11	-0.0136	0.2571	0.6844	0.5317
SDG 12	0.4419	0.2270	0.5816	0.585
SDG 13	0.3171	-0.1147	0.7083	0.6154
SDG 14	0.0707	0.5453	0.4953	0.5476
SDG 15	0.0719	0.5380	0.6138	0.6722
SDG 16	0.7267	0.2175	0.1521	0.5986

Source: Research data (2022).

The results in Table 1 show that, with the aid of EFA, the SDGs can be ordered into three groups. Such groups, considering the reasoning of Queiroz et al. (2021), confer the dimensions of the SDGs proposed by the United Nations (UN) that, according to the discussions of Azapagic (2003), Jamali (2006), Barbieri et al. (2010), and Dyllick and Hockerts (2002), refer to economic, environmental, and social goals. In this context, when verifying each of the groups and the SDGs that participate in each group, Factor 1 was associated with the Social dimension, Factor 2 with the Economic dimension, and Factor 3 with the Environmental dimension.

3.3 Family business, family control, and family management

To categorize the company as family, the logic presented in Shyu's work (2011) was considered, which advocates that a publicly traded family company owns at least 10% of the stocks related to the voting capital held by members of the same family. Based on this logic, it was possible to verify, using the website Fundamentus® and analyzing the last names of the shareholders, whether the companies that make up the sample are familiar or not. With regard to family control, it was sought to verify in these companies whether family members own the majority of the voting capital. The procedures mentioned by Villalonga and Amit (2006) were used regarding family management. They predict that family management is characterized by some aspects, such as: (i) whether the CEO of the company is a member of the family(ies) that own the company; (ii) whether members of the family(ies) that own the company occupy positions in the management of the senior executive; and (iii) whether members of the family(ies) that own the company occupy positions, such as president or directors of the board of directors.

3.4 Research variables

The procedures used considered the reasoning of Queiroz et al. (2021) for calculating the three dimensions of the SDGs (Social, Economic, and Environmental). The criteria used – considered the logic of Shyu (2011), Robalo (2019), Nascimento (2020), and Villalonga and Amit (2006) – to identify characteristics (family business, family control, and family

management) in the companies analyzed. Table 2 shows the dependent and independent variables (interest and control) verified in this study.

Table 2
Research variables

Dependent variables			
Variables	Description	Operationalization	Source
Social Dimension (DSOC)	Sustainable Development Goals related to the Social Dimension	SDG 3, SDG 4, SDG 5, SDG 8, SDG 10, and SDG 16	UN (2015)
Economic Dimension (DECO)	Sustainable Development Goals related to the Economic Dimension	SDG 1, SDG 2, SDG 6, and SDG 14	UN (2015)
Environmental Dimension (DENV)	Sustainable Development Goals related to the Environmental Dimension	SDG 7, SDG 9, SDG 11, SDG 12, SDG 13, and SDG 15	UN (2015)
Independent variables			
Independent variables of interest			
Variables	Description	Operationalization	Source
Family Business (EFAM)	Companies with at least 10% of the voting capital owned by family members	Dichotomous variable: (0) non-family business and (1) family business	Shyu (2011)
Family Control (CFAM)	Companies that hold a majority of the voting capital held by family members	Dichotomous variable: (0) does not have a majority of the voting capital held by any family and (1) has a majority of the voting capital held by the family	Robalo (2019) Nascimento (2020)
Family Management (GFAM)	Family businesses with family members in senior executive positions	Dichotomous variable: (0) family business that does not have family members in senior executive positions and (1) family business with family members in senior executive positions	Villalonga and Amit (2006)
Independent control variables			
Variables	Description	Operationalization	Source
Shareholding Concentration (CA)	Concentration of voting stocks	Companies whose main shareholder owns more/less than 50% of the voting stocks	Braga et al. (2009), Murcia and Santos (2009)
Return on Assets (ROA)	Calculates the operating profit generated by each monetary unit of the asset	Operating Profit/Average Total Assets	Stanwick and Stanwick (2000), Aydoğmuş et al. (2022)
Market-to-book (MB)	Calculated at market value on equity of firm <i>i</i> in period <i>t</i> .	Market value/Book value	Vilhena and Camargos (2015) Di Simone et al. (2022)
Revenue Growth (GROWT)	Represents the percentage change in net revenue for the current period compared to the previous period	$((\text{Net Revenue}_{it}/\text{Net Revenue}_{i,t-1}) - 1) * 100$	Garvey et al. (2018) and Zahid et al. (2022)
Indebtedness (IND)	Proportion of third-party capital financing total assets	Current liabilities / Shareholders' Equity	Huang and Kung (2010) and Alareeni and Hamdan (2020)
Size (SIZ)	Total assets at the end of each company period transformed to its logarithmic base.	Neperian logarithm of the total asset	Chow and Wong-Boren (1987), Fernandes (2013), Silva et al. (2015)

Year	Represents the annual periods	Dichotomous Dummy variables representing the 2019 to 2021 annual periods, with 2019 as the reference variable
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Source: Prepared by the authors (2022).

