REVISTA AMBIENTE CONTÁBIL
Universidade Federal do Rio Grande do Norte
ISSN 2176-9036
Vol. 18, n. 1, Jan./Jun., 2026
Sítios: https://periodicos.ufrn.br/index.php/ambiente
http://www.atena.org.br/revista/ojs-2.2.3-06/index.php/Ambiente
Article received in: September, 19th, 2024. Reviewed by pairs in: January, 21th, 2025. Reformulated in: February, 21th, 2025. Evaluated by the system double blind review.

DOI: 10.21680/2176-9036.2026v18n1ID42533

Influence of budget participation on budget quality, budget adequacy, and budget goal level of managers with budgetary responsibility in port companies

Influencia de la participación presupuestaria en la calidad del presupuesto, la adecuación del presupuesto y el nivel de la meta presupuestaria de los gestores con responsabilidad presupuestaria en empresas portuarias

Influência da participação orçamentária na qualidade do orçamento, adequação do orçamento e no nível da meta orçamentária de gestores com responsabilidade orçamentária em empresas portuárias

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(Article presented at the XXI Iberoamerican Congress on Management Control, CIBEC, Cartagena de Indias, 2024)

Acknowledgments: The work was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) - Financing Code 001, the Santa Catarina Research and Innovation Support Foundation (FAPESC), and the National Council for Scientific and Technological Development (CNPq).

Abstract

Purpose: The present study aimed to analyze the influence of budget participation on budget quality, budget adequacy, and budget goal level of managers with budgetary responsibility in port companies.

Methodology: A methodological approach based on a survey with 101 managers responsible for planning and budget control of port companies in Brazil was used, and structural equation modeling analysis with partial least squares (PLS-SEM) to test the hypotheses.

Results: The results suggest that participation in the budget process exerts a positive and significant influence on both budget quality and adequacy, as well as on budget goal levels. However, although budget quality did not show a significant association with the budget goal level, budget adequacy in terms of the ability to deliver what is expected to emerge as a relevant predictor for achieving these goals.

Contributions of the Study: This study contributes to the literature by presenting new evidence regarding individual participation in the budgeting process and offering insights into the application of Goal Setting Theory. The findings emphasize the importance of managers' participation in budgeting, which directly influences budget quality and adequacy. This engagement significantly affects the achievement of budget goals, providing vital information that enables managers and superiors to make more assertive decisions. Therefore, the research suggests that active participation by managers in the budgeting process is essential for successfully meeting organizational objectives and goals.

Keywords: Budget participation. Budget quality. Budget adequacy. Budget goal.

Resumen

Objetivo: El presente estudio tiene como objetivo analizar la influencia de la participación presupuestaria en la calidad del presupuesto, la adecuación del presupuesto y el nivel de la meta presupuestaria de los gestores con responsabilidad presupuestaria en empresas portuarias.

Metodología: Se utilizó un enfoque metodológico basado en una *survey* a 101 gerentes responsables de la planificación y el control presupuestario de empresas portuarias en Brasil, y un análisis de modelos de ecuaciones estructurales con mínimos cuadrados parciales (PLS-SEM) para probar las hipótesis.

Resultados: Los resultados sugieren que la participación en el proceso presupuestario ejerce una influencia positiva y significativa tanto en la calidad del presupuesto como en la adecuación del presupuesto, así como en el nivel de la meta presupuestaria. Sin embargo, aunque la calidad del presupuesto no mostró una asociación significativa con el nivel de la meta presupuestaria, la adecuación del presupuesto en términos de capacidad para cumplir con lo esperado emergió como un predictor relevante para alcanzar estas metas.

Contribuciones del Estudio: El estudio contribuye a la literatura al presentar nuevas evidencias sobre la participación de los individuos en el proceso presupuestario, además de proporcionar información sobre la aplicación de la Teoría del Establecimiento de Metas. Las evidencias destacan la importancia de la participación de los gestores en el proceso presupuestario y su relación directa con la calidad del presupuesto y la adecuación del presupuesto. Esta participación impacta directamente en el logro de las metas presupuestarias, proporcionando información esencial para que los gestores y superiores tomen decisiones más asertivas. Así, la investigación sugiere que la participación de los gestores en el proceso presupuestario es decisiva para alcanzar los objetivos y metas organizacionales.

Palabras clave: Participación presupuestaria. Calidad del presupuesto. Adecuación del presupuesto. Meta presupuestaria.

Resumo

Objetivo: O presente estudo tem como objetivo analisar a influência da participação orçamentária na qualidade do orçamento, adequação do orçamento e no nível da meta orçamentária de gestores com responsabilidade orçamentária em empresas portuárias.

