



Editor-in-Charge: Jorge Katsumi Niyama
Jomar Miranda Rodrigues
Associate Editor: Pedro Miguel Alves Ribeiro Correia
Evaluation Process: Double Blind Review by SEER/OJS

Relationship between Governance in Federal Public Universities and Socioeconomic Variables from Regression with Panel Data from the perspective of Hierarchical Modeling with Repeated Measures

SUMMARY

Objective: to analyze whether the level of governance exhibited by federal public universities can be influenced by the socioeconomic variables of the environment in which they are located.

Method: descriptive, documentary and quantitative approach using the TCU Management and Governance Index (iGG) resulting from a survey of 69 public federal universities in 2014, 2017 and 2018. Using linear regression with panel data from a hierarchical repeated measures modeling perspective, with iGG as the dependent variable and VAR_GDP, ISS, GINI, IDHM, and IGC as independent variables.

Originality/Relevance: the study takes into account elements of the institutional environment of federal public universities. In this sense, it helps to understand how the environment can contribute as a driving force in the search for solutions to the problems of shared management in these institutions or in the optimization of the positive aspects identified.

Results: the tests showed a weak correlation between the iGG and the selected independent variables (VAR_GDP, ISS, GINI, IDHM, and IGC) (rejection of H₀) and indicated that the iGG is influenced by the environment (state and region) and shows a strong correlation with the number of years of surveys.

Theoretical/Methodological Contributions: the governance structures adopted by the federal universities are not isolated elements of the environment in which they are inserted. Although they are legally formulated administrative structures, the environment can influence how they provide public services.

Keywords: Public university, University governance, Evaluation. Indicators, Regression with panel data.

Ricardo Viotto

Federal University of Ceará, Ceará, Brazil
ricardoviotto@yahoo.com

Roberto Sérgio do Nascimento

Universidade Federal do Ceará, Federal Court
of Auditors, Ceará, Brazil
robertosn@tcu.gov.br

Received: September 06, 2023

Revised: May 08, 2024

Accepted: May 08, 2024

Published: June 30, 2024



How to Cite (APA)

Viotto, R., & Nascimento, R. S. (2024). Relationship between Governance in Federal Public Universities and Socioeconomic Variables from Panel Data from the Perspective of Hierarchical Modeling with Repeated Measures. *Revista Contabilidade, Gestão e Governança*, 27 (1), 94-127. <http://dx.doi.org/10.51341/cgg.v27i1.3136>

1 INTRODUCTION

The drive to strengthen governance has taken on strategic importance in the private and public sectors (Riofrio et al. 2020). Since they were endowed with didactic-scientific, administrative and financial autonomy by Article 207 of the Federal Constitution of 1988 (Constitution of the Federative Republic of Brazil, 1988/2022), Brazilian universities have lived with the challenges of improvement cycles, subjecting themselves to management tools to improve the quality of the organization's functioning (Arslan & Alqatan, 2020).

Theories such as those of asymmetric information markets, agency and stakeholders emphasize the authority and autonomy of the organization, the concentration of information and the possible conflicts of interest that may arise from the relationship between the principal and the agent. In general, studies dealing with governance in higher education institutions (HEIs) tend to focus on the motivation for adopting governance practices in public universities (Gesser & Melo, 2023), examining their interrelation with academic rankings (Wandercil et al., 2021) or evaluating governance mechanisms (Siedschlag & Lana, 2020).

Given the relevance of the topic, the Federal Court of Auditors (TCU) has been promoting surveys on public administration and management, including in the area of universities, since 2014. The result of this survey, elaborated through the application of questions with structured answers and a self-analysis, allows each evaluated institution, if it so wishes, to promote the improvement of the previously highlighted characteristics. This process aims to reflect the vision of the governance system (disclosure, fairness, accountability and corporate responsibility) from the perspective of each manager. As higher education institutions are located in a very heterogeneous environment, comparing governance outcomes between HEIs in different regions of the country can also provide data that can inform their performance.

In this scenario, and taking into account the discretionary nature of the public institution's self-assessment and the treatment of the data by the TCU, the present study has the

following research question: What influence do socioeconomic variables have on the level of governance of federal public universities? As a general objective, it is intended to assess the influence of socio-economic variables on the level of governance of federal public universities. As a specific objective, it is proposed: to understand the construction and systematic application of the TCU's Governance Management Index (iGG) to assess the governance of federal public universities, to identify socioeconomic indicators that may influence the governance level of these educational institutions, and finally to analyze a possible relevant relationship between the iGG and the socioeconomic variables selected in the study.

To carry out this investigation, it was assumed that IFESs are not isolated from the economic, political and social environment in which they are embedded and that they would therefore try to adapt to these specificities (Sales et al., 2020), even if they are institutions established by law. In other words, both public and private sector organizations are open systems that are in constant and dynamic interaction with their environment, which highlights the importance of hybrid management, as mentioned by Frolich et al. (2019), Martínez and Fernandez (2021).

To this end, in addition to this introduction, the work is divided into the following sections: theoretical framework, in which the main aspects of college governance are found, the creation of the TCU Governance Index and previous studies on governance in universities are addressed; methodological procedures applied, analysis and discussion of the results obtained and the respective concluding observations.

2 THEORETICAL REVIEW

2.1 Corporate and public governance: discussions of approaches

In the theoretical field, there are numerous efforts to appreciate the concept of governance, which is strongly influenced by the interpretative and radiant breadth of the term

(Rose-Ackerman, 2017). Etymologically, the word governance comes from the Greek κυβερνάω (kubernáo), and Plato used the term in his work "The Republic" in the sense of leading, guiding, governing. Currently, the word remains controversial, and the observation made by Silva et al. (2023) is striking that the word governance, in contrast to governing, would be more complete and qualifying, i.e. it has a broader character representing attributions, properties, means and processes, which often makes it difficult to distinguish between the two. The precursor to the use of governance in the modern sense is attributed to Ronald Coase in his book *The Nature of the Firm*. Coase (1937) argued that the market is not the only possible coordination mechanism and that in some situations coordination can be achieved more effectively through private agreements and governance institutions.

The literature points to four historical milestones in the development of corporate governance. The first goes back to the activist Roberto Monks in the mid-1980s, when he mobilized shareholders to play an active role in companies (Vilela et. al, 2015); the second, which took place in 1992, is characterized by the publication of the report of the Committee on the Financial Aspects of Corporate Governance (Cadbury Report, 1992), P, which sets out the principles of good corporate governance; the third is represented by the creation of the OECD and the establishment of a set of rules and guidelines aimed at corporate governance (Oliveira, 2020); the fourth concerns the U.S. Sarbanes-Oxley Act of July 30th, 2002, whose orders aim to assign responsibilities and restore the credibility and integrity of capital.

Although governance was initially applied in private organizations, it has gradually been introduced in public institutions with the necessary adaptations. For example, the International Federation of Accounts (IFAC) highlighted in Study 13 (IFAC, 2001) that although there are differences between public and private governance structures that make it impossible to establish a single recommendation model, there are principles that are compatible with all organizations.