3.5 Econometric models and statistical treatments

Regarding this study's objective, econometric models were developed to determine whether the fact that the company: (i) is family, (ii) has family control, or (iii) has family management is related to the social, economic, or environmental dimension of the SDGs. These econometric models are represented by Equation 1:

$$\begin{aligned}
 &DSOC_{it} \text{ or } DECO_{it} \text{ or } DENV_{it} \\
 &= EFAM_{it} + CFAM_{it} + GFAM_{it} + ROA_{it} + MB_{it} + GROWT_{it} + IND_{it} + SIZ_{it} + \sum_{t=2}^3 \varphi YEAR_{it} \\
 &+ \varepsilon_{it}
 \end{aligned}$$

Where: $DSOC_{it}$ = social dimension of the SDGs of company i in period t ; $DECO_{it}$ = economic dimension of the SDGs of company i in period t ; $DENV_{it}$ = environmental dimension of the SDGs of company i in period t ; $EFAM_{it}$ = family business of company i in period t ; $CFAM_{it}$ = family control of company i in period t ; $GFAM_{it}$ = family management of company i in period t ; ROA_{it} = return on assets of company i in period t ; MB_{it} = market to book of company i in period t ; $GROWT_{it}$ = revenue growth of company i in period t ; IND_{it} = total indebtedness of company i in period t ; SIZ_{it} = size of company i in period t ; $YEAR$ = two dummy variables corresponding to the years 2020 and 2021, and 2019 is the reference year.

Data treatment was performed by regression with panel data. Before this analysis, the quantitative variables were submitted to the 1% and 99% winsorize handling. In the case of panel data regression, the first procedure consisted of submitting the data to the Breusch-Pagan L.M. test to verify which estimate best fits the data (Pooled or Random Effect). The estimation in fixed effects was not considered because, in the econometric model, there are variables (family business) that did not vary over time in any of the companies analyzed. Subsequently, the data were subjected to tests that allowed for verification of the validity of the assumptions (lack of multicollinearity, homoscedasticity of the residues, and absence of first-order serial autocorrelation) of the panel data analysis (Fávero & Belfiore, 2017). These assumptions were verified using the Variance Inflation Factor (VIF), Breusch-Pagan and Wooldridge tests.

4 RESULTS AND DISCUSSION

4.1 Descriptive statistics and inferential analysis

The descriptive results of the variables used in this research are in Table 3.

Table 3
Research variables

Panel A: Quantitative variables							
Variables	Mean	Standard deviation			Minimum	Maximum	Obs.
		O	B	W			
DSOC	0.0274	0.9522	0.6734	0.6745	-3.6526	1.1840	126
DECO	-0.0067	0.9858	0.7070	0.6854	-2.1201	1.3108	126
DENV	0.0138	0.9748	0.7542	0.6273	-3.0615	1.6825	126
ROA	3.4365	5.6184	4.7722	2.9438	-22.7330	15.0831	126
MB	3.7815	4.8014	3.4995	3.2751	-8.8693	25.1161	126
GROWT	20.1858	30.2882	18.8728	24.6391	-41.6093	155.6094	126
IND	72.8955	22.7369	21.6007	7.1162	26.9063	189.5805	126

SIZ	24.0884	0.9602	0.9611	0.2043	21.2205	26.2242	126
Panel B: Qualitative variables							
Variables	It has the characteristic that refers to the variable		It does not have the characteristic that refers to the variable		Obs.		
	AF	RF	AF	RF			
EFAM	66	52.38%	60	47.62%	126		
CFAM	29	23.02%	97	76.98%	126		
GFAM	49	38.89%	77	61.11%	126		
CA	23	18.25%	103	81.75%	126		

Note. O: Overall; B: Between; W: Within; Obs. = Observations; AF: absolute frequency; and RF: Relative Frequency.

Source: Research data (2022).

