Board of Directors on the Strategic Flexibility of Family Businesses

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Abstract

Strategic flexibility is a crucial characteristic for the competitiveness and longevity of companies, especially relevant in the context of family businesses that value the continuity of their business for future generations. This study, therefore, aims to analyze the influence of board characteristics on the strategic flexibility of family businesses. To this end, a survey was conducted with managers from 109 Brazilian family businesses in the food sector through the distribution of an electronic questionnaire. The data were analyzed by grouping them into three clusters based on similarities and characteristics. The clusters were initially compared using non-parametric Mann-Whitney and Kruskal-Wallis tests, as the data do not follow a normal distribution. The results indicate that companies with lower family participation on the board of directors or an equal proportion of family and non-family members exhibit greater strategic flexibility (Cluster 2), compared to the other groups using Mann-Whitney statistics. The cluster comprising companies without a structured board of directors showed the least strategic flexibility (Cluster 1). Similarly, Cluster 3, consisting primarily of companies with more family members on the board of directors, also demonstrated lower strategic flexibility, with no statistical difference from Cluster 2. These findings provide relevant empirical evidence for discussions on governance dynamics in family businesses, specifically the formalization of the board of directors, and insights into the influence of family participation on the board and its

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relationship with strategic flexibility. From a practical point of view, the study suggests that governance with less family participation can favor agility in the company's strategic decisions.
Keywords: Family Business; Strategic Flexibility; Board of Directors; Corporate governance.

1 Introduction

The competitive and intense environment has become increasingly common in the organizational world (Pérez-Pérez et al., 2019; Miroshnychenko et al., 2021), demanding more from companies to maintain their competitiveness (Malik & Garg, 2020; Pérez-Pérez et al., 2019), especially after the uncertainties caused by the COVID-19 pandemic. This scenario requires constant innovation and strategic flexibility, with the risk of companies shutting down if they are not agile enough to adapt to adversities (Donthu & Gustafsson, 2020). Therefore, the study and understanding of managerial qualities that help keep organizations competitive have become essential, and strategic flexibility may be one of them. Strategic flexibility refers to the ability of companies to adapt to challenges imposed by the competitive environment, being strongly related to the speed with which companies react to threats and identify and capitalize on opportunities (Cingöz & Akdoğan, 2013; Nadkarni & Herrmann, 2010; Pérez-Pérez et al., 2019).

In the context of family businesses, the need to keep operations running can be even more intense due to the emotional involvement and the intentions for transgenerational continuity (Razzak et al., 2019; Weissmantel et al., 2023). The characteristics of family participation in the board of directors, in turn, can significantly influence the decision-making process, as the board holds considerable power over the company’s strategic decisions (Sievinen et al., 2020b). This context raises questions about how the family's influence on governance affects strategic flexibility, an essential capability for survival in competitive and uncertain environments, such as the one intensified by the COVID-19 pandemic.

Despite the ongoing efforts in the literature to deepen issues regarding strategic flexibility in the context of family businesses, there are still areas that remain unexplored (see Bokhari et al., 2020; Pike-Bowles et al., 2024), particularly concerning family control and board composition, which are relevant factors for the governance of these companies (Sievinen et al., 2020b). In this regard, further discussions on the dynamics between family members and board professionals may reveal how these interactions influence the agility of strategic decisions in these organizations. Therefore, it is important to understand how the family’s participation in the board of directors relates to the company’s strategic flexibility. With this, the present study aims to **analyze the influence of the characteristics of the board of directors on the strategic flexibility of family businesses.**

Thus, the relevance of this study is highlighted, as discussions regarding the characteristics of the board of directors in family businesses and their effects on the strategic flexibility of these organizations require further understanding. Family members can play an important role in the company’s direction and in how strategic decisions are made (Sievinen et al., 2020a). Sievinen et al. (2020a) found that family participation in the board of directors supports the renewal process, as the family supports and commits to the strategic direction of the business. Moreover, the benefits of this participation can be indirect, through discussions among family members, as well as interactions between the family and managers outside the formal meeting environment.

In the study by Weissmantel et al. (2023), it was found that governance mechanisms may be linked to the strategic flexibility of family businesses. Ahmad et al. (2021) identified that the family influences both the longevity of the business and its ability to innovate. However, there are still uncertainties regarding whether the corporate governance structure of family businesses facilitates or hinders strategic renewal. Therefore, understanding how the family exerts influence over strategic decision-making remains limited (Sievinen et al., 2020b).

