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## ORGANIZATIONAL CITIZENSHIP BEHAVIOR: A MULTIPLE LINEAR REGRESSION STUDY AT THE MINERAL RESOURCES RESEARCH COMPANY (CPRM)

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### ABSTRACT

People Management in organizations has become a task in which an increasing number of variables are involved. For companies to act in competitive advantage it is important that they adopt specific strategies. The discretionary actions and gestures practiced by employees in organizations, which go beyond the tasks determined by the position and function in the company, are considered the Behavior of Organizational Citizenship (CCO – *Comportamento de Cidadania Organizacional*), which is the subject of this study. The objective is to know to what extent the five variables proposed by Organ (1988) were perceived and identified in the Mineral Resources Research Company (CPRM – *Companhia de Pesquisa de Recursos Minerais*), considering the opinion of its employees. The survey, a case study with a qualitative and quantitative approach, involved a universe of 1,704 employees, who received online forms containing 31 assertives based on the five variables of Organ (1988) and obtained 362 valid responses. The data collected were analyzed from a multiple linear regression model, which revealed the degree of influence of each of the five variables proposed by Organ (1988) in the CCO within the company. Such an analysis methodology applied to a federal public company could be replicated in other institutions for mapping and managing the factors that most impact the generation of a collaborative environment.

**Keywords:** Organizational Behavior; Organizational Citizenship; Organizational Citizenship Behavior.

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## 1. INTRODUCTION

Barnard (1938) believed that cooperation arose from each individual's primary purpose being to unite in a diverse organizational system, with people thinking and acting in completely different ways. The early studies on Organizational Citizenship Behavior (CCO – *Comportamento de Cidadania Organizacional*) date from this author's work, stating that acts of good will and the engagement of individuals in spontaneous and cooperative gestures are essential for the maintenance of the organization's life.

The studies of Katz and Kahn (1966) on social psychology in organizations contributed in the sense that organizational theory became free from the structure of the individual-organization relationship, whose theoretical bases of the studies of psychology and sociology could not resolve. This work contributed to the formulation of the current theories of CCO.

International and national studies, from the 1960s to the contemporary ones, emphasize and suggest that organizational behavior is very similar when researched in public or private organizations, that is, the basic administrative processes are very similar, whether in a multinational or in a State department in a government sector (Denhardt, 2013).

This research on the behavior of individuals can serve as a support to the decision making of managers in companies, whether in the private or public corporate environment, and is relevant for strategic business purposes. Researchers studied individuals and groups in organizations in order to explain differences in individual and group performance.

For Boreham et al. (2013), work organization has undergone numerous changes in recent decades, which have changed the ways individuals are and act in the work environment. The new forms of work organization have been characterized by the adoption of participatory approaches in decision making, the structuring of work in teams with greater autonomy, the replacement of specific qualifications by broad training of workers, including social skills, as well as the encouragement of knowledge sharing among members of the organization.

Currently, productivity can be determined by technology and by the organization of work, with variations that take into account the cognitive capacities (not only emotional and "spiritual") of individuals. In this sense, the discretionary attributes, beyond the performance of strictly mandatory tasks, are now the target of several studies, involving both personal variables (personality traits) and specific conditions, such as attitudes, beliefs and emotions (Borman et al., 2001; Konovsky; Pugh, 1994; Organ; Ryan, 1995; Ziegler et al., 2012).

The CCO may cause enrichment in human relations at work, as well as in the relations between people and companies, leading to gains for both. To this end, people and organizations should become aware of and broaden their scope of information on this subject, through the dissemination and discussion of the subject.

The interactions between the members of an organization are an important element in the studies on CCO, since the interactions between individuals and between them and the organization are influenced by the social context (Chia-buru et al., 2013).

Faced with this reality, this study presented the following research question: to what extent are the five dimensions of Organ (1988), defined as altruism, sportsmanship, courtesy, civic virtue and conscientiousness, identified in the Mineral Resources Research Company (CPRM) from the perception of its employees?

In this sense, the purpose of this work is to investigate, based on the Organ CCO model (1988), the variables that influence the CCO in CPRM, perceived by its employees.