The findings indicated that the mean social dimension was 0.027 with a standard deviation of ± 0.952 . Also, it is noted that the mean economic dimension and environmental dimension were $-0.006 (\pm 0.986)$ and $0.014 (\pm 0.975)$, respectively. Regarding the independent variables of interest in the study, it is clear that most of the observations (52.38%) come from family businesses. This result shows that most of the Brazilian companies belonging to the CSI are family owned. This is an interesting result, even with the initial public offer to trade stocks on the stock exchange. Most companies remain under the rule of families.

Regarding family control, the results indicate that 23.02% of the observations refer to family companies with the majority of the voting capital. In other words, the family effectively controls the company. This result shows a significant concentration of the shareholding of almost a quarter of the companies participating in the CSI in family ownership. Moreover, it can be added that the permanence of the possession of the majority of voting capital by families can be a strategy of family members, a relationship that is explicit in some studies (Monteiro et al., 2019; Pestana et al., 2021) that describe the concern of family members to preserve their power within the company since the company constitutes a heritage that can be passed on to the next generations.

Also, it is noted that not all family businesses have family management since of the 66 observations that refer to family businesses, only 49 (38.89% of the total sample) have members of the same family in senior executive positions. A result that may be linked to the growth of the company since it is noticed that family members hire professional managers to lead the company, which is evidenced in several studies (Jensen & Meckling, 1976; Eisenhardt, 1989; Lopes et al., 2017; Rengel et al., 2020; Harymawan et al., 2020). They mention that such managers provide an increase in performance due to a greater propensity to maximum risk when they have incentive plans aimed at this purpose, such as variable compensation plans.

Despite this, the results referring to the central variables of the research (SDG dimensions, family business, family management, and family control) may have shown a significant difference over the time interval analyzed, especially in 2020, as it was the first year of the Covid-19 pandemic, which may have influenced the companies' socio-environmental action strategies. To determine whether there was a significant difference in the variables DSOC, DECO, and DENV, the data of these variables were submitted to the Kruskal-Wallis test separately, considering the annual periods as groups of the analysis. The results of the Kruskal-Wallis test suggest that the social dimension ($X^2 = 2.450$; p-value < 0.293), the economic dimension ($X^2 = 0.072$; p-value < 0.965), and the environmental dimension ($X^2 = 1.020$; p-value < 0.606) showed no significant difference over the analyzed period. This indicates that companies did not change the levels of practices in any of the three dimensions of the SDGs, even during the pandemic period.

To determine whether there was a significant difference between the variables EFAM, CFAM, and GFAM, the information was analyzed using Cochran's Q test at the level of 5%. For this purpose, the annual periods were considered groups for this analysis. The results of the

Cochran test indicate that the variables family business ($X^2 = 0.250$; $p < 0.882$), family management ($X^2 = 0.348$; $p < 0.840$), and family control ($X^2 = 1.052$; $p < 0.949$) did not have significant variations over the analyzed period. Thus, there was no significant change in how families are present in publicly traded companies that trade stocks in the B3 Sustainability Index, even during a pandemic.

Subsequently, regression analysis was performed with panel data. The Breusch-Pagan LM test, in all multivariate models, indicated that random-effect estimation is better suited to the data since such a test was significant at a 5% level in all multivariate regression models. Thus, the variables of the three models presented VIF values lower than five, indicating the absence of multicollinearity, as Fávero and Belfiore (2017) recommended. The Breusch-Pagan and Wooldridge test was also applied, and when the results of these tests indicated the presence of residue heteroscedasticity or first-order serial autocorrelation, the multivariate regression model was estimated with clustering in individuals, as Fávero and Belfiore (2017) suggested. The results of applying regression models with panel data are in Table 4.

Table 4
Descriptive statistics

Variables	DSOC	DECO	DENV
	Model 1	Model 2	Model 3
	Coeff.	Coeff.	Coeff.
EFAM	0.3701	0.2972	0.2198
CFAM	-0.3095	-0.2127	-0.0907
GFAM	-0.5290**	0.0453	-0.2147
CA	0.1233	0.4642	0.1546
ROA	-0.0161	0.0456*	0.0237*
MB	0.0163	-0.0035	-0.0230
GROWT	-0.0003	-0.0003	-0.0056**
IND	-0.0115**	0.0032	0.0002
SIZ	0.3019	0.0975	0.2176*
Constant	0.1386	-2.9367	-5.0476
PC	Yes	Yes	Yes
R ² Within	0.0995	0.0194	0.083
R ² Between	0.1787	0.1464	0.1997
R ² Overall	0.1442	0.0846	0.1504
Test Wald	20.81***	7.18***	26.78***
Observations	126	126	126
Test of choosing the most suitable estimate for the data			
Breusch-Pagan LM	4.32**	5.99***	12.41***
Assumptions			
VIF (minimum)	1.21	1.21	1.21
VIF (maximum)	3.56	3.56	3.56
Breusch-Pagan	25.72***	2.48	10.57**
Wooldridge	4.51**	0.20	7.142**

