IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 28, Issue 12, Series 6 (December, 2023) 08-17
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Overview Of The Use Of Quantitative Methods In Research On Institutional Theory In The Public Sector

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Abstract:
Background*: The objective of the present research is to provide an overview of the use of quantitative methods in studies on Institutional Theory in the Public Sector.*
Materials and Methods*: It's a systematic literature review in which the sample consists of 20 articles that have employed quantitative methods aligned with the research theme. The results indicate that the keywords "Institutional Theory" and "Public Sector" were the most frequently used for indexing articles containing information about relevant content, comprising the research and its reading perspective.*
Results*: It was found that the most commonly used scale in data collection was the 5-point Likert scale, appearing in 30% of the researched studies. The most commonly used statistical techniques were multiple regression analysis and structural equation modeling. Cronbach's Alpha was the most recurrent reliability indicator, and the software tools SPSS and Smart-PLS3 were the most commonly used. For bibliographic support, the results indicated the recurrent use of works by Professor Joseph Hair Jr., a reference in the field of scientific research in Brazil.*
Conclusion: *The generated contributions aim to enhance the understanding of the use of quantitative methods in research involving the topic and provide directions that may assist in future studies.*
Key Word*: Quantitative Methods. Statistics. Institutional Theory. Public Administration.*

Date of Submission: 10-12-2023 Date of Acceptance: 20-12-2023

I. Introduction

The scientific work aims to present new knowledge; therefore, theoretical and methodological rigor, along with the contribution of value, are fundamental elements that should be incorporated into any high-quality article. Methodological rigor means that the methods used should be suitable for the research question and objectives, and they need to be justified by the authors[1].

The scientific research process includes a stage of configuring the methodological package, which should be designed and composed based on the choice of methods and techniques, adjusted and coherent with the problem, research question, assumptions or hypotheses constructed, and the proposed objectives[2]. In research activities, method and technique are complementary and inseparable, as the method indicates the path, and the technique provides the means to achieve the result. In the case of scientific methodology, it is important, in principle, to understand the purpose of the study so that the method chosen is appropriate.

The choice of the method conditions how the research problem will be addressed. Aspects such as the worldview, the relationship between the researcher and the researched object, and the interplay between objective and subjective facts and values are crucial in determining the approach. These factors will have a direct impact on the outline and focus of the research, as well as its purpose, the construction of hypotheses or assumptions, the typology and profile of the sample, data collection instruments, and data treatment[3].

The typologies of research related to the approach of the problem encompass two methodologies: qualitative and quantitative. In qualitative research, deeper analyses related to the studied phenomenon are applied. On the other hand, quantitative research is characterized by the use of statistical instruments related to data collection and treatment[4].

When defining the research method and opting for quantitative methodology, the researcher needs to specify the data collection techniques that will be applied in their study. When statistical methods are employed, appropriate descriptive and inferential techniques should be chosen, the probability of error must be estimated, and statistical significance criteria should be applied[5]. Each of the existing statistical techniques and tests has predefined theoretical assumptions that must be respected to ensure unbiased and consistent inferential estimation[6].

In light of this context, the research question guiding this study is: how is the application of quantitative methods in research on Institutional Theory in the Public Sector conducted? To address this inquiry, the objective has been established as follows: to outline the panorama of quantitative methods employed in research on Institutional Theory in the Public Sector.

The Institutional Theory has been used in the academic sphere to support organizational studies, providing explanations for complex issues faced by organizations in the face of changes[7]. Research on Institutional Theory has significantly contributed to organizational studies, thanks to its sociological emphasis and the introduction of variables such as shared values, the pursuit of legitimacy, and isomorphism. This contribution is evident in the analysis of relationships between organizations or in the analysis of relationships between organizations and their environment[8].

In recent decades, organizations within the global public sphere have experienced increasing and sustained pressure, compelling them to enhance the formulation of policies and programs and provide more effective services that operate with transparency and accountability[9].