Additionally, corporate governance deserves further exploration, especially to clarify its strategic role during crisis management (Calabrò et al., 2021). In this sense, this study contributes to these discussions.

Additionally, this study is relevant as it analyzes the promising landscape of family businesses, which employ approximately 60% of the global workforce (Neckebrouck et al., 2018). In Brazil, these businesses represent around 85% of enterprises, according to research by the Brazilian Institute of Corporate Governance (IBGC, 2018). Internationally, they also represent a significant portion of companies and act as major drivers of the economy (Alves & Gama, 2020; Sievinen et al., 2020a). Given this context, studying these businesses is a fertile area of research.

Finally, this study contributes to the literature on strategic flexibility in family businesses by analyzing how the composition of the board of directors influences strategic flexibility. Practically, the study provides insights for family business managers about the board's profile and how it is linked to the company's strategic flexibility. Furthermore, this study offers a reflection for contemporary organizations on the composition of the board of directors that best supports strategic flexibility.

2 Literature Review

Competitive trends and the rapid and intense digital transformation in recent years have challenged contemporary organizations to remain active. These global patterns require organizations to transform quickly (Pérez-Pérez et al., 2019; Malik & Garg, 2020; Miroshnychenko et al., 2021). In this context, the ability of companies to act with strategic flexibility has become essential for business continuity (Miroshnychenko et al., 2021). When it comes to family businesses, this scenario can be even more relevant, as the weight of business continuity is greater for these companies, being tied to emotional issues and the intention to perpetuate the family legacy for future generations (Zahra et al., 2008; Sievinen et al., 2020a; Weissmantel et al., 2023).

Strategic flexibility encompasses the ability of companies to identify and seize emerging opportunities and respond to threats by quickly adapting to changes imposed by the external environment (Zahra et al., 2008; Cingöz & Akdoğan, 2013; Miroshnychenko et al., 2021). This capability involves identifying new resources and opportunities, enabling agile adaptation that helps organizations stay ahead of their competitors (Nadkarni & Herrmann, 2010; Miroshnychenko et al., 2021).

Moreover, strategic flexibility is closely tied to the development of new products to meet market demands, making it an essential characteristic for the establishment of a company's competitive advantage (Miroshnychenko et al., 2021). Strategic flexibility is also directly related to the speed with which companies react to both opportunities and threats (Nadkarni & Herrmann, 2010; Cingöz & Akdogan, 2013). Companies with high strategic flexibility are able to align their strategies with both internal and external demands, which is crucial for their survival and enables them to respond more swiftly to economic uncertainties (Sievinen et al., 2020a).

Economic market uncertainties have increased in recent years (Cingöz & Akdoğan, 2013), especially with the Coronavirus (COVID-19) pandemic, which forced companies to adapt and innovate quickly as a condition to continue their activities (Donthu & Gustafsson, 2020). Thus, in this new context, strategic flexibility has become a key differentiator for the continuity of business operations. Only agile companies are able to remain operational, as, according to Zahra et al. (2008), if companies do not change their strategies when necessary and fail to innovate continuously, they will become misaligned with customer needs and, consequently, lose market share to competitors.

Furthermore, due to emotional involvement and the particular ownership structures, family businesses are able to adopt more flexible strategies during the pandemic when compared to companies with more formal structures. These businesses are even able to take on greater risks in the face of external threats and crises like the pandemic (Kraus et al., 2020).

In this sense, it is important to identify facilitators of strategic flexibility within organizations, with corporate governance being one of them. Ineffective governance represents a barrier to strategic flexibility (Cingöz & Akdoğan, 2013; Sievinen et al., 2020b). Corporate governance is one of the factors that impacts strategic decisions, and according to Filatotchev and Toms (2006), general factors related to corporate governance can affect strategic flexibility in companies, as bodies such as the board of directors play a key role in guiding long-term strategic direction (Sievinen et al., 2020b).

Although strategic flexibility can be achieved in various ways, family-owned businesses have an advantage due to their more centralized and less hierarchical structure, which can facilitate the implementation of organizational changes. Additionally, family businesses positively influence strategic flexibility (Craig et al., 2014), as the direct involvement of the family in the business tends to positively affect the acceptance of strategic changes by managers (Zahra et al., 2008; Weissmantel et al., 2023). It is worth noting that strategic flexibility may be positively associated with business performance (Zahra et al., 2008; Nadkarni & Herrmann, 2010).