Para atingir este objetivo, foram determinados os seguintes objetivos específicos:

1. Identify the theoretical underpinning of the CCO and its importance in organizations;
2. Survey the state of the art on the background and attitudinal dimensions of the CCO relevant to the analysis of the work in question;
3. Apply electronic questionnaire as a tool for the case study;
4. Measure the representativeness of the results obtained; and
5. Analyze the data from the statistical technique of multiple linear regression.

## 2. LITERATURE REVIEW

In a contemporary view, the concept of citizenship has come to be used not only to specify the relationship that individuals have with their Country-State, but also to theoretically support understanding interms of certain behaviors that are emitted in specific environments, such as associations, groups or work institutions (Gomes et al., 2014).

Falconer (1999) argues that organizational citizenship presupposes a continuum of practices, from philanthro-



pic action to long-term survival strategies of the company. It should also be noted that there are forms of interaction between private companies and communities or non-profit organizations, such as cultural sponsorship of activities promoted by third sector organizations.

As Sobral and Mansur (2013) assert, the field of studies of organizational behavior was recognized in the mid-1960s, which can be understood as an area that examines the behavior of organizational environments, as well as the influence that groups of people and individuals have on behavior in organizations. According to Robbins et al. (2011), this is an area of research whose objective is to help managers explain, predict and control human behavior. It refers to the systematic study of the actions and attitudes of people within organizations.

The study of organizational behavior is fundamental for the development of companies and people, because organizational objectives can be achieved through help, commitment and collaboration. It was from this field that the area of knowledge on CCO was derived.

The term CCO was first used by Bateman and Organ (1983) and Smith et al. (1983) in a study that analyzed the nature and predictors of this type of performance in a sample of employees and their supervisors at two banks. Under this designation, the authors referred to those behaviors that superiors appreciate but cannot demand from their subordinates.

According to Costa et al. (2017), in the scenario of the current corporate universe, whether private or public, organizations require even more professionals with the behaviors of organizational citizenship, i.e. proactive individuals with initiative, and which are not restricted to the routines and tasks inherent in the formal system of the organization.

Second, Organ (1988), in turn, defined Organizational Citizenship Behavior as "individual discretionary behaviors, not directly or explicitly recognized by the formal reward system, and that promote the effective operation of the organization. For this author, the concept is composed of the following dimensions:

- a) Altruism: actions aimed at helping a person with difficulties at work and discretionary behavior and, on the part of workers, helping specific people with relevant problems in the organization;
- b) Courtesy: actions aimed at helping a person avoid problems at work;
- c) Sportsmanship: attitude of citizenship that consists of tolerating small frustrations and inconveniences at work without complaints;

- d) Conscientiousness: a standard that results in going beyond the minimum required levels of presence, punctuality, maintenance of the space and of the resources at work; and
- e) Civic virtue: responsible and constructive involvement in the political life of the organization.

CCOs have been considered desirable in organizations, and are a subject of worldwide research whose definition is widely shared by many leading authors as "informal actions of workers that benefit the organization".

Verchai and Laner (2008), based on their study which included the analysis of 75 authors whose publications were presented in the Journal of Applied Psychology between 1983 and 2008, define CCO as "non-prescribed conduct that benefits the organization as a whole, thus increasing its competitiveness" and that transcends the relationship of rights and duties and can be considered as "an informal agreement between the parties of the organization". It should be noted that Verchai and Laner (2008) include competitiveness in their definition of CCO due to the large number of authors studied who empirically evaluated the consequences of these behaviors in organizations in this respect. The CCO, by its definition, necessarily occurs outside the formal sphere and the previously established agreements.

### **Study of the dimensions of organizational citizenship behaviors**

The literature presents two ways of applying the term dimensions in the CCO categorization. The first way is to understand dimension as the level where behaviors or acts of citizenship occur. The second way is to understand dimension as components or groups of behavior. Within this line there are several dimensions, components or groups of behavior that characterize the study of CCO.

Based on these theoretical conceptions, the notion of CCO was addressed by the studies of Organ (1988) and his collaborators (Bateman; Organ, 1988).

As Podsakoff et al. (2014) and Organ (1988) state, organizational citizenship is an individual, discretionary behavior that is not explicitly recognized by the formal reward system and contributes to the effective functioning of the organization. By discretionary, the author makes it explicit that the behavior is not an enforceable requirement of the role or work description, but a matter of personal choice, so that its omission is not generally understood as punishable.