Scenarios of economic uncertainties demand greater transparency from organizations and result in increasing pressure, with constant demands for reports on social, environmental, and governance issues. More significantly, public sector entities are even more compelled to address transparency issues, added to the challenges of limited resources, expectations from a broad stakeholder base, growing complexity of activities, and the need to plan for both the present and future generations[10].

When interpreting organizations as a structural expression of rational action, subject over time to pressures from the social environment and transforming into organic systems, Philip Selznick (1957) introduced the idea of the institutional approach. In Brazil, Institutional Theory has been increasingly adopted as the basis for empirical studies since the late 1980s by researchers and research groups across various regions of the country[11].

Given the above, for a better understanding, this study, which aims to analyze quantitative methods used in research related to Institutional Theory in the Public Sector, is organized into five sections, beginning with this introduction. In the second section, the literature review is presented, providing the foundation for discussions on the use of quantitative methods. In the third section, the research methodology procedures are outlined, with emphasis on its delineation as a quantitative investigation, in addition to the sample of articles selected for this study. The fourth section presents the analysis and discussion of the obtained data; and in the final remarks, the conclusion of this study is presented along with suggestions for future research on the topic.

II. Literature Review

The wisdom from previous studies and the statistical techniques used in the research questions provide a methodological overview for future research. In this sense, this section presents a brief approach to the use of quantitative methods in data analysis, identifying and analyzing the quantitative methods employed, listing their main results and conclusions, especially concerning quantitative techniques.

Studies on the Use of Quantitative Methods

Investigations that classify the methodological approaches employed in scientific research ensure the advancement of future research, as they systematize technically valid knowledge. Envisioning the evolution and potential shortcomings in previous studies, where the choice of statistical techniques can inform more relevant and precise solutions, is considered significant[12].

In studies in the field of Administration, biased or poorly representative samples, along with limitations or deficient description of the variables used, and the incorrect manipulation of data, are recurring characteristics in rejection reports for articles in Brazilian journals[13]. The section that most tends to contribute to direct rejection (desk rejection) is the one dealing with the employed methodology[14].

In a study on the proficiency of Brazilian researchers affiliated with stricto sensu graduate programs in Administration for quantitative research, it was concluded that Brazilian researchers are proficient only in simple techniques and appear unprepared compared to their North American counterparts. This suggests not only the need for the preparation of teachers and students in quantitative methods but, above all, the existence of support structures that provide assistance for the improvement of such works[15].

In an investigation into the use of statistical methodology in scientific papers, a sample of 299 articles published between 2007 and 2009, and presented at three conferences on the theme "Accounting for external users," was analyzed. The results of the investigation identified the use of some statistical technique in the data analysis of more than 50% of the articles. Eleven different types of statistical methods were evident, with statistical inference, regression analysis, and descriptive statistics being prominent. Universities in the southeast of the country made the most significant contributions to articles employing this approach[16]. It's also noteworthy that the use of quantitative methodology in scientific research has been growing over the years, increasing from 46% in 2007 to 62% in 2009, according to the aforementioned study[16].

The statistical techniques employed in nine editions of the congress organized by the National Association of Postgraduate Programs in Accounting Sciences (ANPCONT) were mapped, analyzing 637 articles from the perspective of four research lines[17]. It was evident that the congress predominantly follows a quantitative orientation, with the application of 198 techniques, comprising 30 main techniques, 14 autonomous ones, 148 ancillary ones, and 6 classifieds in other groups. The test was the most applied in the field of Controllership and Managerial Accounting; in the areas of Accounting for External Users and Financial Market, Credit, and Capital, correlation prevailed; and in the area of Education and Research in Accounting, the most used technique was the Chi-Square. These findings allow us to assert that the ANPCONT Congress exhibits highly diversified characteristics regarding the use of statistical techniques, demonstrating that researchers in the field of accounting have significantly expanded the range of techniques for the development of their research[17].