Strategic flexibility is more fluid in family-owned businesses due to their more centralized structure and the absence of formal hierarchy (Craig et al., 2014; Kraus et al., 2020). However, family ownership does not always represent an advantage, as the presence of many family shareholders and directors can lead to conflicts of interest (Kraus et al., 2020). It is important to note that, as organizations grow, the control and management structure is also affected, with companies facing the separation of ownership and management functions. Thus, corporate governance emerges with the aim of overseeing the achievement of company goals and ensuring that the owners' interests are met (Arruda et al., 2008).

Corporate governance utilizes a variety of governance mechanisms to ensure its effective performance, with the board of directors being one of the key elements (El Gammal et al., 2020; Parente & Machado Filho, 2020). The board of directors is a fundamental body for corporate governance, as it not only controls and mitigates opportunistic behavior at all levels of the company but also reduces agency costs and contributes to organizational performance (Parente & Machado Filho, 2020). The board of directors plays a crucial role in the company's strategic direction, being involved in the strategic decision-making process and overseeing long-term management (Sievinen et al., 2020b). However, in family-owned businesses, the boards of directors may have a different structure, with members predominantly from the family or even a specific board for the family, which alters the way business is conducted (Vazquez et al., 2020).

There is evidence that strategic flexibility can be stimulated by internal aspects of the organization, such as corporate governance (Filatotchev & Toms, 2003; Madison et al., 2015). Family members who serve on the board of directors exert significant influence on the direction of strategic changes, both during meetings and outside of them (Sievinen et al., 2020b). However, the differentiated hierarchy in family businesses can facilitate the implementation of strategic changes (Craig et al., 2014; Sievinen et al., 2020b).

However, uncertainties arising from a more volatile environment, such as the one triggered by the COVID-19 pandemic, can intensify the need for strategic flexibility, requiring increasing strategic agility from contemporary organizations, which directly impacts their results and future (Hsu & Lai, 2022). However, while some studies have reported that formal governance, such as the board of directors, may be associated with monitoring costs and an inability to absorb external changes, such as strategic flexibility (Huang et al., 2014), others

report that, in the context of family businesses, there is a tendency toward cognitive rigidity in business plans, resulting in limited strategic flexibility (Bruneel et al., 2022). This type of flexibility, however, tends to be more easily achieved when there are external members on the board of directors (see Bruneel et al., 2022). In light of this, there is no consensus on how corporate governance aspects influence strategic flexibility. Based on this issue, a hypothesis was formulated to be tested in this research.

H_1: Family businesses with a higher involvement of family members on the board of directors tend to have greater strategic flexibility compared to those with fewer family members.

The issue of hypotheses, statistically formulated along with the tests conducted, is discussed in the next section. However, it is scientifically proposed that the null hypothesis (H0) assumes that there are no differences between the elements under analysis (Pestana & Gageiro, 2014). On the other hand, if there are statistically significant reasons, this null hypothesis may be rejected in favor of the alternative hypothesis, indicating to the researcher that there is a difference between the elements being analyzed, providing an opportunity to investigate the reasons behind it. Indeed, there is no scientific way to choose one of the alternative hypotheses as valid unless there is a method for measuring the effectiveness applicable to each of the alternative courses of action.

In this article, care is taken to avoid Type I errors (rejecting the null hypothesis when it is true) by setting the significance level of the test or the size of the critical region. However, the understanding from the literature indicates differences when there is a greater participation of family members in the company's board of directors. In other words, it is expected that, through the power of the test, this investigation will ultimately accept hypothesis H1, described earlier, as being true.

3 Methodological Procedures

In order to achieve the objective proposed in the article, a descriptive, quantitative, and survey-based research was conducted. The study population consisted of Brazilian family-owned companies in the food sector, with ownership and management located within Brazilian territory. The respondents included both family and non-family members, as long as they held management positions such as Controller, Chief Executive Officer (CEO), Chief Financial Officer (CFO), Vice President, Owner, Directors, General Managers, and Operations Managers, as they were directly involved with the family.

The choice of the food sector is primarily justified by the constant need for these companies to innovate and remain competitive. It is a dynamic sector that must comply with a series of regulations and safety restrictions due to the handling of products for human consumption. This scenario, therefore, is well-suited to analyze strategic flexibility (Zahra et al., 2008). Moreover, the choice of this sector is further supported by the Brazilian context, as the Ministry of Development, Industry, Commerce, and Services (MDIC) reported significant advancements in the food sector, with an 8.4% growth compared to 2023 (see MDIC, 2024).