Podsakoff et al. (2000), with the intention of contributing to the construction of a more consistent theoretical frame-



work, carried out an in-depth study on the dimensions of CCO. Thus, even though there are approximately 30 different forms of organizational citizenship in the literature, the authors listed seven main dimensions, as illustrated in Chart 1. This chart shows that the dimensions of the CCO demonstrate the prominent set of components and behaviors associated with the theme.

**Chart 1.** Dimensions of Organizational Citizenship Behaviors

Dimensions	Definition
Altruism	Voluntary actions of workers, used to help colleagues prevent and overcome problems within the organization or in carrying out tasks.
Sportsmanship	Refrain from complaining about trivial matters and potentiate small problems that can lead to unfavorable tension in the workplace.
Organizational Loyalty	Promotion of the organization's image with external entities, protection and defense of the organization in the face of external threats and maintaining commitment even under unfavorable conditions.
Obedience (conscientiousness)	Internalization, acceptance of rules adopted by the organizational system, regulations and procedures.
Individual initiative	Voluntary creativity and innovation aimed to improve the execution of one's tasks and organizational performance, and the persistence of enthusiasm in the exercise of one's job.
Civic Virtue	Organizational participation and concern for the interests of the company. It reveals the level of loyalty to the organization, represented by workers' participation in meetings, gatherings and organizational activities.
Self-development	Voluntary behavior to improve personal performance through the development of skills, aptitudes and the acquisition of knowledge to promote individual development.

Source: Prepared and adapted by the authors from Podsakoff et al. (2000) and Marinova et al. (2010).

Based on these approaches, Polat (2009) highlights some factors that tend to increase the exposure levels of organizational citizenship behaviors, such as: pleasant feelings about the workplace, support, equality, job satisfaction, loyalty to the organization, organizational trust, equity in the organization, organizational identity, perception of satisfactory salary, interest in the organization, feeling of social responsibility and the increase in motivation.

### Background on organizational citizenship behavior

Nowadays, organizations can be characterized as systems of interpretation of the environment, being their builders, through their actions, with the purpose of obtaining com-

petitive advantage, constant improvement and organizational development. Just as historians study the past to better understand the future, leaders seek to discover the factors that precede them, i.e. the predecessors (predictors) of the CCOs, to better understand their origins.

According to Podsakoff et al. (2000) and Rego (2010), empirical research focuses on four broad categories of background: individual (or employee), task characteristics, organizational characteristics and leadership behaviors, as shown in Chart 2 below.

**Chart 2.** Background on Organizational Citizenship Behavior

Categories	Variables
Employee Attitudes	Satisfaction Justice Organizational commitment/commitment Trust in the leader
Dispositional variables	Awareness Kindness Positive affectivity Negative affectivity
Perceptions of Paper by Employees	Role Ambiguity Role Conflict
Individual differences and employee competences/skills	Competence/experience/training/knowledge Professional guidance Need for independence Indifference to the rewards
Task characteristics	Task Feedback Task Routines Intrinsically satisfactory task
Organizational characteristics	Organizational inflexibility Group cohesion Rewards beyond the leader's control Spatial distance relative to the leader Perceived organizational support
Congruence/adjustment between individuals and the organization	Degree to which the values of the individual and the organization are congruent/next or not
Leadership Behaviors	Articulation of a vision Appropriate behaviour model Fostering acceptance of the group's objectives High performance expectations Intellectual stimulation Contingent reward behavior Non-contingent reward behavior Non-contingent punitive behaviour Clarification of roles Supportive leadership behaviors Exchange leader-member

Source: Rego (2002).



### 3. METHOD

This paper presents a qualitative and quantitative approach. It is characterized as being a case study in terms of means. As for the objectives, it is descriptive and applied, since the result can be used as an organizational management tool for other public companies.

#### Company researched

CPRM is a public company with the attributions of Geological Service of Brazil (SGB), linked to the Ministry of Mines and Energy (MME), which establishes the basic guidelines of public policies of the federal government for the areas of geology, mineral resources and energy. As the company is geographically spread throughout Brazil, it is distributed in 13 regional units: Federal District - DF (Headquarters), Rio de Janeiro, São Paulo, Belo Horizonte, Fortaleza, Porto Alegre, Recife, Salvador, Belém, Manaus, Goiânia, Porto Velho and Teresina.