In an effort to outline the landscape of the use of statistical methods in research applying the Servqual scale in higher education institutions, a survey was conducted on a sample of 69 studies collected from major national and international databases[18]. The study revealed that confirmatory factor analysis was the most employed statistical technique, followed by analysis of variance and descriptive analysis. Additionally, other identified techniques included multiple regression, multiple discriminant analysis, canonical correlation analysis, multivariate analysis of covariance, and structural equation modeling. The Statistical Package for the Social Sciences (SPSS) software was the most widely used tool, representing 26.08% in the studies. The presence of questionnaires was observed in all studies, with the majority, 39.13%, opting for the use of the 5-point Likert scale for obtaining responses. Cronbach's Alpha was present in the majority of the analyzed articles, accounting for 62.31% of them. The results of the respective research allowed for the conclusion that the original Servqual model prevailed with its initial characteristics, undergoing few changes regarding the questionnaire format[18].

Another study sought to present the current state of quantitative methods used in research addressing the assessment of carbon footprint in higher education institutions, with a sample of 20 scientific articles published between 2016 and 2021[12]. The results showed that the majority of publications on the topic used the multiple regression analysis technique, accounting for 35%. The questionnaire was the instrument used for data collection in the majority of studies, at 75%, followed by documentary research, at 25%. The predominance of the use of the 5-point Likert measurement scale was identified in 40% of the articles. In conclusion, the research allowed for the conclusion that there are different variables to measure and interpret the carbon footprint instrument. Additionally, it contributed to expanding understanding regarding the use of quantitative methods in research on the topic, as well as highlighting some methodological paths that may assist other researchers in future studies[12].

In addition to the analogous studies presented on the subject, it is noteworthy that the use of quantitative methods in research in the field of Administration and Accounting is increasingly explored. This is evidenced in scientific research, as evaluated by authors such as: Lopes (2005)[19]; Dallabona, Nascimento e Hein (2010)[20]; Prearo, Gouvêa e Monari (2010)[21]; Bido, Mantovani e Cohen (2017)[22]; Bido e Silva (2019)[23]; Soares, Soares e Soares (2019)[24]; Agostineto, Soares, Soares e Lima (2020)[25]; Silva, Soares e Martins (2021)[26]; Borges, Soares, Lima, Sarquis e Boing (2020)[27]; Damázio, Soares e Lima (2020)[28]; Borba, Soares, Casagrande e Martins (2021)[29]; Santos, Soares e Martins (2021)[30]; Garcia, Soares e Lima (2022)[31]; Vaz, Soares, Martins e Herzmann Junior (2022)[32].

After presenting this brief overview of studies that have investigated the techniques used in research in the field of Administration, the next section of this research describes the methodological procedures.

III. Methodological Procedures

In this section, the methodological procedures used in this research are detailed, outlining the characteristics and aspects that shaped this investigation. Due to the observed features in data collection and analysis procedures, this study is characterized as a literature review. Literature review, considered a source of secondary data collection, can be defined as cultural or scientific contributions made in the past on a particular subject, theme, or problem that can be studied[33, 34].

The process of searching through bibliographic data begins with choosing a suitable database for the topic under study. Subsequently, it is necessary to construct a search query, save the results of the search conducted, retrieve articles not available in the database, and finally, supplement the results with additional information[5]. Studies of the nature currently being developed are structured in such a way as to allow the measurement of characteristics described in the research question, using conventional data collection techniques[35].