In Brazil, the institutionalization of governance structures began with the Federal Constitution of 1988, Article 1 (Constitution of the Federative Republic of Brazil, 1988/2022). In the area of Brazilian norms, the inflation of legislation proves the legislator's interest in strengthening governance - highlighting the LRF -, the Public Accounting Law, state-owned enterprises and the federal government's governance policy through Federal Decree No. 9.203/2017 (2017). The latter instrument reiterates the concept of governance as "a set of command, strategy and control mechanisms established to assess, direct and monitor management in order to carry out public policies and provide services in the interests of society". In particular, concerning the variable of public policies, it is worth remembering the association of Aguiar Filho et al. (2019), who associate effective governments with those that are more likely to implement policies that benefit human development than those that do not.

Prior to Decree No. 9,203 (2017), the TCU published the Basic Governance Framework, currently in its 3rd edition (TCU, 2020), in which it defines public governance "as a set of measures for directing, monitoring and promoting organizations that encompass the relationships between society, management, employees or employees of control bodies". For the Court of Audit, it "essentially comprises the command, strategy and control mechanisms established to assess, direct and monitor the performance of management to implement public policies and deliver services of social interest" (TCU, 2020).

The literature again emphasizes the importance of interaction and complementarity between different governance systems in different contexts. Permeability is a feature of governance systems that allows mutual influence between different levels of governance, while complementarity means convergence between different governance systems to improve the effectiveness of public policy (Oliveira, 2020).

In addition to the permeability and complementarity between the different governance systems, Frolich et al. (2019) emphasize the importance of hybrid management in internal

governance as a mechanism to strengthen the strategic capacity of public universities, to promote stakeholder participation and collaboration in strategic decision-making processes, and to identify a balance between instrumental and cultural perspectives. Ultimately, they conclude that changes in internal arrangements alone are not sufficient to drive change in HEIs and that it is necessary to implement policy instruments that promote effective policy coordination at a systemic level (Martínez & Fernandez, 2021).

Apart from this, the studies show progress in the discussion process based first on the simple understanding of the terminology for the effective use of its significant collaborators in both the private and public sectors (Frolich et al., 2019; Soares et al., 2019). Concerning this last aspect of the investigation, numerous advances have been noted in the legal field (Constitution of the Federative Republic of Brazil, 1988/2022; Federal Decree No. 9.203/2017, 2017; Complementary Law No. 101/2000; Law No. 13.303/2016), as well as studies of the governance structures adopted (Bleiklie & Michelsen, 2019; Boer & Maassen, 2020; Saiti et al., 2018). In the current phase, research seeks to identify possible relationships with external scenarios (Ramírez-Gutiérrez et al., 2020), suggesting a possible correlation between them and the adopted governance structures.

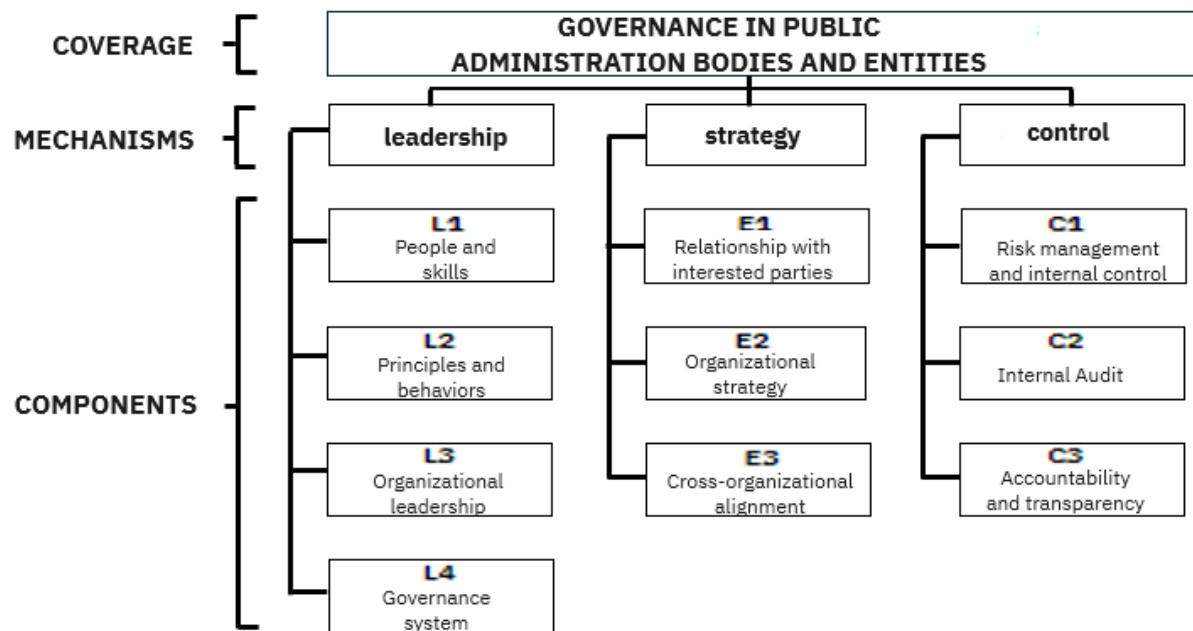
2.2. Governance model proposed by the TCU for the evaluation of the bodies and entities of the Federal Public Administration

In order to systematize information about public governance in direct and indirect public administration entities and to identify possible vulnerabilities, the TCU has been promoting, since 2014, a survey on public governance itself and the management of acquisitions. As of 2017, it unified governance and management into a single self-assessment instrument: the Integrated Public Governance Questionnaire. This integration enabled a comprehensive

analysis of the matter in all areas of practice, aiming to involve both the Court and other interested parties, as can be inferred in Figure 1.

Figure 1

Components of TCU's governance mechanisms



Source: Components of TCU Governance mechanisms (TCU, 2020).

The assertions used in the formulation of the questionnaire (checklist) represent the practices of good governance and good management that can be implemented by any organization. They aim to determine the maturity level of organizational public governance, which includes the mechanisms of leadership, strategy and control. The model is based on the CSA (control self-assessment) method to collect information on the maturity of governance and management capacities.

The answers, given by the institutions, form the iGG, a thermometer that measures the maturity of federal public organizations. The monitoring and evaluation of governance, as well as the responsibilities for its decisions, the measurability or description of the activities carried out by the public entities, translated by economic and social indicators, can have a significant

impact on planning and provide a broader view of the institution of public policies (Frolich et al., 2019).

However, as Buta and Teixeira (2020) and Texeira and Gomes (2019) emphasize, one of the main limitations in measuring governance is the definition of its concept. For this reason, as mentioned above, the TCU has developed its own approach to conducting the survey. However, it is still a challenge to relate it to the different levels of efficiency.

Critics of this model of governance and management survey implemented by the TCU argue that the application of a single and homogenized questionnaire to organizations from different segments can lead to normative isomorphism, to the extent that public organizations tend to imitate the practices assessed by the iGG without selectively taking into account their needs and the realities in which they are embedded (Hurtado et al., 2020).

Although the model has been criticized, especially for its budgetary and financial character (Martins et al., 2020; Pasquali et al., 2020), it should not be forgotten that evaluations are always welcome, even when it comes to reformulating the practices implemented, especially in institutions as heterogeneous as public universities. One possible explanation lies in the relationships found between efficiency and governance (Machado & Quiraque, 2023), another in the inclusion of attributes in the iGG aimed at evaluating social, economic and cultural aspects (Jacques et al., 2013).

In the Brazilian case, such types of studies are necessary due to the historical culture that attributes responsibility for public higher education to the federal government. Therefore, the mere mention of the character of coercive and mimetic isomorphism is not necessarily a negative attribute, since the characterization as autarchies and foundations already allows them a certain malleability in the fulfillment of their objectives.