As a method of data collection, a survey was carried out through the application of an online form to verify the influence of five perceived predictors in the CPRM work environment (independent variables): altruism, awareness, courtesy, sportsmanship, and civic virtue, according to Organ's concept (1988).

Following the 1,704 surveys that covered the company's total employee universe, using SurveyMonkey software, which provided the 362 answers in graphs, the responses were extracted according to the predetermined five-point Likert scale: (1) totally disagree, (2) disagree, (3) do not agree or disagree, (4) agree, and (5) totally agree.

These answers were all tabulated and coded from 1 to 5, forming a numerical database, with the help of Windows Excel software. Then, the factorial analysis was undertaken by arithmetic mean, and its objective was to group the 31 statements: 30 of them were grouped in five factors, corresponding to Organ's variables, and one statement corresponded to the Y axis, considered as a question. Afterwards, multiple linear regression statistical tests were performed.

The company has 1,704 employees and a sample calculation for finite population (Equation 1) was performed, according to Gil (2002), in order to identify the minimum number of valid questionnaires to be answered. To reach this calculation, the following reasoning was used:

#### Equation 1

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + Z^2 \cdot p \cdot q}$$

In which,

n: sample size

Z<sup>2</sup>: chosen confidence level

p: percentage with which the phenomenon occurs

q: additional percentage

N: population size

e<sup>2</sup>: maximum error allowed

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + Z^2 \cdot p \cdot q} = \frac{(1,96)^2 \cdot 0,5 \cdot 0,5 \cdot 1704}{0,05^2 \cdot (1704-1) + (1,96)^2 \cdot 0,5 \cdot 0,5} = \frac{1636,52}{5,2179} = 313,6$$

Considering the total population size of 1,704 employees for a maximum allowed error of 5%, with a confidence level of 95% (of which two deviations) and without the possibility of predicting the value of p, it is admitted, in a conservative way, 50%, because this is the largest sample size. Given these established parameters, the sample size (n) is equal to 313.6, that is, approximately 314. This number represents the minimum number of valid questionnaires answered to perform the statistical analyses.

A total of 1,704 surveys were distributed via SurveyMonkey's electronic software, via the Internet, and via email with the assertions to be answered by employees, returning 362 properly completed surveys. This software allows you to activate the option to only accept the submission of the fully answered questionnaires. This means that the researcher does not receive incomplete questionnaires.

The data from the 362 responses were higher than the value determined by the sample calculation (n = 313.6) and were used to compose the sample of this study.

#### Research design

The research was designed as shown in figure 1.

For data analysis, multiple linear regressions were chosen as a way to evaluate the relationship between the CCO dimensions of Organ (1988) and the interpretation that CPRM employees make of the company's citizen behavior.

According to Abbad and Torres (2002), multiple linear regression consists of multivariate research models that in-



involve analyses of the relationship between multiple explanatory variables and, in some cases, multiple dependent variables. A large part of the research designed to examine the effect exerted by two or more independent variables on a dependent variable uses multiple linear regression analysis.

Multiple regression is defined by Tabachnick and Fidell (1996) as a set of statistical techniques that allows the evaluation of the relationship of a dependent variable with several independent variables. This technique is very useful in organizational psychology research, since most of them involve independent variables correlated with each other.

For Dunlap and Landis (1998), the use of redundant predictors correlated to each other is a feature of psychology studies that, when constructing internally consistent measures, include multiple measures correlated to the same construct, which can eventually lead to the exclusion of important variables in explaining the variable in focus. In these cases, the use of statistical techniques, such as multiple regression, is safer.

The use of scientifically constructed, validated and tested measurement tools and instruments by other researchers can enable the researcher to effectively diagnose the management of organizational behavior, as well as the possibility of future interventions in the reality of work organizations.

The present research used two studies as a basis for the elaboration of the questionnaire, containing 31 assertions. The first was the study of Porto and Tamayo (2003), in which the authors created an instrument to measure organization-

al civism. In this study, the scale of organizational civism was applied to 1,100 employees of various organizations in the Federal District. The data obtained were submitted to factor analysis using the Principal Axis Factoring (PAF) method with oblique rotation. The results indicated five factors with Cronbach's alpha higher than 0.80. The conclusion of the study is that the validation of this scale was duly established and it can be used in research, even for organizational diagnosis.