Family businesses were the focus of the study, given that approximately 85% of Brazilian businesses are family-owned (IBGC, 2018). These businesses also play a crucial role in the global economy, serving as major drivers of economic development (Alves & Gama, 2020; Sievinen et al., 2020a). The study aimed to reach a population of 1,000 Brazilian family businesses in the food sector, using the EMIS® - Emerging Markets Information Service database. To do so, a Microsoft Forms® questionnaire was sent out via LinkedIn®. The questionnaire consisted of 10 questions, of which 5 were related to strategic flexibility, 1 to the board of directors, 2 to the respondent's characterization, and 2 screening questions to confirm

whether the company was a family business. The criterion adopted to define a "family business" was based on the definition of Vazquez et al. (2020), where the family must hold at least 20% control of the company and have family members involved in the company's board of directors or management.

Despite the initial goal of reaching 1,000 family businesses, only 426 (42.60%) were potential respondents, primarily due to the lack of active profiles on the LinkedIn® professional networking site and the non-acceptance of connection invitations. After 65 days of data collection, from 09/02/2020 to 11/05/2020, and the sending of two reminder emails at intervals of approximately 15 days, 125 (29.34%) complete questionnaires were received. However, 8 respondents had to be removed as they did not meet the family business criteria established by Vazquez et al. (2020), along with another 8 respondents who could not provide information regarding the company's board of directors, resulting in 109 valid responses. Therefore, considering the 426 potential respondents, the final valid response rate was 25.58% (109).

3.1 Measurement and analysis

The study used the instrument developed by Nadkarni and Herrmann (2010) to measure **Strategic Flexibility (SF)**. This instrument consists of 5 questions, measured using a 5-point Likert scale. It is important to note that the instrument was translated and underwent a pre-test process, with adaptations made during translation. This process was reviewed by several management accounting professionals, including three PhD professors in the management field, a graduate program academic, as well as professionals from two family-owned companies and one non-family-owned company.

To measure **Family Participation in the Board of Directors**, a multiple-choice question was used to determine whether the family has a larger, smaller, or equal share of the board seats. The questionnaire also included two questions to characterize the companies: **their size and age**. The company's size was defined by the number of employees, following the classification by the **Brazilian Service of Support for Micro and Small Enterprises (SEBRAE, 2013)**. The companies were classified as follows: Microenterprise: when the company has up to 19 employees; Small Enterprise: with 20 to 99 employees; Medium Enterprise: with 100 to 499 employees; Large Enterprise: with more than 500 employees.

To proceed with the statistical analysis of the data, the software Microsoft Excel® and SPSS® were used. Each observation belongs to a specific cluster, is similar to all other observations within it, and is different from observations in other groups. Cluster analysis helps to find the best structure characterized by the greatest similarity and dissimilarity between the data, thereby creating the most effective grouping of information (Sinaga & Yang, 2020).

In order to identify the main characteristics of the clusters, the family's participation in the company's board of directors was considered. Based on this, three clusters were formed to verify the similarity in strategic flexibility among these companies. The clustering of the companies was done by separating those with a formal board of directors from those without one, forming a group of 22 members. Then, two new groups were formed, combining those with fewer family members on the board (22) and an equal number (10), forming a new group with 32 elements. Finally, the companies with the highest number of family members on the board (51) were grouped. The scheme in Figure 1 shows the formation of the clusters.

Figure 1
Cluster diagram of sample companies

$$\text{Sample} \begin{cases} \text{No Board} \Rightarrow Cluster\ 1 \\ \text{With Board} \begin{cases} \begin{cases} \text{Fewer family members} \\ and \\ \text{Equal number of family members} \end{cases} \Rightarrow Cluster\ 2 \\ \text{More Family Members} \Rightarrow Cluster\ 3 \end{cases} \end{cases}$$

Source: Research procedures (2024).

The adherence or non-adherence of the treatment variable SF (Strategic Flexibility) to the normal curve allows defining the type of hypothesis test to be performed, that is, parametric or non-parametric. Given the presence of data normality, it is possible to establish the hypotheses. Thus, in Figure 2, the diagram of the formation of statistical hypotheses for the research is presented.

Figure 2
Research statistical hypotheses formation diagram

Parametric Hypothesis Test	Non-Parametric Hypothesis Test
$H_0: \mu_A = \mu_B \ \ vs \ \ H_1: \mu_A \neq \mu_B$	$H_0: F(X_A) = F(X_B) \ \ vs \ \ H_1: F(X_A) \neq F(X_B)$
$H_0: \mu_A = \mu_B = \cdots = \mu_k$ vs $H_1: \exists i,j: \mu_i \neq \mu_j$	$H_0: F(X_A) = F(X_B) = \cdots = F(X_k)$ vs $H_1: \exists i,j: F(X_i) \neq F(X_j)$

If the data are normally distributed N(μ;σ), with known mean and standard deviation, one can opt for analysis using the Student's T-test to compare the means of two groups (clusters) or use the ANOVA framework for more than two groups, allowing post-hoc tests if ANOVA indicates differences among groups. If the data are not normally distributed, non-parametric tests are used, which are guided not by the mean, but by the median. The non-parametric Mann-Whitney test serves as a substitute for the parametric T-test, while the non-parametric Kruskal-Wallis test serves as a substitute for the parametric ANOVA test.