Note. * significance at the level of 10%; **significance at the level of 5%; ***significance at the level of 1%. Coeff. = Coefficient; PC = Period Control; VIF = Variance Inflation Factor; Breusch-Pagan L.M. = Breusch-Pagan Lagrange Multiplier Test. The regressions with panel data were estimated through the random effect with clustering in the individuals when the presence of heteroscedasticity in the residues or serial autocorrelation of the first order was found. The period control variable was based on 2019.

Source: Research data (2022)

The results of Model 1 indicated that family management (Coeff.: 0.529; p-value <0.025) had a negative and significant relationship with the social dimension. The other variables of interest, family business (Coeff.: 0.370; p-value <0.290) and family control (Coeff.: -0.309; p-value <0.261), were not significantly related to the social dimension. Model 2 indicated that family business (Coeff.: 0.297; p-value < 0.419), family control (Coeff.: -0.213; p-value <

0.542), and family management (Coeff.: 0.045; p-value < 0.895) are not related to the economic dimension. A similar result is indicated in Model 3, where the environmental dimension has no significant effect on the variables family business (Coeff.: 0.219; p-value < 0.596), family control (Coeff.: -0.091; p-value < 0.805), and family management (Coeff.: -0.214; p-value < 0.532).

4.2 Discussion of the results

From the results obtained, one can observe that the family business variable does not present significant differences in the social, economic, and environmental dimensions. This finding contradicts what is observed in the literature (Clauss et al., 2022), which states a positive relationship exists between family businesses and sustainable practices. According to Clauss et al. (2022), family businesses are more likely to exercise sustainable practices due to their organizational formation structure, in addition to the founding families having greater ties to their social network, which provides greater proximity and social responsibility in their practices for the global environment.

Regarding family control, the results indicated a lack of significance relative to the social, economic, and environmental spheres. Thus, regardless of control (family or non-family), no difference was found in the socio-environmental practices developed by the companies analyzed. This result disagrees with those presented in the studies of Oudah et al. (2018), Ferreira et al. (2021), Kazancoglu et al. (2021), and Haddoud et al. (2021) since they found that family businesses contribute positively to the use of technology in clean production processes, as well as to the increased perception of socio-environmental practices of family businesses in relation to non-family businesses, respectively.

A justification for this is in the socio-environmental actions that non-family companies conduct. These companies also adopt socio-environmental practices (Adomako et al., 2019) to face the climate change crisis (Miroshnychenko & Massis, 2022). Adopting such practices does not happen without any interest. They are conducted from different factors that influence the conduct of decisions of senior executive managers, such as pressure from investors and regulatory bodies. This may be one of the justifications for companies listed in the CSI, controlled by a family, not showing a significant difference regarding adopting sustainable actions.

The third variable analyzed concerns family management. The findings suggest that companies with family management adopt a lower level of practices related to the SDGs of the social dimension relative to non-family companies. Nonetheless, this difference does not occur when considering the economic and environmental dimensions. This result goes against the logic exposed by Fritz et al. (2021). They found that family businesses tend to accentuate social concerns when considering the search for regional value creation. Similarly, it differs from the work of Tiberius et al. (2021), when they considered German and Swiss companies and found a predominance of family companies related to economic and social dynamics.

Some justifications may mitigate these results. One considers that companies may be more concerned with actions related to financial (economic dimension) and environmental (environmental dimension) sustainability. This may result from external pressures aimed at the environmental responsibility of companies that carry out economic activity in Brazil, a country pointed out as a potential leader in environmental issues in confronting climate change. For this reason, there was no significant difference in practices related to the economic and environmental dimension, regardless of the characteristic of the company's management (family or non-family). Another justification refers to the fact that companies with family management may be performing less adoption of practices of the social dimension than companies without family management when considering the discussions present in the work of Blodgett et al.

(2011), when they mention that companies with family management would be more concerned with ethical values linked to integrity and honesty, unlike non-family companies, whose focus is focused on social actions.