The second study used as a basis was Martins' Master's dissertation (2014), defended at the Higher Institute of Economics and Management (*Instituto Superior de Economia e Gestão*) of the University of Lisbon. In it, the author used an individual questionnaire that was distributed to 820 civil workers of the Portuguese Air Force (FAP – *Força Aérea Portuguesa*), having received 424 valid questionnaires as answers. Through the use of hypothesis tests, the study identified the CCO background of FAP's civilian workers from leadership styles and proactive personality.

In this study, a structured questionnaire with 31 statements, eight socioeconomic profile questions, and one outcome question was designed for all employees in the company's 13 regional units, using the electronic survey tool known as SurveyMonkey (2018).

#### 4. RESULTS

With the aid of Excel software, multiple linear regression analysis was performed to check whether the five proposed variables present statistical significance and whether CPRM

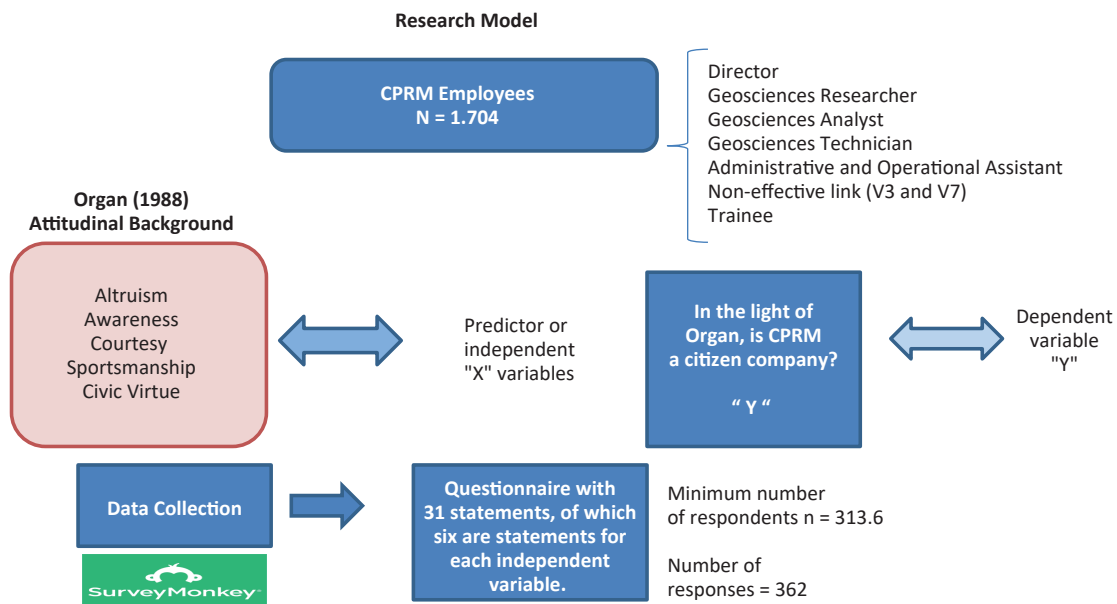


Figure 1. Research design



is considered a citizen company, in the light of Organ (1988). Table 1 presents these results.

It is observed, from Table 1, values of the coefficient of determination (R\_Square) close to 0.26, indicating that the five dependent variables (altruism, awareness, courtesy, sportsmanship, and civic virtue) represent or explain 26% of the independent variable CCO. The coefficient of determination serves as a didactic tool to evaluate the utility of a multiple linear regression model.

Table 2 contains the analysis of the variance of the regression and the residuals of the model, using the Excel software. Two values of F are observed: close to 25 and of significance close to zero. These data indicate that the variance of the regression and the residuals of the model are satisfactory.

Table 3 presents the statistical significance of the coefficients of the model variables (altruism, awareness, courtesy, sportsmanship, and civic virtue), using Excel software. These coefficients represent the degree of influence of each of the five variables proposed by Organ (1988) in the CCO. All five coefficients presented values of p (p value) close to zero, indicating that they are statistically relevant for the dependent variable CCO. In addition, among the five variables, it can

be observed that virtue and sportsmanship present higher coefficients, 0.58 and 0.64, respectively. Thus, they are the ones that have more impact on the CCO.