2.3 Previous studies

According to the literature (Frolich et al., 2019; Marcovitch, 2018; Soares et al., 2019), the construction of specific performance indicators is one of the ways to improve the management and governance of universities (GU). For Lugoboni et al. (2021), both structural and socio-economic indicators are useful tools for compliance, monitoring strategic objectives and evaluating these processes, in addition to playing a fundamental role in monitoring public policies and social requirements (Martínez & Fernandez, 2021).

The indicators also show that governance practices related to intellectual capital contribute significantly to increasing the competitiveness of universities and the country (Yudianto et al., 2021). According to Rahayu et al. (2018), they not only contribute to the image of the institution, but also promote credibility and citizen participation as well as transparency, responsibility and accountability. For Marcovitch (2018), the monitoring of college performance also plays a crucial role in the college's dialog with the government in terms of accountability, as it can provide institutional governance with indicators that can be used to justify the investments made. In contrast, González and Lopes (2020) consider that the emphasis on performance indicators and quality rankings can negatively influence the way in which teaching, research and consultancy activities are evaluated and can lead to the loss of the social mission of universities and a decrease in the quality of teaching.

Although there are different views on the governance of higher education, it is common to centralize this responsibility with government agencies (Boer & Maassen, 2020), as in the case of Brazil. In addition, it can contribute to the governance of higher education institutions and the standardization of a quality system.

The structures of public universities have also been the subject of comparative studies. Bleiklie and Michelsen (2019), Boer and Maassen (2020), Saiti et al. (2018) found that in Norway and the Netherlands there is a strong trend towards regional governance practices,

while in the United Kingdom and Greece there is a decrease in collective participation in the decision-making process, the use of performance indicators to improve UG and the need for alternative sources of funding. In Denmark, Norway and Sweden, a Scandinavian model of HE organization and governance was also identified, characterized by a strong presence of the state, high public investment and policies focused on inclusion and social justice. However, similar to what Boer and Maassen (2020) observed, governance in each country is shaped by local factors, such as the national political and administrative system, the complexity of HEIs and the involvement of stakeholders whose specificities contribute to different patterns of autonomy.

In the context of cooperation between college, business and government, Sułkowski et al. (2019) conducted an analysis of the relationship between French and Polish universities that drive economic development and promote scientific and technological research. They pointed out that effective management of human capital and an entrepreneurial organizational culture play a key role in this process and that macro policy and the level of administrative governance also influence the outcome of this cooperation.

Another relevant aspect in the evaluation of the quality of education is the satisfaction of *stakeholders*, teachers and students.

Regarding faculty participation in GU, the literature suggests that it can lead to greater efficiency in the management of college resources, improvement in the quality of teaching, greater trust and collaboration between administration and faculty, and contribute to the creation of more equitable and transparent policies and practices (Facchini & Fia, 2021). However, this involvement is not homogeneous.

In terms of student engagement in GU processes, their participation can take place in different ways, such as academic councils, committees, student associations and councils (Cornelius-Bell & Bell, 2020). A study conducted in Chilean universities concluded that the

student satisfaction index is an efficient indicator to represent and evaluate aspects related to the quality of education and student well-being (Letelier-Sanz et al., 2021). Considering that it is more often designed by the college itself than by the students themselves (Efimov, 2021), it remains one of the challenges to be overcome in governance based on the principles of autonomy, participation and democracy (Calduch et al., 2020).

Studies indicate that college governance is a growing concern for researchers because of the impact it can have on their chosen structures. The use of indicators is proving to be a useful tool in the analysis and redesign of structures that prove to be less efficient, as well as in the identification of possible associated factors that favor them and hinder the achievement of efficiency (Mammadov & Aypay, 2020; Martínez-Campillo & Fernandez-Santos, 2020; Ramírez-Gutiérrez et al., 2020).

There seems to be a consensus that such organizations, even if they are public, are not isolated from the environment in which they are embedded (Boer & Maassen, 2020), either concerning stakeholders and/or other institutions (companies and governments) (Sułkowski et al., 2019). However, there is resistance in the college environment that such approaches could distort the constitutional nature of public and free education and bring it closer to a process of commodification (Saiti et al., 2018), even if these opinions are not unanimous (Gonzalez & Lopes, 2020; Yudianto et al., 2021). The study takes advantage of this dilemma and seeks to observe possible advances in these relationships – if they take place at all – given that their historical limits in terms of human, material and financial resources are known.

Considering the previous sections, the following research hypotheses are proposed:

- a) H0 – The TCU iGG is not associated with socioeconomic variables.
- b) H1 – TCU's iGG is associated with socioeconomic variables.

3 METHODOLOGICAL PROCEDURES

The research follows a descriptive, documentary and quantitative approach. Regarding the objective, the study was classified as descriptive-deductive, as it uses standardized data collection techniques aimed at discovering the correlation between the variables that determine or contribute to the governance found in the universities in question. Regarding the data collection procedures, the documentary approach was chosen, whose secondary data obtained from the electronic portals were not treated, or which can be re-elaborated according to the objectives of the research.

The selected population was the Brazilian federal universities and the sample consisted of 69 federal universities, distributed in the five regions of the country included in the Management and Governance Index (iGG) of TCU (dependent variable).

To achieve the objectives, the iGG of the analyzed years was compared with selected socioeconomic indicators. In this way, possible correlations between the analyzed indices and the environmental context of the respective units could be determined. In view of the results of the governance indicators published by the TCU, it was assumed that these can be influenced by the environment in which the universities are located.

From a quantitative perspective, the technique of panel data analysis was used and a normality test of the data was conducted. The latter is used to determine the type of correlation coefficient to be used to test the proposed regression model: Spearman or Pearson. Educational data are almost always non-normal, and the first test (Spearman) is the best choice compared to the second (Pearson), as the latter is considered a non-parametric test.

Equation 1 – Panel Data Regression Model: $Y_{it} = \beta_0 + \beta_1IDH_{it} + \beta_2IGC_{it} + \beta_3GINI_{it} + \beta_4VAR-GDP_{it} + \beta_5ISS_{it} + \epsilon_{it}$

Where:

Y_{it} = represents the management and governance index (iGG) calculated by the TCU.

IDH $_{it}$ = presents the indicators for assessing the well-being of the population in the municipality in which the university is headquartered.

IGC $_{it}$ = consists of the general index of MEC courses that evaluates the training offered by higher education institutions in the country.

GIN $_{it}$ = shows the income distribution in the state in which the university is based.

VAR-GDP $_{it}$ = variation in the gross domestic product of the federation unit in which the university is based.

ISS $_{it}$ = volume of ISS collected by the municipality in which the university is headquartered.

To test the regression model for the panel data, the Hierarchical Linear Method (HLM3) with repeated measures (multilevel model) was used, as the data have a contextual influence. Pinheiro (2005) points out that multilevel models have been developed to analyze data that have a hierarchical structure that takes into account the variability of the existing data within each hierarchical level and between hierarchical levels, rather than randomly selected data. For this author, such a methodology would be largely appropriate in areas of knowledge that exhibit a group structure, such as in the human and biological sciences, such as the studies by Aitkin et al. (1981), Aitkin and Longford (1986) and Ferrão et al. (2002). For this purpose, the statistical software "R" was used to calculate the interactions between the individual variables and the time series, the collection and analysis of which covered the period between July 2022 and March 2023.