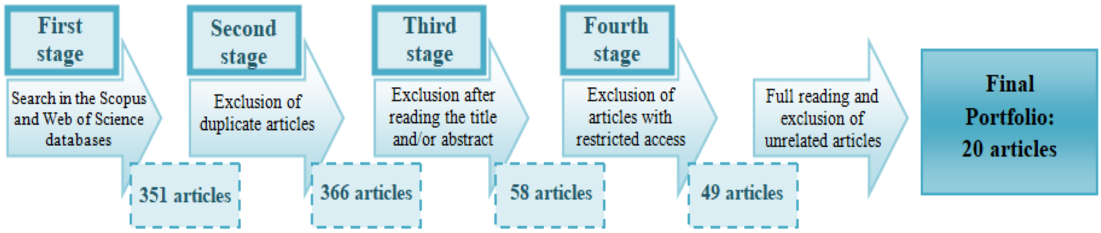
Regarding the approach, this research is quantitative, as it aims to collect quantitative data and explore them in measurable categories with the intention of defining patterns[36]. Quantitative research tests objective theories using variables that can be measured by instruments, with numerical data analyzed through statistical procedures[37]. In quantitative research, statistical and mathematical methods of assessment prevail, where each continuous step of the research constitutes a significant advancement by the researcher, who conducts a study of predominantly sequential nature[5].

The articles provide the researcher with relevant information for methodologically grounded decisions; they present new approaches, modifications of existing methods, and discussions of quantitative and analytical data approaches. Additionally, they corroborate by providing details that enable researchers to assess the application of the methodology to their research problem, allowing the reader to compare the proposed methods with those in use[38].

Sample of articles

In this research, the sample of analyzed studies consists of scientific materials obtained from the Web of Science and Scopus databases. The choice of international databases occurred due to the observation of the increasing number of research related to organizational studies. It is considered that the selected databases are comprehensive and traditionally used in research in the fields of Administration and Accounting, making them relevant sources for obtaining significant scientific productions[39].
Figure 1 illustrates the process of selecting articles from the bibliographic portfolio.

Figure 1: Selection process of the bibliographic portfolio



The articles for the formation of the sample were selected using the following keywords and boolean operations: "Institutional Theory" OR "Process of Institutionalization" AND "Public Sector" OR "Public Administration", in the fields: title, abstract, and keywords of the articles resulting from the searches. The data collection for the study took place during the month of October 2022, with the final temporal cutoff set at 2021. However, there was no specific initial temporal cutoff, aiming for the broadest possible coverage. The search was limited to open-access articles in the field of Business, Management, Administration, and Accounting, resulting in 351 scientific publications. All resulting articles were exported to an Excel spreadsheet. Subsequently, duplicate productions were removed, and the titles and/or abstracts were read to verify homogeneity with the purpose of this research. Therefore, by discarding the others, 58 articles remained for reading and analysis. However, in the search for full publications, it was identified that 09 research studies had restricted access and, therefore, were excluded, leaving a total of 49 articles that were subsequently read. From this quantity, 29 were eliminated for not presenting Institutional Theory in the theoretical approach of their research, completing the portfolio with a total of 20 articles considered aligned with this study, representing the scientific production to be explored in this research.

At the end of these described steps, the sample of the bibliographic portfolio consisted of 20 articles, listed in Table 1.

Table 1: Bibliographic Portfolio Articles

Title	Authors	Journal	Year	Citation
Network of interorganizational relationships in the organizational field of Videira-SC	Machado-da-Silva, C. L.; Coser, C.	Journal of Contemporary Administration	2006	73
Risk and FDI flows to developing countries	Van Wyk, J.; Lal, A. K.	South African Journal of Economic and Management Sciences	2008	39
Strategic practices in a network of religious congregations: values and institutions, interdependence and reciprocity	Oliveira Maciel, C. de; Silva, C. L. M. da.	Journal of Public Administration	2009	00
Determinant Factors of the Implementation of the Balanced Scorecard in Portugal: empirical evidence in public and private organizations	Quesado, P. R.; Guzman, B. A.; Rodrigues, L. L.	Brazilian Journal of Business Management	2014	21
Institutional theory for explaining corruption: An empirical study on public sector organizations in China and Indonesia	Sudibyo, Y. A.; Jianfu, S.	Corporate Ownership and Control	2015	18
Individual performance: From common source bias to institutionalized assessment	Andersen, L. B.; Heinesen, E.; Pedersen, L. H.	Journal of Public Administration Research	2016	47