## 5. FINAL CONSIDERATIONS

It is noted that the research on CCO is marked by complexity in its conceptualization, which reflects in the difficulty of theoretical delimitation and, especially, its dimensionality.

The elaboration of this research approached the conceptualization of CCO under the initial delimitation of Organ (1988), where it was restricted to only five variables, which are: altruism, awareness, courtesy, sportsmanship, and civic virtue. This study allowed the analysis, evaluation and description of some important points of CCO present in CPRM, and which were perceived by its employees.

Based on the theoretical contextualization and the exploratory research carried out at CPRM, a case study was conducted with the general objective of investigating, under the CCO models of Organ (1988), the variables that influence CCO at CPRM and which are perceived by employees.

**Table 1.** Regression statistics, using Excel Software

Regression statistics	
R multiple	0.514673833
R-Square	0.264889154
Adjusted R-square	0.254564564
Standard error	0.947727829
Observations	362

ANOVA						
	gl	SQ	MQ	F	F of meaning	
Regression	5	115.220196	23.04	25.6561	0.00	
Residue	356	319.754942	0.898			
Total	361	434.975138				
	Coefficients	Standard error	Stat t	P-value	95% inferior	95% superior
intersection	-1.2759438	0.50753814	-2.51	0,01238	-2.274093686	-0.277793912
Mean	-0.12561028	0.13445148	-0.93	0,35081	-0.390029285	0.13880873
Awareness						
Mean	0.583234059	0.12502045	4.665	0	0.337362598	0.829105519
Virtue						
Mean	0.245442345	0.14702672	1.669	0,09592	-0.043707759	0.53459245
Courtesy						
Mean	-0.1356719	0.14474699	-0.94	0,34924	-0.420338567	0.148994761
Altruism						
Mean	0.646858392	0.12026927	5.378	0	0.410330837	0.883385948
Sportsmanship						



In order to meet the proposed general objective, it was necessary to meet each of the specific objectives. The first proposed to identify the theoretical rationale for the CCO and its importance in organizations. For this, a survey was conducted on 35 articles from the Emerald Insights scientific search database of the last three years, from the Elsevier international journal publisher and also from dissertations extracted from the Capes database of the federal government. The objective was to search recent studies related to CCO with emphasis on the five variables of Organ (1988), and not only on the broad sensu definitions of CCO.

The second specific objective was to raise the state of the art from the perspective of the attitudinal background and dimensions of the CCO relevant to the analysis of the work in question. The study of this survey is necessary, because it is from them that the future CCOs can be inferred, using the appropriate tools and statistical techniques.

The third objective was to measure the representativeness of the results obtained with the help of Excel software. The information extracted from SurveyMonkey was converted into the Excel database, i.e. the nominal information was transformed into a numerical database for processing in Excel.

And finally, the last specific objective was to analyze the data from the multiple linear regression statistical technique using Excel. The studies of organizational psychology of the work have already proved to be efficient and effective regarding the use of statistical techniques, especially multiple linear regression, where there is more than one independent variable to be compared.

In view of these results, all the proposed objectives were met, thus answering the central question of the survey. Thus, the study suggests that under the perception of CPRM employees, this company is considered a citizen and that according to the analysis of statistical data, the independent variables "virtue" and "sportsmanship" have a strong influence on this finding.

As a limiting factor of the research, the study was carried out through quantitative and qualitative research, in which a questionnaire adapted from other models was elaborated, besides the behavioral question that suggests a subjective bias.

New studies and research within the federal government's public enterprises are expected, as this is the only way to make comparisons between this study and the new studies conducted.

For future researches, it is suggested the item analysis to verify the reliability of the instrument from the item-total correlation, correlation between the items, Cronbach's al-

pha and McDonald's omega, besides the internal structure analysis of the scale to verify which are the latent dimensions that can explain the variability of the answers offered in each item, initial analyses aiming to confirm the internal structure, and latent analyses to verify the effect of exogenous variables in the data variability, from modeling structural equations.

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