Metodologia: Utilizou-se uma abordagem metodológica baseada em pesquisa *survey* com 101 gestores responsáveis pelo planejamento e controle orçamentário de empresas portuárias no Brasil, e análise de modelagem de equações estruturais com mínimos quadrados parciais (PLS-SEM) para o teste das hipóteses.

Resultados: Os resultados sugerem que a participação no processo orçamentário exerce uma influência positiva e significativa tanto na qualidade do orçamento quanto na adequação do orçamento, assim como no nível da meta orçamentária. No entanto, embora a qualidade do orçamento não tenha apresentado uma associação significativa com o nível da meta orçamentária, a adequação do orçamento em termos de capacidade para cumprir o que é esperado emergiu como um preditor relevante para o alcance dessas metas.

Contribuições do Estudo: O estudo contribui para a literatura ao apresentar novas evidências sobre a participação dos indivíduos no processo orçamentário, além de fornecer *insights* sobre a aplicação da Teoria do Estabelecimento de Metas. As evidências destacam a importância da participação dos gestores no processo orçamentário e sua relação direta com a qualidade do orçamento e a adequação do orçamento. Essa participação impacta diretamente o alcance das metas orçamentárias, fornecendo informações essenciais para que gestores e superiores possam tomar decisões mais assertivas. Dessa forma, a pesquisa sugere que a participação ativa dos gestores no processo orçamentário é decisiva para o atingimento dos objetivos e metas organizacionais.

Palavras-chave: Participação orçamentária. Qualidade do orçamento. Adequação do orçamento. Meta orçamentária.

1 Introduction

The budget is an analytical tool that allows us to understand the factors that influence individuals' behavior (Covaleski, Evans III, Luft & Shields, 2007). It is used as a management control instrument, highlighting its ability to affect the minds and behavior of managers (Birnberg, Luft & Shields, 2007). This issue has been widely debated in Management Accounting studies (Aguiar, Dieng & Guerreiro, 2024; Bernd, Beuren, Pazetto & Lavarda, 2022).

From a psychological perspective, budgetary participation is considered a mechanism that facilitates communication between superiors and subordinates (Covaleski et al., 2007). Managers responsible for the budget and involved in the discussions have the opportunity to influence the creation of their own budgets (Derfuss, 2016; Shields & Shields, 1998). This improves the quality of the budget, its ability to provide useful, accurate, and reliable information for decision-making (Magner, Welker, & Campbell, 1996), and the adequacy of the budget, related to the perception that budgeted resources are sufficient to meet job requirements (Nouri & Parker, 1998). The inclusion of managers in the budgeting process benefits the company as a whole, promoting a better understanding of the level associated with budgetary goals (Kenis, 1979).

Studies on budgetary participation aim to identify the factors that can influence managerial performance either directly or indirectly (Milani, 1975; Derfuss, 2016). The literature suggests that budgetary participation improves budget quality and the relevance of information to a job (Magner et al., 1996). Furthermore, budgetary participation leads to greater budget adequacy and increases job performance directly and indirectly through organizational commitment (Nouri & Parker, 1998). It also influences managers' commitment to clarity and difficulty in achieving budgetary goals (Kenis, 1979). Evidence is still limited concerning studies that investigate, in an integrated manner, how managerial participation in the budgetary process can affect budget quality and adequacy, as well as the level of budgetary goals–essential factors for managerial decision-making.

Another gap identified in the literature is related to the study of managers of Brazilian port companies, a field that is still under development in research in the budgetary context (Oliveira & Lavarda, 2023). Oliveira and Lavarda (2023) provide evidence of budgetary participation in the organizational commitment and work involvement of managers of port companies in Northern Brazil. Thus, the importance of managers' participation in budgetary processes is recognized.

In this sense, we sought to answer the following research question: **What is the influence of budgetary participation on the budget quality, budget adequacy, and budget goal level of managers with budgetary responsibility in port companies?** Thus, the objective of this study was to analyze the influence of budgetary participation on the budget quality, budget adequacy, and budget goal level of managers with budgetary responsibility in port companies. Managers of these companies must have a clear understanding of the difficulties associated with budgetary goals, considering that they operate in a dynamic environment, constantly adapted and influenced by factors such as legislation, customers, technology, and sustainability, which can affect the expected budget.

The relevance of this study lies in the fact that its results may provide support for budget management practices, particularly in port companies that seek to align organizational objectives more adequately with managers' efforts. In addition, this research stands out for the application of the Goal Setting Theory in the context of managers' participation in the budget process, offering a new perspective on this dynamic in the organizational environment.