The iGG data were obtained directly from the TCU website (www.tcu.gov.br), observing the completion of 4 (four) surveys (2014, 2017, 2018 and 2023) organized according to the dimensions studied. To ensure the consistency of the study, institutions that were not represented in all years of the surveys were excluded from the sample. Regarding the

independent variables, the data collection was carried out in national (IBGE, IPEA, etc.) and local (Iplanfor) economic research institutes. Considering that some of the variables did not match the last year of the iGG survey, we decided to exclude the year 2023.

4 RESULTS AND DISCUSSIONS

4.1 Results of the Analysis

The result of the exploratory analysis of the indicators object of the research is shown in Table 1.

Table 1

Exploratory data analysis

YEAR	N	Minimum	Maximum	Mean	Standard Deviation	
2014	iGG	46	0,176	0,885	0,552	0,193
	IGC	46	1,437	4,247	3,363	0,586
	GINI	46	0,443	0,573	0,499	0,028
	IDHM	46	0,663	0,836	0,752	0,045
	VAR_GDP	46	2,360	22,030	8,988	3,997
	ISS (per billion)	45	0,089	28,742	5,120	7,869
2017	iGG	46	0,075	0,718	0,330	0,136
	IGC	46	2,545	4,228	3,444	0,426
	GINI	46	0,414	0,730	0,515	0,050
	IDHM	46	0,547	0,842	0,757	0,053
	VAR_GDP	46	0,360	13,480	5,550	2,415
	ISS (per billion)	45	0,091	27,816	4,707	7,570
2018	iGG	46	0,121	0,813	0,393	0,153
	IGC	46	2,603	4,250	3,478	0,425
	GINI	46	0,424	0,596	0,517	0,044
	IDHM	46	0,676	0,814	0,745	0,039
	VAR_GDP	46	1,510	11,880	6,018	2,858
	ISS (per billion)	45	0,093	29,329	4,925	7,977

It was observed that the iGG data fluctuated over the years, with a decrease in 2017 and a recovery in 2018. The standard deviation indicated a significant dispersion of the data in relation to the mean, suggesting that the mean remained relatively stable, with values close to 3.4 in the analyzed period. In addition, the standard deviation indicates a relatively low dispersion of the analyzed data.

With regard to the GINI, it was found that it remained relatively stable throughout the period, with mean values around 0.5. However, the variation in the minimum and maximum

values indicates different levels of income inequality in each year. The standard deviation, on the other hand, showed relatively little fluctuation in all years, indicating that income inequality did not fluctuate greatly during this period.

As far as the VAR-GDP indicator is concerned, there was greater variation in 2014, with a minimum of 2.36 and a maximum of 22.03. In the following years, 2017 and 2018, the fluctuations were smaller and the values were closer together. The average value fell from 2014 to 2017, although it rose slightly compared to 2017. The standard deviation decreased from 2014 to 2017 and remained relatively stable in 2018, indicating less dispersion in the data compared to the mean in recent years.

Finally, when analyzing the ISS data, it was found that the minimum values fluctuated slightly over the years and the maximum values varied considerably. The average values of 5.12 in 2014, 4.707 in 2017 and 4.925 in 2018 indicate some stability in the central values of the data over the years analyzed, similar to the standard deviation, which shows stability in the variability of the data.

To determine whether the data were characterized as normal or not, the normality test was performed. The *Kolmogorov-Smirnov* (KS) and *Shapiro-Wilk* tests attempt to assess whether the data follow a distribution that deviates from the normal distribution or the normal distribution itself. The null hypothesis is that the sample follows the same distribution as the normal distribution, and the alternative is that the two distributions are different. Therefore, if the normality of a variable is to be confirmed, the p-value must be greater than 0.05. The Table 2 shows that the data should be considered non-normal, which underpins the type of data used – education - and therefore the need to select the Spearman coefficient.

Table 2

Normality test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Degrees of freedom	P-value	Statistic	Degrees of freedom	P-value
iGG	0,121	135	0,000	0,951	135	0,000
IGC	0,060	135	0,200	0,967	135	0,002
GINI	0,137	135	0,000	0,912	135	0,000
IDHM	0,158	135	0,000	0,941	135	0,000
VAR_GDP	0,134	135	0,000	0,922	135	0,000
ISS	0,370	135	0,000	0,555	135	0,000

Once the non-normality of the data was demonstrated, the Spearman correlation test was developed to determine a possible relationship between the variables of the proposed model, as shown in the Table 3.

Table 3

Spearman coefficient correlation test of model variables

	iGG	IGC	GINI	IDHM	VAR_GDP	ISS
Spearman's	iGG	1,000				
	IGC	0,116	1,000			
	GINI	-0,132	0,002	1,000		
	IDHM	0,027	0,582	-0,352	1,000	
	VAR_GDP	0,205	-0,222	-0,024	-0,235	1,000
	ISS	0,114	0,611	-0,073	0,651	-0,157
P-value	iGG	.				
	IGC	0,175	.			
	GINI	0,123	0,980	.		
	IDHM	0,752	0,000	0,000	.	
	VAR_GDP	0,016	0,009	0,778	0,006	.
	ISS	0,189	0,000	0,398	0,000	0,068

The individual examination of the indicators showed that there is a correlation between the iGG and all the variables proposed in the study, most of which were classified as weak and positive (0.116, 0.205 and 0.114), i.e. the increase or decrease between them is in the same direction. Only in relation to the GINI was it classified as negative (-0.132), showing an opposite relationship between them. Moderate and strong correlations were also found for the other independent variables: IGC and IDHM (0.582), GCI and ISS (0.611), and IDHM and ISS (0.651), indicating a better association between the independent variables than between the latter and the dependent variable. When running the model with all variables in the "R"

software, IGC and ISS were excluded as expected, as they showed a strong correlation with other variables in the model.

Table 4

Summary of models with the Akaike Information Criterion (AIC)

Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
[1]-62,43342	[1]-38,7612	[1]-38,97158	[1]-38,70753	[1]-61,47687	[1]-71,82421

The Akaike information criterion (AIC) is an important statistical tool for selecting the most appropriate multilevel regression model in a hierarchical data set. It provides a balance between the complexity of the model and the quality of the fit and allows you to identify the model that best represents the data without being too complex or over-parameterized. The AIC value for each candidate model is compared, and the model with the lowest AIC value is considered the most appropriate (Snijders & Bosker, 2012).

To determine the proportion of total variance observed, six models were run to determine the best-fitting intraclass correlation coefficient, with model 6 proving to be the most consistent.

The intraclass correlation coefficient (ICC) is a statistical measure used primarily in analyzes of variance (ANOVA) and in studies of reliability or agreement, in this case between hypothesized measurements or classifications. In multilevel regression models, this index replaces the coefficient of determination (R²). The ICC for Model 6, the best-fitting of the models tested, is 0.2449. This means that approximately 24.49% of the total variability of the dependent variable (iGG) is due to the differences between the cluster units (state and region).

The data for this model are as follows: Level 1 (Observations): $iGG_{ij} = \beta_0j + \beta_1 \times ANO_{ij} + \beta_2 \times IDHM_{ij} + \beta_3 \times GINI_{ij} + \beta_4 \times VAR_GDP_{ij} + \epsilon_{ij}$; Level 2 (UF): $\beta_0j = \gamma_{00} + u_{0j}$ and Level 3 (Region): $u_{0j} = \gamma_{10} + v_{0k}$.