		and Theory		
Why do some municipalities apply accrual-based rules more than others? Evidence from Turkey	Ada, S. S.; Christiaens, J.	Economics and Management	201 7	03
Investigation of the institutional and decision-usefulness factors in the implementation of accrual accounting reforms in the public sector of Tanzania	Mbelwa, L. H.; Adhikari, P.; Shahadat, K.	Journal of Accounting in Emerging Economies	201 9	24
Novel approaches to the regulatory control of financial services providers: The importance of cultural context	Mulcahy, M.; Beck, M.; Carr, M.; Hourigan, N.	The British Accounting Review	201 9	03
Influence of organizational factors on the effectiveness of performance management systems in the public sector	Teeroovengadum, V., Nunkoo, R., & Dulloo, H.	European Business Review	201 9	09
Innovation in public organizations: do government reforms matter?	Hijal-Moghrabi, I.; Sabharwal, M.; Ramanathan, K.	International Journal of Public Sector Management	202 0	12
The institutionalization of public sector accounting reforms: the role of pilot entities	Jorge, S.; Nogueira, S. P.; Ribeiro, N.	Journal of Public Budgeting, Accounting & Financial Management	202 0	12
Decomposing isomorphism: What drives similarity in the adoption of New Public Management?	Li, J.; Chung, K.	Administration & Society	202 0	18
Do organisational culture and national culture mediate the relationship between high-performance human resource management practices and organisational citizenship behaviour	Lockhart, P.; Shahani, N. K.; Bhanugopan, R.	International Journal of Manpower	202 0	13
The influence of the organizational structure, environment, and resource provision on the use of accrual accounting in municipalities	Nitzl, C.; Hilgers, D.; Hirsch, B.; Lindermüller, D.	Schmalenbach Business Review	202 0	15
The impact of the performance measurement system on the organizational performance of the public sector in a transition economy: Is public accountability a missing link?	Tran, Y. T.; Nguyen, N. P.	Cogent Business & Management	202 0	12
Meta-analysis of collaboration and performance: Moderating tests of sectoral differences in collaborative performance	Lee, D.; Hung, C.	Journal of Public Administration Research and Theory	202 1	10
Does stakeholder engagement affect corruption risk management?	Monteduro, F.; Cecchetti, I.; Lai, Y.; Allegrini, V.	Journal of Management and Governance	202 1	05
Success factors for implementing Uganda's public road construction projects.	Mwelu, N.; Davis, P. R.; Ke, Y.; Watundu, S.; Jefferies, M.	International Journal of Construction Management	202 1	16
Effects of leadership and accounting capacity on accountability through the quality of financial reporting by public organisations in Vietnam	Tran, Y. T.; Nguyen, N. P.; Hoang, T. C.	Journal of Asia Business Studies	202 1	04

As shown in Table 1, the details of the article sample are provided with the aim of enabling future replication of the research by other authors.

The next step in this study involves the analysis and discussion of the results, which will be presented in the next section.

IV. Results and Discussion

In this section, the results of this research are presented, discussing the keywords, objectives, variables used, scales employed, sample characteristics, quantitative methods, software used, and the support bibliography identified in the articles of the bibliographic portfolio.

Keywords

The keywords found in the articles provide information about the relevant content that makes up the research and its reading perspective, serving as indexers. The keywords analyzed in the sample total 79 records, with the terms "Institutional Theory," "Public Sector," and "Accounting" identified as the most cited in the samples, as described in Table 2.