It can also be mentioned that the divergence of results found concerning the research (Adomako et al., 2019; Fritz et al., 2021; Tiberius et al., 2021; Miroshnychenko & Massis, 2022) is justified by the evidence that Brazil has on the global scenario - regarding environmental issues so that companies operating in the country are driven to implement more sustainable practices, regardless of whether they are companies characterized as familiar or not. Another conjectured possibility concerns the interference of current legislation in Brazil. The laws of a country can act decisively in implementing sustainable practices, either punishing or encouraging the adoption of measures that corroborate for a socio-environmentally friendlier performance or pressing and, as mentioned by Wu et al. (2022), influencing or combating print management.

With regard to the control variables, it is clear that the shareholding concentration is not related to the dimensions: (i) social, (ii) economic, and (iii) environmental of the SDGs. This contradicts Braga et al. (2009) since the shareholding concentration is a characteristic of the ownership structure, influencing the adoption of socio-environmental practices. Regarding the variables related to the economic-financial aspects of the companies, it was found that market-to-book is not related to any of the three dimensions of the SDGs. This evidence differs from that found by Di Simone et al. (2022) since the authors found a positive relationship between market-to-book and socio-environmental practices.

On the other hand, the variables return on assets and size showed a positive and significant relationship with at least one of the dimensions of the SDGs, focusing on the economic and environmental dimensions. Results similar to those of some studies (Stanwick & Stanwick, 2000; Fernandes, 2013; Silva et al., 2015; Aydoğmuş et al., 2022) that also found a positive relationship between return on assets and size with the adoption of environmental practices. This relationship comes from the logic that more profitable companies have a greater capacity to implement socio-environmental practices. Also, the reasoning is focused on the understanding that larger companies are in greater evidence to investors. And to remain competitive in the market and in the face of shareholder pressure, they seek to adopt socio-environmental practices, especially in a society that values organizations that implement such practices.

The variables revenue growth and indebtedness showed a significant relationship with the dimensions of the SDGs, but it is negative, emphasizing the environmental and social dimensions, respectively. This evidence disagrees with evidence presented by research, such as those by Huang and Kung (2010) and Alareeni and Hamdan (2020), since they detected that companies with higher levels of indebtedness adopt more socio-environmental practices. Moreover, the negative relationship between revenue growth and one of the dimensions of the SDGs is dissonant with the discussions held by Garvey et al. (2018) and Zahid et al. (2022). The authors mention that performance characteristics linked to revenue are positively related to adopting socio-environmental practices.

5 CONCLUSION

The results achieved in this study showed that companies with family members at the head of the top executive board adopt fewer practices related to the SDGs in the social dimension. On the other hand, the findings indicate that the fact that the company is family-owned or controlled by family members is not related to the practices of the SDGs in the social, economic, and environmental dimensions. Additionally, the findings elucidate that family-run

companies are unrelated to using the SDGs when considering the economic and environmental dimensions.

These findings generate some contributions to the literature, especially considering results found by Oudah et al. (2018), Ferreira et al. (2021), Kazancoglu et al. (2021), and Haddoud et al. (2021) since it was concluded that family control and family management companies do not adopt, at a higher-level, practices related to the SDGs relative to non-family companies. Thus, the discussion is complemented. Brazil, recognized as an environmental power, has an environment that allows companies - even if not family, without family control and family management - to adopt socio-environmental actions.

The findings of this research also contribute to society, noting that the companies that participate in the CSI portfolio have acted with greater sensitivity and responsibility concerning the economic, social, and environmental dimensions and have stood out concerning companies from some countries. Besides, one can say that the results can help external information users, such as investors and creditors, realize that companies participating in CSI value their commitment to the 2030 Agenda by adopting practices related to the SDGs. Therefore, these users can worry about other aspects related to the companies they want to invest in, such as asymmetry, transparency, and print management.

This study was not exempt from limitations, having been restricted to verifying the mention of the SDGs in the Sustainability Reports and Management Reports published by the organizations, and there was no effective investigation of how the practices related to the SDGs were developed. We also did not verify the prevalence of certain practices over others, nor can we measure them. Also, the study is limited to companies listed in the Corporate Sustainability Index (CSI) without considering companies not participating in the CSI.

In this step, a detailed analysis of the reports is suggested for future research, based on a survey of the practices related to each SDG of companies listed and not listed in the CSI, to compare them. It is also suggested to verify the priority of existing practices in companies and eventual case studies that allow us to investigate how the development of the practices that the company claims to carry out and the adequacy of the correlated SDGs takes place, giving voice to the various social actors involved or benefited by the actions of the organization.

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