If the variances are not homogeneous, the variable under study can be transformed either to homogenize its variance or to normalize the variable (Marôco, 2021). In this case, hypothesis tests should be conducted using the transformed variable. Marôco (2021) cautions that depending on the transformation, the conclusions drawn from the transformed variable may not be directly translatable to the original variable.

4 Results Analysis

In line with the research objective, 109 family-owned companies in the food sector were analyzed. Of these companies, 77% are medium-sized (33%) and large-sized (44%), and 46.80% have been in operation for over 40 years. Table 1 provides a detailed description of the size and years of operation of these companies:

Table 1
Companies size and age

		N	**%**			**N**	**%**
Size	Microenterprise	2	1.80	Age	Up to 01 year	1	0.90
	Small Enterprise	21	19.30		Between 05 and 10 years	5	4.60
	Medium Enterprise	36	33		Between 10 and 15 years	6	5.50
	Large Enterprise	48	44		Between 15 and 20 years	12	11

	Could not answer	2	1.80		Between 20 and 25 years	14	12.80
					Between 25 and 30 years	11	10.10
					Between 30 and 40 years	9	8.30
					Between 40 and 50 years	12	11
					Over 50 years	39	35.80
	Total	**109**	**100**		**Total**	**109**	**100**

Captions: N: Number.
Source: Research data

Based on Table 1, it is possible to observe that the companies analyzed are mostly medium to large-sized and have been in the competitive market for a long time. Regarding the board of directors, Table 2 presents the descriptive statistics.

Table 2
Board of directors description

Board of directors	**N**	**%**
No board	26	23.90
Fewer Family Members in the Board	22	20.20
Equal Number	10	9.20
More Family Members in the Board	51	46.80
Total	**109**	**100**

Captions: N: Number.
Source: Research data

Based on the sample investigated, it can be seen in Table 2 that 23.90% of the companies do not have a board of directors. Although 77% of the sample consists of medium to large-sized companies, there is still a percentage of smaller companies, which justifies the absence of a board of directors in some of them. Additionally, it is observed that 46.80% of the companies have more family members on the board, while 20.20% have fewer or no family members. Only 9.20% of respondents reported having an equal number of family and non-family members on the board of directors.

Continuing with the data analysis, Chart 1 presents the characteristics of the three clusters formed, based on the grouping of the set of variables, where the groups were formed according to similarities in the composition of the board of directors.

Chart 1
Sample companies groupings description

Grouping	**Cluster 1**	**Cluster 2**	**Cluster 3**
Board	Grouping of companies without a board of directors.	Grouping of companies with fewer family members on the board or an equal number.	Companies with a board of directors with more family members.
Companies by group	**26**	**22+10=32**	**51**

Source: Research data.

As evidenced in Chart 1, Cluster 1 consists of companies that do not have a board of directors, making up 23.8% of the sample. The second cluster, formed by companies with fewer family members and an equal number of family and non-family members on the board of directors, accounts for 29.4% of the sample. Finally, the third group, consisting of companies with a higher number of family members on the board of directors, contains 46.8% of the sample.

Initially, the Kolmogorov-Smirnov test was performed to verify the adherence of the data for the variable SF (Strategic Flexibility). The KS statistic=0.079 (p-value=0.095)

indicated that the data do not follow a normal distribution, suggesting the use of non-parametric tests.

The Kruskal-Wallis method is given by the number of times an observation from sample A precedes an observation from sample B. After all observations have been ordered in ascending order, the Mann-Whitney U statistic is calculated. This statistic is formulated by $U = min(U_A, U_B)$ sendo: $U_A = n_A n_B + \frac{n_A(n_A+1)}{2} - R_A$ to sample A in which the A order is given by $R_A = \sum_{j=1}^{n_A} \quad r_{1j}$ e $U_B = n_A n_B + \frac{n_B(n_B+1)}{2} - R_B$ to sample B in which the B order is given by $R_B = \sum_{j=1}^{n_B} \quad r_{1j}$.