Table 2: Keywords found

Keywords	***f***
Institutional Theory	9
Public Sector	8
Accounting	5
Human resource management, Corruption, Accountability	2
Balanced scorecard, Campo organizational, Central government, Change Management, Compliance, Contingency	1

theory, Democracy, Developing countries, Diffusion of innovation, Economic freedom, Effectiveness, Environmental stimuli, estruturação, Financial reporting quality, Foreign direct investment, Implementation strategy, Institutional Environment, Institutional logics, Interorganizacionais, Isomorfismo, Leadership, macroeconomic theory, Management accounting, Management involvement, Municipalities, National cultures, Organisational citizenship behaviour, Organizational culture, Organizational factors, Organizational innovation, Organizational stimuli, Outsourcing, Performance management, Political risk, Portugal, Project success, Public road construction, Regulatory disclosure, Regulatory framework, Relações, Religious organisations, Risk management, Senior management support, Social networks, Stakeholder engagement, Strategic practices, Tanzania, Task Environment, Transparency, Vietnam, Business, Public & Nonprofit Management	

In Table 2, it can be observed that all keywords mentioned only once were combined into a single field. It is worth noting that cited keywords are important and relevant, as they allow for the connection of the research theme, reinforcing the credibility of the bibliographic portfolio in the sample.

Scales used

To measure in research, it is necessary, according to a set of rules, to assign numbers to empirical facts, objects, properties, or activities. In this sense, it is a process developed in three parts: (i) selecting observable empirical facts; (ii) creating a scheme to assign numbers or symbols to represent aspects of the fact to be measured; and (iii) applying mapping rules to each observation of that fact[5].

The Likert scale, in its origin, consists of a set of statements (items) presented for a real or hypothetical situation under study. Participants are asked to indicate their level of agreement with the given statement (items) on a metric scale[40].

In Table 3, the scales used by the portfolio studies are described.

Table 3: Frequency of measurement scales used

Scale	*f*	%
Likert 5 points	6	30
Likert 7 points	2	10
Likert (does not mention points)	3	15
Does not mention	8	40
Points system	1	5
Total	20	100

The authors of the portfolio articles found that the statistical measurement technique using the 5-point Likert scale was the most commonly used, appearing in 6 studies (30%). The 7-point scale appeared in only 2 articles (10%); in 3 scientific productions (15%), the Likert scale was mentioned without specifying the number of points; and in 8 studies (40%), the type of scale used was not specified[12]. In another study, the same occurrence was found, i.e., 40% of the articles did not specify the type of scale used. It is of utmost importance that articles provide detailed information about the scales used to allow for future replications[12].

Sample: size and type

The researcher's ethics should always permeate their studies, and in this sense, it concerns transparency regarding the sampling technique to be used, which highlights the rigor of scientific investigation, ensuring its validity and reliability within the scientific community. In the quantitative approach, conceptually, the sample is a portion extracted from a population. Therefore, the sound constitution of the sample, in quantitative methods, is one of the elements that favor the generalization of the results obtained in the study[41].

Samples need to represent the characteristics of the population intended for study. Sampling involves selecting certain elements from a population and, based on these, drawing conclusions for the entire population[5]. Table 4 contains information demonstrating the sample sizes of the portfolio's research studies.

Table 4: Sample Sizes

Sample size	*f*	%
< 100	5	25
$\geq 100 < 200$	5	25
$\geq 200 < 300$	3	15
$\geq 300 < 400$	2	10
$\geq 400 < 500$	1	5
≥ 500	3	15
No information is presented	1	5
Total	20	100

In the bibliographic portfolio of this research, it was identified that 50% of the studies used samples of up to 200 individuals, totaling 10 articles. Additionally, three studies were found with samples ranging between 200 and 300 individuals, and another three studies with samples exceeding 500 individuals.