Table 5

Fixed effects of the selected model

Nome	Estimativa	Erro padrão	df	t	value Pr(> t)
(Intercept)	85.593918	17.916065	120.541068	4.777	5.05e-06 ***
YEAR	-0.042334	0.008885	121.062037	-4.764	5.31e-06 ***
IDHM	0.048328	0.524626	32.809208	0.092	0.927
GINI	0.182829	0.452477	61.014459	0.404	0.688
VAR_GDP	0.007263	0.004632	131.736065	1.568	0.119

Nota: códigos de significância 0 **** 0.001 *** 0.01 ** 0.05 * 0.1 . 1

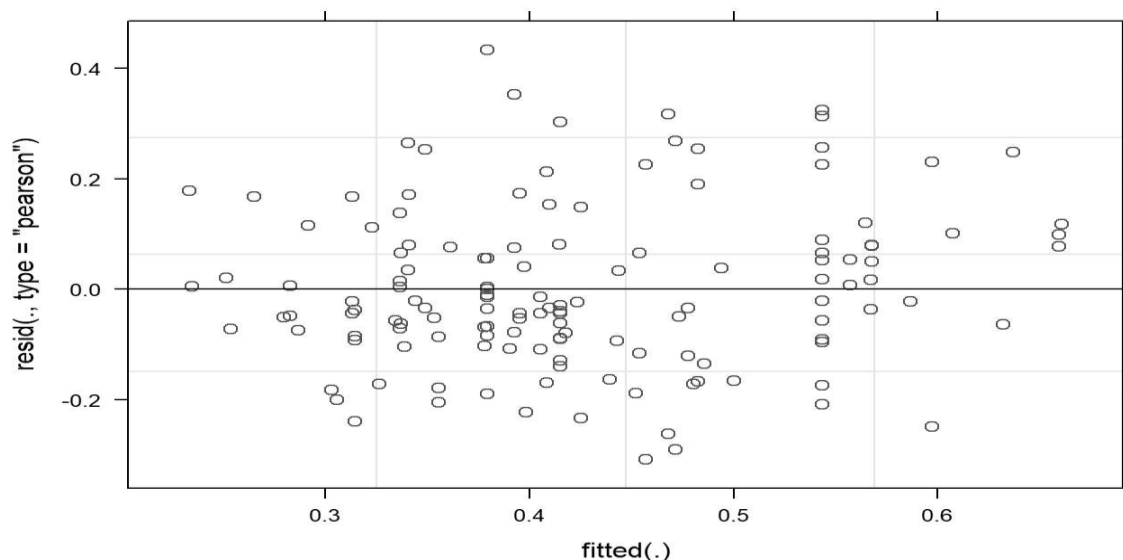
Table 6

Fixed effects correlation

Name	(Intr)	Year	IDHM	GINI
YEAR	-1,000			
IDHM	-0.089	0.063		
GINI	0.179	-0.198	0.297	
VAR_GDP	-0.427	0.419	0.211	0.097

Figure 2

Graph of the adopted model 6



Calculating the ICC for model 6, the result was approximately 0.2449 $(0.003677 + 0.004102) / 0.004102 + 0.023988) * 100$. This indicates that about 24.49% of the total variability in the dependent variable (iGG) is due to the differences between the clustering units (State and Region).

4.2 Discussion of Results

As can be seen, the correlation test identified a significant relationship, although weak, in four of the 5 proposed variables ($VAR_GDP=0.205$, $CIG=0.116$, $ISS=0.114$ and $GINI=-0.132$), most of which were positive in nature and only one was negatively associated. The only one that did not generate a relationship was the MHDI (0.027), which are analyzed below.

With regard to VAR_GDP , the result confirms the relationship between this indicator and the level of governance. This is because when the economic health of a country or region improves, this is usually reflected in public and private investment in key sectors of the economy, such as education. It is argued that, depending on the policies pursued by the central government, higher education can be one of the main drivers of a country's economic and social development, as it enables the promotion of scientific and technological discoveries. Therefore, the results go in the direction that the VAR_GDP is not limited to the issue of public investment, but extends to the overall quality of these institutions in terms of service provision (more courses and extension projects, more vacancies, better salaries for the workforce, greater international projection, etc.), i.e. improving governance.

With regard to the IGC, which represents the quality level of each institution's Bachelor's and Master's programs, the result was considered as expected, since it can be assumed that with the progress of this index, the higher education institution itself as a whole is forced to improve its governance structure in order to meet the new requirements. In other words, there is a tendency for the quality of the study programs to drive higher education institutions towards the external environment with which they interact, receive incentives, expand their knowledge, and promise innovation among the authors involved. The result thus confirms the studies by Boer and Maassen (2020), which emphasize the synergy between these organizations and the environment, both in relation to stakeholders and/or other institutions (companies and governments), as evidenced by Sułkowski et al. (2019).

With regard to ISS, the results followed the same line as for VAR_GDP, i.e. the correlation of the variable with iGG. However, with practical and direct effects – by increasing the universities' own income for the provision of services (sale of courses, consultancy and promotion of techniques) – ISS has not proved to be an alternative to the lack of resources observed in state universities. One possible response to this behavior arises from the debate within educational institutions that there is a process of commodification of teaching conditions, while others believe that they should not enter the market (Saiti et al., 2018). Although the debate about whether they should depend exclusively on the state or collaborate with it is heated (Fávero & Bechi, 2017), the truth is that the amount of own revenues related to this attribute is still insignificant, as shown by a study conducted by Caetano et al. (2021), which indicates a significant decrease in the own revenues of state universities between 2010 and 2020.

As far as the GINI is concerned, the negative correlation with the iGG is remarkable. The indicator was created to measure the degree of income concentration in a particular group. The result suggests that the improvement in the efficiency and quality of public administration measured by the TCU is not able to change the GINI. Although both indicators are related to the socio-economic and political context of the country, their metrics could be one of the explanations for the lack of a direct and causal relationship.

Finally, the investigation of the lack of correlation between the iGG and the IDHM was a surprise. It was to be expected that these indicators would at least correlate positively, as there is evidence that universities are able to positively influence the environment in which they are embedded (Boer & Maassen, 2020; Sułkowski et al., 2019). However, the negative correlation may be related to the fact that the influence is indirect rather than direct, as in the case of universities improving their governance systems so that people benefit from the enabling environment they create. That is, effective governments are more inclined to implement policies

that benefit human development than those that do not have such developed policies (Aguiar Filho et al., 2019).

When testing the proposed model, it was found that 24.49 of the total variability of the dependent variable (iGG) is explained, taking into account the differences between the grouping units (state and region). The results represent an important conclusion in the sense that the physical location of HEIs in relation to the federating unit and geopolitical region is able to influence the level of public administration efficiency measured by the TCU.

Thus, the components that currently make up the index (stakeholder relations, organizational strategy, and cross-organizational alignment - Figure 1) could be better measured if they captured local characteristics such as culture, settlement, socioeconomic development, civic participation, etc. This aligns with Jacques et al.'s (2013) observation that some researchers are trying to include more specific variables about the analyzed governments that can incorporate social, economic, and cultural attributes into the indicators to reduce potential subjective issues and misinterpretation. A good example of possible changes would be the inclusion of ESG (environmental, social and governance) variables. The proposal is innovative because, as highlighted by Martins et al. (2020) and Pasquali et al. (2020), the iGG is based on strong assumptions of budgetary and financial control, such as the risk management, internal audit and accountability and transparency components.