When comparing Groups 1 and 2, the Mann-Whitney statistic showed U=301.5 with a p-value=0.036 for a one-tailed test, indicating a significant difference in ranks between Clusters 1 and 2. Cluster 1, consisting of 26 participants, had an average rank of 25.10 and a total rank sum of 652.50 points. Cluster 2, made up of 32 participants, had an average rank of 33.08 and a total rank sum of 1058.50 points, indicating higher strategic flexibility. This difference is statistically significant, so the null hypothesis H_0 is rejected in favor of the alternative hypothesis.

The comparison of Clusters 1 and 3 yielded the U statistic=578.50 with a p-value=0.183 (one-tailed), indicating a difference in ranks between the groups. Group 1 (26 elements) had an average rank of 35.75 points and a total rank sum of 929.50 points. Group 3, with 51 elements, had an average rank of 40.66 points and a total rank sum of 2073.50 points. This difference is not statistically significant, so the null hypothesis $H_0: F(X_1) = F(X_3)$ is not rejected.

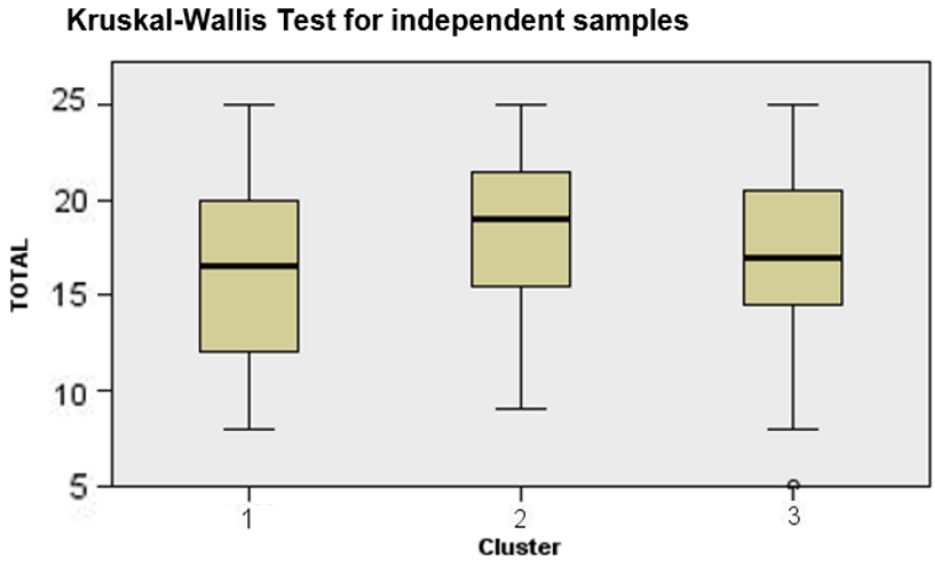
The test between Cluster 2, with 32 elements, and Cluster 3, with 51 elements, resulted in a U statistic of 710.00 with a p-value of 0.162 (one-tailed). Cluster 2 had an average rank of 45.31 points and a total rank sum of 1450.00 points, while Cluster 3 had an average rank of 39.92 points and a total rank sum of 2036.00 points. The difference between the groups is not statistically significant, so the null hypothesis $H_0: F(X_2) = F(X_3)$is not rejected.

The Kruskal-Wallis test, involving more than two groups, begins by sorting all observations from different samples in ascending order in a single dataset (global sample). Each observation is then assigned its rank in the global sample while keeping track of the original sample from which the observation came. In the absence of ties, the rank of an observation is determined by the average of the ranks that the tied observations would have had if there had been no ties. Finally, the H statistic is calculated (Siegel & Castellan, 1988) as follows:

$$H = \frac{\frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{R_j^2}{n_j} - 3(N+1)}{1 - \frac{\sum_{i=1}^{g}(t_i^3 - t_i)}{N^3 - N}}; \; R_j = \sum_{i=1}^{n_j} r_{ij}$$

If only two samples are being tested, the result becomes similar to the Mann-Whitney test (Marôco, 2023). As a result of the Kruskal-Wallis test, which yielded a value of H=3.068 with a p-value of 0.216 > 0.05. Figure 3 presents the comparisons from the test.

Figure 3
Kruskal-Wallis Test for independent samples.



Source: Research data.

In the Figure 3, it is noticeable that cluster 2 has superior Strategic Flexibility compared to cluster 1. Although there is a visual difference between the ranks, it was not statistically confirmed that there are differences between clusters 1 and 3, or between clusters 2 and 3. The superiority of cluster 2 over cluster 1 was only statistically significant when compared group-by-group. However, when considered together, this perception was not observed.