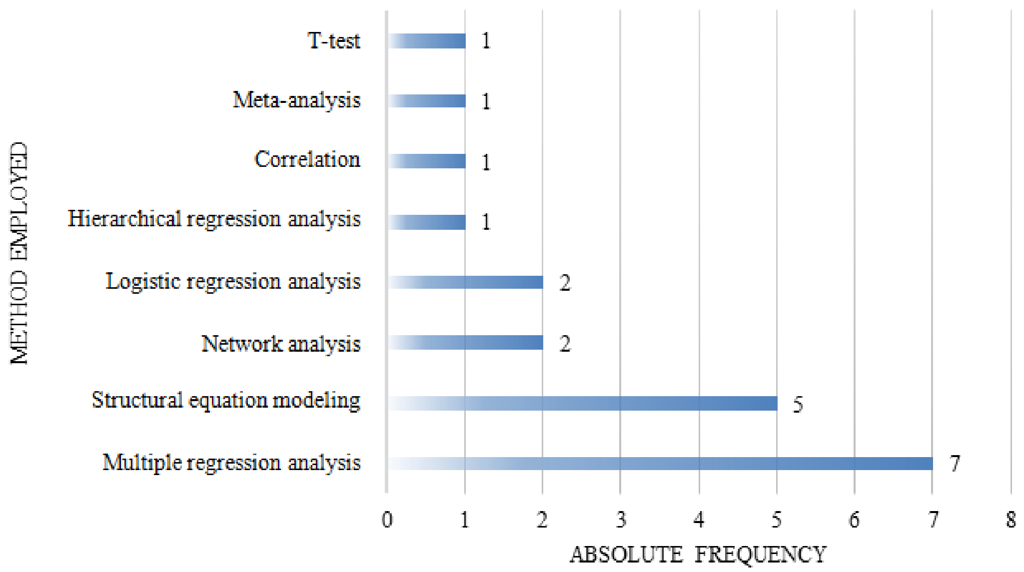
Regarding the type of sample, it was found that 60% of the portfolio, or 12 studies, did not disclose the type of sampling employed. In three studies (15%), stratified random sampling was used; in another three (15%), non-probabilistic judgment sampling was employed. It was identified that in one of the studies, simple random sampling was used, and in another study, non-probabilistic convenience sampling was applied.

In a similar study, they observed a substantial variation in the sample size among the portfolio's research, ranging from 39 to 1,409 individuals. It was noted that this variation possibly occurred because the research objectives are linked to the selected universe[29].

The quantitative method employed

The categorization of the analyzed studies was performed through reading the abstract and the section on methodological procedures of the sample articles. Given that some articles did not follow a consistent pattern in presenting the quantitative techniques used, it was necessary to read them in their entirety. Subsequently, the main quantitative methods employed were identified, as indicated in Chart 1.

Chart 1: Quantitative methods employed



In Chart 1, the frequency results of the usage of quantitative methods by the studies on the topic are presented. It should be noted that the classification was based on the technique employed to address the research question.

Many research techniques encompass various tests and ancillary analyses, including assumptions, which are necessary but not sufficient to answer the research question. It is observed that the majority of published studies use Multiple Regression Analysis (7) and Structural Equation Modeling (5). Techniques such as correlations, t-tests, and confirmatory and exploratory factor analyses were also found in articles that utilized multiple regression analysis and structural equation modeling. The use of descriptive statistics was also recurrent as a complementary analysis.

Only one article used the t-test, and one article employed Spearman's correlation, which are considered simpler techniques to address the research question. All the other studies utilized techniques generally regarded as more sophisticated.

The regression analysis model is a technique of dependence that aims to study the behavior of a metric dependent variable in relation to one or more explanatory variables, with the goal of analyzing the relative influence of each and establishing prediction models[16]. Data analysis software has made significant progress, and its use represents clear facilitating factors for scientific research[35].

In Table 5, the software and the frequency with which they were mentioned in the 20 articles that make up the sample are listed. It is observed that nine articles (45%) did not specify which statistical software was used. The most widely used software was SPSS, followed by Smart-PLS3, totaling the other nine articles (45%). The use of G*Power 3.1 and UCINET 6 software was also identified.

Table 5: Software Used

Software	*f*	%
SPSS	5	25
Smart-PLS3	4	20

G*Power 3.1	1	5
UCINET 6	1	5
Not specified	9	45
Total	20	100

In another study, the use of quantitative methods in research on Occupational Accident Risk Management is noteworthy. The SPSS software emerged as the primary processing tool in portfolio studies, being employed in the data analysis of eight articles, representing 36.4% of the research on the subject[29].