As for the variables proposed in the modeling (VAR_GDP, ISS, IGC, GINI and IDHM), although a correlation with iGG was found in the individualized investigation, they were not found to be significant in the choice of the hierarchical model chosen, except for the variable YEAR ($5.313e-06$ ***). This evidence leads us to believe in a second conclusion: that the passage of time is a relevant factor in the index proposed by the TCU.

The result sheds light on two aspects: the indicator itself and the *self-assessment* model used by the Court.

As far as the indicator (iGG) is concerned, it is true that the passage of years has a major influence on the results achieved by the Court of Auditors. However, it is not possible to determine from these results alone whether the iGG is the result of the implementation/improvement or reassessment of governance tools by managers, or whether the iGG is deliberately increased without the corresponding ballast in the form of an improvement in governance mechanisms.

This last aspect finally led to the evaluation of the self-assessment model proposed by the ACA. It is explained: for this specific system the Court of Auditors has replaced the traditional model of on-site audit before the pre-selected bodies and institutions with another in which the administrator performs a self-assessment, collects the data, and sends it to the Court of Auditors for consolidation, it is assumed that there are no inaccuracies in the information. Their existence jeopardizes not only the iGG results as a whole but also the self-assessment system itself. Given this, the results indicated that the Court of Audit must evaluate the iGG results at regular intervals, as the indicator has methodological limitations.

6. FINAL THOUGHTS

The purpose of this study was to assess whether the governance level of a group of 69 federal public universities that participated in the TCU Governance Survey (iGG) can be influenced by socioeconomic variables of the environment in which they are located. Therefore, the TCU iGG for the years 2014, 2017 and 2018 was used to determine a possible relationship with previously selected socioeconomic variables (IDHM, ISS, VAR_GDP, IGC, GINI) associated with the FUs and regions of the country in which the universities are located. As a technique, regression with panel data was combined with the hierarchical linear method with repeated measures, as it is more suitable for educational data.

The study yielded two important conclusions, although the variables proposed in the regression model were not significant.

The first relates to the fact that the physical location of higher education institutions in relation to the federal entity and geopolitical region can influence the level of public administration efficiency measured by TCU. This evidence is consistent with the studies of Boer and Maassen (2020) and Sułkowski et al. (2019), which indicated that synergies between these organizations and their environment are natural. The results show that 24.49% of the total variability of the dependent variable (iGG) is explained by the state and region in which the universities are located. The second piece of evidence relates to the aspect that the passage of time is a relevant factor in the index proposed by TCU. The tests show that the consistency of the iGG increases with the number of years of surveys conducted.

Overall, it is proposed to change the modeling of the indicator and to evaluate the iGG results obtained by the Court. Regarding the first finding, it is known that the country has its own specificities, many of which are linked to local attributes, such as economic development, more or less skilled labor force, natural resources, population engagement, cultural and colonial aspects. It is possible that these attributes represent a difference in the efficiency process in the management of HEIs.

Given the limited configuration of the TCU indicators in relation to environmental aspects, it is therefore suggested that these aspects be included in a possible reassessment of the iGG so that it can be determined exactly which elements favor the improvement of public administration. Such a measure could, for example, encourage the adoption of specific actions aimed at reducing the discrepancies in the results of the assessments carried out.

The second finding, which relates to the strong correlation between the iGG results and the number of survey years, deserves special attention.

At first, one could draw conclusions about the assertiveness of the format and the results of the iGG based on an in-depth investigation. Once there is an increase in the indicator, the most logical conclusion would be that the agencies and institutions participating in the survey have improved their governance tools compared to the previous edition and that there has therefore been a natural improvement in the assessment process.

However, the design of the chosen model (self-assessment) does not allow this conclusion to be accepted unilaterally. The reason for this is simple. Since the system does not provide regular assessments, it can be assumed that managers can adapt to the self-assessment process and improve their own scores without needing corresponding improvement and/or introducing new management tools.

To prevent this from happening, it would be advisable for the Court to consider the possibility of regular audits of the results obtained in order to maintain the integrity of the proposed model while strengthening the expectations of control of the participating public administrations.

Finally, the main limitation identified for the present study's performance is that the years of edition of some independent variables contained in the proposed model did not coincide with the last year of the survey made available by the TCU in 2023. This made it impossible to include those results for calculation purposes. In addition, for future research, it is suggested to expand the dependent variables studied to identify possible associations capable of contributing to Brazilian public management.

REFERENCES

Aguiar Filho, A., Tomé, M. A., Farias, A. D. B., Machado Júnior, C. M., & Ribeiro, D. M. N. M. (2019). Relação entre os indicadores de governança dos países o índice de

- desenvolvimento humano. *Revista Gestão e Desenvolvimento*, 16(1), 53–70.
<https://doi.org/10.25112/rgd.v16i1.1511>
- Aitkin, M., & Longford, N. (1986). *Statistical modelling in school effectiveness studies*. *Journal of the Royal Statistical Society*, série A, 149, 1-43.
- Aitkin, M., Anderson, D., & Hindle, J. (1981). *Statistical modelling of data on teaching styles*. *Journal of the Royal Statistical Society*, série A, 144, 148-161.
- Arslan, M., & Alqatan, A. (2020). Role of institutions in shaping corporate governance system: evidence from emerging economy. *Heliyon*, 6(3), e03520.
<https://doi.org/10.1016/j.heliyon.2020.e03520>
- Bleiklie, I., & Michelsen, S. (2019). Scandinavian Higher Education Governance—Pursuing Similar Goals Through Different Organizational Arrangements. (2019). *European Policy Analysis*, 5(2), 190–209. <https://doi.org/10.1002/epa2.1056>
- Boer, H. de, & Maassen, P. (2020). University governance and leadership in Continental Northwestern Europe. *Studies in Higher Education*, Abingdon, 45(10), 2045–2053.
<https://doi.org/10.1080/03075079.2020.1823640>
- Buta, B.O., Teixeira, M. A. C. (2020). Governança pública em três dimensões: conceitual, mensural e democrática. *Revista Organizações e Sociedade*, 27(94), 370-395.
<https://periodicos.ufba.br/index.php/revistaoes/article/view/26419>
- Cadbury Report. (1992). *The Report of the committee on the financial aspects of corporate governance*. London: Gee Professional Publishing.
- Caetano, E. F. D. S., Campos, I. M. B. M., & Cavalcanti, V. P. (2021). A captação de recursos próprios pelas Universidades Públicas Federais: autonomia ou mercantilização? *FINEDUCA – Revista de Financiamento da Educação*, São Paulo. 10.22491/2236-5907114022. <https://seer.ufrgs.br/fineduca/article/view/114022/64897>