In order to verify the possibility of using the ANOVA test, the transformation indicated by Marôco (2021) was applied to the specific data at hand. Marôco suggests the $Log\ Y$ transformation, i.e., $Log\left(\frac{1+FE}{1-FE}\right)$, using base 10 logarithm (Cross base). The data were normalized within the range [-1, 1], meaning $-1 \leq \underline{FE} \leq 1$. The transformation of the variable is an attempt to normalize the data distribution and homogenize the variances, invoking the robustness of parametric methods to mild violations of their assumptions.

Normality was achieved (KS=0.063; p-value=0.200, with Lilliefors significance correlation). However, this procedure proved to be ineffective, as the ANOVA resulted in F=1.456 with a p-value of 0.238>0.05, indicating no differences between the groups. Although unnecessary, given the results obtained, post-hoc Tukey and Scheffé tests were conducted, which obviously showed no significant differences at the 95% confidence level. The Student's t-test was applied in the group-by-group analysis, once again confirming what had already been achieved by the Mann-Whitney test, that is, now in the parametric format, the result was:

$$H_0: \mu_1 < \mu_2;\ H_1: \mu_1 = \mu_3; H_1: \mu_2 = \mu_3$$

Finally, the results did not change when compared to the non-parametric analysis, thus confirming that cluster 1 is distinct from cluster 2, indicating lower strategic flexibility in cluster 1, which consists of companies without a board of directors.

5 Results Discussion

The data analysis revealed that the data did not follow a normal distribution, requiring the use of non-parametric hypothesis tests, specifically the Mann-Whitney and Kruskal-Wallis tests. The results showed significance in the differences of strategic flexibility ranks only

between clusters 1 and 2. The Mann-Whitney test confirmed this significance. As a complementary analysis, the strategic flexibility values were transformed into a scale that adjusted to the normal distribution, but this procedure only confirmed the results obtained with the non-parametric methods.

The results allow us to infer that companies in cluster 2 have greater strategic flexibility compared to those in cluster 1. Cluster 3 showed no significant difference compared to cluster 2, suggesting a similarity between the two. However, this similarity also extends to clusters 1 and 3, preventing the assertion of significant differences between them, even though a distinction may be visually perceived. Therefore, the research hypothesis could not be confirmed. Despite an observed difference only between companies in clusters 1 and 2, strategic flexibility was higher in group 2, which consists of companies with a family presence equal to or lower than that of non-family members.

Cluster 1 appears to group companies with the lowest strategic flexibility, which is the cluster where companies lack a board of directors, suggesting that the absence of a board also hinders strategic flexibility. Cluster 3, on the other hand, consists of companies with a board of directors that has a higher family involvement. Cluster 2 also includes companies with a board of directors, but with less family involvement or a family involvement similar to that of non-family members. These results align with the study by Bruneel et al. (2022), which indicates that boards of directors composed of external members tend to favor a short-term strategic orientation, promoting more flexible actions and behaviors within the company.

Additionally, it is noteworthy that a lower presence of family members on the board may reduce internal conflicts but tends to increase conflicts of interest, impacting strategic decisions (Kraus et al., 2020). Cluster 1, consisting of companies without a board of directors, exhibited the lowest strategic flexibility. The absence of a board, which serves as a tool for mitigating conflicts of interest and provides a formal space for aligning the organization's strategies, may explain the lower average flexibility observed in cluster 1.

Cluster 2, which demonstrated greater strategic flexibility, is composed of companies with boards of directors where the family presence is either equal to or lower than that of non-family members. These findings suggest that a higher presence of family members may limit the agility and adaptability of companies in dynamic contexts.

These results highlight the importance of the presence of family members in the board composition for strategic flexibility, corroborating the study by Sievinen et al. (2020b), which points out that family involvement in the board of directors can significantly influence the strategic decision-making process. Furthermore, it is noteworthy that the findings align with the study by Pérez-Pérez et al. (2019), which identified the existence of heterogeneous groups of family businesses in terms of strategic flexibility.

In light of these results, the study provides empirical evidence that contributes to the discussion of governance dynamics within family businesses, primarily offering insights into the influence of family members' participation in the board of directors and how this is linked to strategic flexibility. From a practical standpoint, the study reports that governance with lower family involvement may promote agility in the company's strategic decision-making.