Supporting bibliography

Furthermore, to verify sources supporting the developed analyses and identify the bibliography supporting the employed quantitative methods, the predominance of certain authors was observed. This is reflected, in alphabetical order, in Table 6

Table 6: Supporting bibliography

Authors	Year	Title
Hair *et al.*	1995	Multivariate data analysis: with readings
Hair *et al.*	2012	Na assessment of the use of partial least squares structural equation modeling in marketing research
Hair *et al.*	2014	Partial least squares structural equation modeling (PLSSEM): an emerging tool in business research
Hair *et al.*	2014	Multivariate data analysis: Pearson new international edition
Hair *et al.*	2017	An updated and expanded assessment of PLS-SEM in information systems research
Hair *et al.*	2017	A primer on partial least squares structural equation modeling (PLS-SEM)
Hair *et al.*	2019	Multivariate data analysis
Hair *et al.*	2020	Assessing measurement model quality in PLS-SEM using confirmatory composite analysis
Hair *et al.*	2009	Multivariate Data Analysis
Henseler *et al*.	2009	The use of partial least squares path modeling in international marketing
Henseler *et al*.	2015	A new criterion for assessing discriminant validity in variance-based structural equation modeling
Chin	2010	How to write up and report PLS analyses.
Chin	2013	Controlling for common method variance in PLS analysis: the measured latent marker variable approach
O'brien	2007	A caution regarding rules of thumb for variance inflation factors
Ringquist	2013	Meta-Analysis for Public Management and Policy

In this way, it was observed in the supporting bibliography of the sample articles the use of nine works by Joseph Hair Jr., a professor at the University of South Alabama. It is emphasized how positive his publications are for scientific research in Brazil. Even before being translated into Portuguese, the book titled 'Multivariate Data Analysis' was already a reference because, unlike many other publications, the book is illustrative and allows readers, even with little experience in quantitative methods, to perform analyses of their data[22, 43].

V. Conclusion

This study, aiming to map the quantitative methods employed in research on Institutional Theory in the Public Sector, culminated in a synthesis of the main characteristics of the articles resulting from the bibliographic research. The bibliographic portfolio, resulting from the selection process, consisted of 20 scientific articles aligned with the research theme.

Through the analysis of the bibliographic portfolio, the mapping allowed the identification of the keywords 'Institutional Theory' and 'Public Sector' as the most used. Additionally, it was found that the 5-point Likert scale was the most commonly used in data collection, appearing in 30% of the researched works. Regarding sample sizes, it was observed that 50% of the studies used samples of up to 200 individuals, totaling 10 articles, with 60% of the studies not specifying the type of sampling employed.

Furthermore, it was observed that a significant portion of the articles did not provide detailed information on the methodological procedures used, which could have hindered the analysis of the techniques in two dimensions: replicability of the research and assessment of the appropriateness of the method application. It was also noted that the quantitative methods used in the samples are quite diverse, highlighting two methods used most frequently: Multiple Regression Analysis and Structural Equation Modeling.

Regarding the use of software for data analysis, four tools were identified, with the SPSS software taking the lead, followed by Smart-PLS3. However, it was noted that nine articles (45%) did not specify which statistical software was used. The supporting bibliography of the sample articles prominently features various works by Professor Joseph Hair Jr., a notable figure in scientific research in Brazil.

The limitations identified for the completion of this study are primarily related to the lack of complete information about the methodological procedures adopted in the sample articles, especially regarding the type of scale and the type of sample used. This has an impact on the analysis of the studies and the quantitative methods employed.

Therefore, the objective of this study is to contribute to the knowledge and dissemination of quantitative methods used in the field of Institutional Theory in the Public Sector. The scientific articles comprising the literature fragment analyzed are limited to the results obtained from the two mentioned freely accessible databases, with no intention to exhaust the subject. Ultimately, this research may contribute to and inspire future studies addressing the use of statistical models, expanding and providing additional perspectives on the subject matter.

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