- Calduch, I., Llanes, J., Montane, A., & Mendez-Ulrich, J. L. (2020). Governance and University: Ibero-american study of student participation in Higher Education Institutions. *Revista Iberoamericana de Educación*: Madrid, 83(1), 187–209.
<https://doi.org/10.35362/rie8313839>
- Coase, R. H. (1937). The nature of the firm. *Economica*, New Jersey, 4(16), 386–405.
<https://doi.org/10.1111/j.1468-0335.1937.tb00002.x>
- Constituição da República Federativa do Brasil*: promulgada em 5 de outubro de 1988. (2022). Atualizada até a Emenda Constitucional nº 123, de 14 de julho de 2022.
https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm
- Cornelius-Bell, A., & Bell, P. A. (2020). Partnership as student power: democracy and governance in neoliberal university. *Radical Teacher*, Pittsburgh, 118, 21–30.
<https://doi.org/10.5195/rt.2020.738>
- Decreto nº 9.203, de 22 de novembro de 2017*. (2017). Dispõe sobre a política de governança da administração pública federal direta, autárquica e fundacional. Diário Oficial [da] República Federativa do Brasil, Poder Executivo, Brasília, DF, 23 nov. 2017, 3.
http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/decreto/D9203.htm
- Efimov, D. B. (2021). The structure and activities of student representative bodies in modern Russian Universities. *Voprosy Obrazovaniya / Educational Studies Moscow*, Moscow, (4), 74–96. <https://doi.org/10.17323/1814-9545-2021-4-74-96>
- Facchini, C., & Fia, M. (2021). Public sector reform in italian higher education: the governance transformation of the universities — a comparison among perceptions of rectors and department chairs. *Higher Education Policy*, Milano, 34(3), 560–581.
<https://doi.org/10.1057/s41307-019-00152-2>

- Fávero, A. A., & Bechi, D. (2017). O financiamento da educação superior no limiar do século XXI: o caminho da mercantilização da educação. *Revista Internacional de Educação Superior*, Campinas, 3(1), 90–113. <https://doi.org/10.22348/riesup.v3i1.7688>
- Ferrão, M. E., Beltrão, K., & Santos, D. (2002). Modelo de regressão multinível: aplicação ao estudo do impacto da política de não-repetência no desempenho escolar dos alunos da 4ª. série. *Pesquisa e Planejamento Econômico*, 32(3).
- Frolich, N., Christensen, T., & Stensaker, B. (2019). Strengthening the strategic capacity of public universities: The role of internal governance models. *Public Policy and administration*, Oslo, 34(4), 475–493. <https://doi.org/10.1177/0952076718762041>
- Gesser, G. A., & Melo, P. A. de. (2023). Motivação para adoção de práticas de governança na Universidade de Santa Catarina. *Gestão Universitária na América Latina*, 16(3). <https://doi.org/10.5007/1983-4535.2023.e92943>
- González, A. C., & Lopes, L. F. (2020). Universities in Transition: The 6i Model for Strategic Governance and Management. *Economic and Social Changes-Facts Trends Forecast*, Gorkogo: ISEDT RAS, 13(1), 217–230.
- Hurtado, A. B., Benini, E. G., & Figueiredo, J. de C. (2020). O processo de institucionalização do levantamento integrado de governança organizacional pública no Brasil. *Encontro Internacional de Gestão, Desenvolvimento e Inovação (EIGEDIN)*, 4(1). <https://periodicos.ufms.br/index.php/EIGEDIN/article/view/11673>
- International Federation of Accountants-IFAC. (2001). *Governance in the public sector: a governing body perspective: international public sector study*. Study, 13 New York: International Federation of Accountants, 2001.
- Jacques, F. V. S., Quintana, A. C., & Macagnan, C. B. (2013). *Transparência em Municípios da Região Sul do Brasil*. In: Encontro da Associação Nacional do Programa de Pós-Graduação em Administração (ANPAD). Anais... Rio de Janeiro, ANPAD.

- Lei Complementar n. 101, de 04 de maio de 2000 (LRF). (2000). Estabelece normas de finanças públicas voltadas para a responsabilidade na gestão fiscal e dá outras providências. Diário Oficial [da] República Federativa do Brasil, Poder Executivo, Brasília, DF, 04 maio 2000, 3.
- Lei n. 13.303, de de 30 de junho de 2016. (2016). Dispõe sobre o estatuto jurídico da empresa pública, da sociedade de economia mista e de suas subsidiárias, no âmbito da União, dos Estados, do Distrito Federal e dos Municípios. Diário Oficial [da] República Federativa do Brasil, Poder Executivo, Brasília, DF, 30 jun. 2016, 3.
- Letelier-Sanz, P., Bustos, Y. M., Acuña, Y. M., Pinto, K. N., Saldías, S. Z., & Rodríguez-Fernández, A. (2021). Satisfacción con la educación superior como indicador de calidad: el caso de una universidad pública chilena. *Revista Cubana de Educación Superior*, La Habana, 40(3).
http://scielo.sld.cu/scielo.php?script=sci_abstract&pid=S0257-43142021000300013&lng=es&nrm=iso&tlng=es
- Lugoboni, L. F., Correa, H. L., Araújo, J. A., & O. Chiareto. (2021). J. Management systems by performance indicators of higher education institutions: proposal of a model. *Revista de Administração da UFSM*, 14(3), 655–673.
<https://doi.org/10.5902/1983465944512>
- Machado, D. P., & Quiraque, E. H. (2023). Maturidade de governança e criação de valor público em instituições públicas de ensino superior: o caso das universidades brasileiras. *Revista de Avaliação da Educação Superior*, 28, 1-21.
<http://dx.doi.org/10.1590/S1414-40772023000100002>
- Mammadov, R., & Aypay, A. (2020). Análise de eficiência de universidades de pesquisa na Turquia. *International Journal of Educational Development*, 75.
<https://doi.org/10.1016/j.ijedudev.2020.102176>

- Marcovitch, J. (Org.). (2018). *Repensar a universidade: desempenho acadêmico e comparações internacionais*. São Paulo; Fapesp.
- Martinez, A. P., & Fernandez, A. R. (2021). Understanding of strategic alignment as a principle of university governance. *Hallazgos-Revista De Investigaciones*, Bogota: Univ. Santo Tomas, 18(35), 233–257. <https://doi.org/10.15332/2422409X.5689>
- Martínez-Campillo, A., & Fernández-Santos, Y. (2020). The impact of the economic crisis on the (in) efficiency of public Higher Education institutions in Southern Europe: the case of spanish universities. *Ciências do Planejamento Socioeconômico*, 71. <https://doi.org/10.1016/j.seps.2019.100771>
- Martins, K. W. C., Silva, F. F. M. da, Figueiredo, J. de C., Silva, M. A. C. da, & Arruda, A. G. S. (2020). Relação entre governança e o valor público gerado pelas universidades federais brasileiras. *Encontro internacional de gestão, desenvolvimento e inovação*. 4(1). <https://periodicos.ufms.br/index.php/EIGEDIN/article/view/11684>
- Oliveira, A. L. L. (2020). *Boas práticas na Administração Pública: uma análise do modelo de gestão da EBSEH à luz do modelo de governança pública*. 2020. Dissertação (Mestrado profissional em gestão pública). – Universidade Federal de Uberlândia. <https://repositorio.ufu.br/handle/123456789/29306>
- Pasquali, J. C., Nottar, D. I. da S., & Mello, G. R. de. (2020). Práticas de governança pública e sua relação com o desempenho das universidades federais brasileiras. *Ciências Sociais em Perspectiva*, 19, Edição Especial, 202 - 221. <https://erevista.unioeste.br/index.php/ccsaemperspectiva/article/view/27368>.
- Pinheiro, S. M. C. (2005). *Modelo Linear Hierárquico: um modelo alternativo para análise de desempenho escolar*. [Dissertação de Mestrado, Universidade Federal de Pernambuco]. Repositório Digital da UFPE. <https://repositorio.ufpe.br/handle/123456789/6476>