Additionally, the results contribute to the literature by clarifying how family involvement impacts strategic flexibility in family businesses, an aspect that has been underexplored in academic studies (Sievinen et al., 2020a). Furthermore, the study highlighted the importance of the board of directors for organizations, revealing that the group with the lowest strategic flexibility was precisely the one without this board (cluster 1).

6 Final Considerations

Although the research hypothesis was not confirmed, the results of the study achieve the objective of analyzing the influence of board characteristics on the strategic flexibility of

family businesses, an analysis conducted through clusters formed by similarities between them (Figure 3). The results indicate that the group of companies with fewer family members or an equal distribution between family and non-family members on the board shows the highest average of strategic flexibility (cluster 2). This difference in ranks, later confirmed by the mean, was statistically significant when compared between clusters 1 and 2. Thus, lower family participation on the board seems to contribute to greater strategic flexibility, likely due to a reduction in conflicts of interest.

On the other hand, cluster 1 revealed the lowest strategic flexibility, which can be attributed to the lack of a board of directors. This absence hinders problem-solving and the mitigation of conflicts of interest. Cluster 3, which includes most of the companies with a high number of family members on the board, showed mixed results, without the predominance of a specific characteristic regarding strategic flexibility. However, statistical significance was not achieved.

This study responds to the call made by Sievinen et al. (2020a) for further research on family involvement in the strategic flexibility of family businesses, an area that still requires deeper exploration. Furthermore, the study advances the discussions on the uncertainties related to corporate governance structure and its influence on strategic flexibility. Additionally, this study contributes to the existing literature on strategic flexibility in family businesses, providing a deeper understanding of how the composition of the board of directors affects this flexibility.

The findings of this study offer a counterpoint to research that tends to treat family businesses as homogeneous entities, promoting a more detailed approach to managerial decisions related to strategic flexibility in this context. In terms of practical contributions, the results provide valuable insights for family business managers, elucidating the influence of family member involvement in the board of directors and its relationship with strategic flexibility. The study also innovates by presenting, through clusters, board composition arrangements that appear to be more favorable for family businesses to achieve strategic flexibility.

Among the limitations of the study, it is highlighted that the research was conducted in a single economic sector (the food industry), and as such, the effects of this study cannot be generalized to other sectors. Additionally, the generalization of the results is also limited by the low response rate. However, these limitations do not invalidate the findings of this study and serve as a foundation for future research on the topic.

Finally, there are significant opportunities for future research that analyzes strategic flexibility in family businesses from other sectors, using varied statistical methods to enrich the understanding of the phenomenon in diverse contexts. Furthermore, exploring other factors such as organizational culture, family dynamics, and governance structure could provide a more comprehensive view of how these elements influence strategic flexibility.

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APPENDIX A – Applied Questionnaire

Dear Manager,

This questionnaire is part of an academic study aimed at analyzing the influence of the characteristics of the board of directors on the strategic flexibility of family businesses. Your participation will contribute to the generation of academic knowledge and the success of this study. Please answer the following questions based on your perspective.

The following statements relate to your assessment of how flexible the strategic planning process of your company may be. Please indicate to what extent you agree with each statement by selecting a number on a 5-point scale, where:

1 - Strongly Disagree
2 - Disagree
3 - Neither Agree nor Disagree
4 - Agree
5 - Strongly Agree

Strategic Flexibility					
SF1- We regularly share information and costs among business activities.	1	2	3	4	5
SF2- We frequently change our strategies and structures to benefit from environmental changes.	1	2	3	4	5
SF3- Our strategy emphasizes the exploration of new opportunities arising from environmental variability.	1	2	3	4	5
SF4- Our strategy reflects a high level of flexibility in managing political, economic, and financial risks.	1	2	3	4	5
SF5- Our strategy emphasizes versatility and capability in the allocation of human resources.	1	2	3	4	5

Board of Directors	
Board- What is the composition of the Board of Directors in the company you work for?	a) Greater participation of family members; b) Lesser participation of family members; c) Equal number of family and non-family members on the Board of Directors; d) Our company does not have a Board of Directors.

Respondent's Characterization

RC1- Approximately how many employees work for the company?

( ) up to 19 employees
( ) from 20 to 99 employees
( ) from 100 to 499 employees
( ) from 500 to 999 employees
( ) over 1000 employees
( ) I do not know

RC2- How old is the company?

( ) Up to 01 year

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( ) Between 05 and 10 years ( ) Between 10 and 15 years ( ) Between 15 and 20 years ( ) Between 20 and 25 years ( ) Between 25 and 30 years ( ) Between 30 and 40 years ( ) Between 40 and 50 years ( ) Over 50 years