- Rahayu, A. P., Subagiyo, L., Rahayu, S. M., & Sjamsir, H. (2018). The principles of Good University Governance at Islamic Muhammadiyah University of East Borneo. *Journal of Social Sciences Research*, 4(10), 200-204.
<https://doi.org/10.32861/tjssr.410.200.204>
- Ramírez-Gutiérrez, Z., Barrachina-Palanca, M., & Ripoll-Feliu, V. (2020). Eficiencia en la educación superior: estudio empírico en universidades públicas de Colombia y España. *Revista de Administração Pública*, 54(3). <https://doi.org/10.1590/0034-761220190232>
- Riofrio, V. M. C., Moncayo, M. E. M., González, M. P. C., Pilay, F. J. G., & Padilla, M. I. E. (2020). Los principios de gobierno corporativo de la organización para la cooperación y el desarrollo económico. Su aplicación en el Instituto Superior Tecnológico Tsáchila. *Universidad y Sociedad*, 12(3), 275-283.
<https://rus.ucf.edu.cu/index.php/rus/article/view/1585>
- Rose-Ackerman, S. (2017). What Does “Governance” Mean? *Governance: an international journal of policy, administration, and institutions*, London: Wiley Periodicals, 30(1), 23–27. <https://doi.org/10.1111/gove.12212>
- Saiti, A., Abbott, I., & Middlewood, D. (2018). University governance: insights from England and Greece. *International Journal of Educational Management*, Bingley: Emerald Group Publishing Ltd, 32(3), 448–462. <https://doi.org/10.1108/IJEM-05-2016-0091>
- Sales, E. C. de A. S., Peter, M. da G. A., Machado, M. V. V., & Nascimento, C. P. S. do. (2020). Governança no setor público segundo a IFAC – estudo nas Universidades Federais Brasileiras. *Brazilian Journal of Business*, 2(2), 1477-1495.
<https://doi.org/10.34140/bjbv2n2-040>

- Siedschlag, D., & Lana, J. (2020). Governance mechanism in non-profit universities: theoretical essay. *Revista Iberoamericana de Educación*, Madrid, 83(1), 163–186.
<https://doi.org/10.35362/rie8313764>
- Silva, L. P., Sousa, K. A., & Costa, B. B. (2023). Governança pública para o desenvolvimento regional por meio do fortalecimento do ecossistema local de inovação. *Revista Interdisciplinar da Universidade Federal do Tocantins*, 10(Especial 4).
- Snijders, T. A. B., & Bosker, R. (2012). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Sage.
- Soares, J. R., Bordin, R., & Rosa, R. dos S. (2019). Indicadores de gestão e de qualidade nas instituições federais de ensino superior brasileiras - 2009 - 2016. *REAd. Revista Eletrônica de Administração (Porto Alegre)*, Porto Alegre, RS, 25(2), 215–239.
<https://doi.org/10.1590/1413-2311.250.95100>
- Sulkowski, Ł., Seliga, R., & Wozniak, A. (2019). Strategic challenges of mergers and acquisitions in the higher education sector. *Entrepreneurial Business and Economics Review*, 7(2), 199–215. <https://doi.org/10.15678/EBER.2019.070211>
- Texeira, A. F., & Gomes, R. C. (2019). Governança Pública: uma revisão conceitual. *Revista do Servidor Público*, 70(4) 519-550.
<https://revista.enap.gov.br/index.php/RSP/article/view/3089>
- Tribunal de Contas da União. (2018). *Esclarecimentos sobre uso dos resultados*. Brasília, DF: TCU, Secretaria de Controle Externo da Administração do Estado - Secex Administração.
<https://portal.tcu.gov.br/governanca/governancapublica/organizacional/levantamento-de-governanca/>.

- Tribunal de Contas da União. (2020). *Referencial básico de governança aplicável a organizações públicas e outros entes jurisdicionados ao TCU*. 3. ed. Brasília: TCU, Secretaria de Controle Externo da Administração do Estado - Secex Administração.
- Vilela, J. R. de P. X., Neto, A. C., Bernardes, P., & Cardoso, M. B. R. (2015). Governança e Relações de Poder: Orientando as Boas Práticas em Cooperativas e outras Sociedades de Pessoas. *Contabilidade Gestão e Governança*, Brasília: Janann Joslin Medeiros, 18(2). <https://revistacgg.org/index.php/contabil/article/view/758>
- Wandercil, M., Calderón, A.-I., & Ganga-Contreas, F. A. (2021). Governança universitária e rankings acadêmicos à luz da literatura acadêmica brasileira. *Roteiro (Joaçaba)*, 46, e22391. <https://doi.org/10.18593/r.v46i.22391>
- Yudianto, I., Mulyani, S., Fahmi, M., & Winarningsih, S. (2021). The influence of good university governance and intellectual capital on university performance in Indonesia. *Academic Journal of Interdisciplinary Studies*, London: Richtmann Publishing Ltd, 10(1), 57–70. <https://doi.org/10.36941/ajis-2021-0006>

Relação entre Governança em Universidades Públicas Federais e Variáveis Socioeconômicas a partir de Regressão com Dados em Painel sob a Perspectiva da Modelagem Hierárquica com Medidas Repetidas

RESUMO

Objetivo: analisar se o nível de governança apresentado pelas Universidades Públicas Federais é capaz de sofrer influência de variáveis socioeconômicas dos ambientes nos quais elas se encontram inseridas.

Método: abordagem descritiva, documental e quantitativa, mediante a utilização do Índice de Gestão e Governança (iGG) do TCU resultante de levantamento em 69 universidades públicas federais, nos anos de 2014, 2017 e 2018. Uso de regressão linear com dados em painel sob a perspectiva da modelagem hierárquica com medidas repetidas, tendo como variável dependente o iGG e, independentes, a VAR_PIB, ISS, GINI, IDHM e IGC.

Originalidade/Relevância: o estudo considera elementos do ambiente institucional sobre as universidades públicas federais. Neste sentido, ajuda a compreender como o entorno pode contribuir como elemento propulsor na busca de soluções para os problemas de governança comum nestas instituições ou na otimização dos aspectos positivos identificados.


Resultados: os exames apontaram fraca correlação entre o iGG e as variáveis independentes selecionadas (VAR_PIB, ISS, GINI, IDHM e IGC) (rejeição da H_0), bem como apontou que o iGG é influenciado pelo ambiente (UF e Região) e possui forte correlação com a quantidade de anos dos levantamentos.

Contribuições Teóricas/Metodológicas: as estruturas de governanças adotadas pelas universidades federais não são elementos isolados do ambiente no qual se encontram inseridas. Apesar de serem estruturas administrativas, legalmente formatadas, o entorno é capaz de moldar como elas prestam serviços públicos.

Palavras-chave: Universidade pública, Governança universitária, Avaliação, Indicadores, Regressão com dados em painel.

Ricardo Viotto 

Universidade Federal do Ceará, Ceará, Brasil
ricardoviotto@yahoo.com

Roberto Sérgio do Nascimento 

Universidade Federal do Ceará, Tribunal de
Contas da União, Ceará, Brasil
robertosn@tcu.gov.br

Recebido: Setembro 06, 2023

Revisado: Maio 08, 2024

Aceito: Maio 08, 2024

Publicado: Junho 30, 2024