This study contributes to the literature by presenting new evidence on the influence of manager participation in the budgeting process (Milani, 1975; Nouri & Parker, 1998; Oliveira & Lavarda, 2023). In addition, it explores a little-researched field of study: the participation of managers in the port sector, expanding on the findings of Oliveira and Lavarda (2023). Another relevant contribution is the application of the Goal Setting Theory, enriching the understanding of the relationship between budgetary participation and the achievement of organizational objectives. By providing new evidence, this study expands and complements previous research conducted by Guterres and Lavarda (2024) and Lavarda, Sant'ana, Manfroi, and Dagostini (2015).

In a practical context, the results of this study may contribute to the management of port companies, highlighting the importance of encouraging the active participation of managers both in preparing the budget and in setting organizational goals. By promoting participation, budget management becomes more aligned with the needs and realities of the sector, enabling more appropriate decisions and strategies. Furthermore, adopting an integrated approach to budget management that considers various factors related to managers' involvement can contribute to the continuous improvement of management practices. This integrated approach is also essential for port companies to adapt quickly to constant changes and market demands, in addition to strengthening their organizational capacity to achieve strategic objectives.

2 Literature Review and Research Hypotheses

2.1 Budgetary Participation in Budget Quality

Locke and Latham (1990; 2006) developed the Goal Setting Theory, investigating how goals can influence organizational performance. They identified that goal measurement and evaluation systems can be fundamental to improving performance (Locke & Latham, 1990; 2006). According to the authors, clear goals encourage motivation and persistence and offer precise guidance for employees' work in the organization (Locke, 1968). Locke (1968) also highlighted that goal setting is essential to shape behaviors, as it guides employees on the effort required and the actions to be taken to achieve the established objectives.

The Goal Setting Theory has been adopted in studies on the participation of managers in the budgeting process, such as that of Guterres and Lavarda (2024), who investigated managers of companies associated with the Chamber of Commerce and Industry of Timor-Leste, and that of Lavarda, Sant'ana, Manfroi and Dagostini (2015), who investigated managers of an agro-industrial cooperative in southern Brazil. In our study, the theory is also applied to analyze the managers of port companies in Brazil.

In this way, managers' engagement in defining these goals is decisive, as it allows them to set goals that are challenging but still perceived as achievable (Locke, 1968; Locke, Shaw, Saari & Latham, 1981; Murray, 1990; Chong & Johnson, 2007). Setting challenging but attainable goals often result in superior performance compared with moderate or easy goals (Murray, 1990; Locke & Latham, 1990). Furthermore, difficult goals are more effortful and may require greater knowledge and skills, whereas easily achievable goals require less effort and skills. This reflects the perceived challenge managers experience in meeting budgetary goals (Hussein, Maji, & Panda, 2016; Steers & Porter, 1974).

Thus, a budget that reflects accurate estimates of future conditions will likely provide managers with a better allocation of organizational resources, which is a more appropriate tool for directing work efforts and planning organizational activities (Magner et al., 1996; Milani, 1975). Budgetary participation functions as a means of conveying information between superiors and subordinates, increasing the motivation of the latter (Covaleski, Evans III, Luft & Shields, 2003; Derfuss, 2016; Shields & Shields, 1998). In a participatory budgeting approach, managers with budgetary responsibility, involved in discussions, influence the definition of the budget (Derfuss, 2016; Shields & Shields, 1998).

Consequently, the quality of the budget not only provides managers with a more adequate basis for planning in the units under their responsibility but can also be enhanced through their active participation in the budgeting process (Magner et al., 1996; Milani, 1975).

This quality can be described by the accuracy and reliability of the information presented in the budgets, which accurately reflect the situation and provide reliable data (Magner et al., 1996).

In the literature, research exploring the relationship between budgetary participation and budget quality across various types of organizations and cultural settings is still incipient. The study is dedicated to a public organization. Recent findings by Hassan and Basiruddin (2023) reveal a strong and positive correlation between budgetary participation and budget quality within municipal institutions and local government bodies in Iraq. This suggests that enhancing the involvement of civil servants in the budget formulation process could be an effective strategy to mitigate budgetary challenges (Hassan & Basiruddin, 2023).

Contrastingly, budget quality in private organizations holds significant importance, especially due to the dynamic and ever-evolving market environment. Involving managers in the budgeting process can improve budget quality (Magner et al., 1996). Due to their specialized knowledge in their respective roles, managers can provide crucial insights to budget decision-makers (Mahama, 2006). This information may result in budgets that more accurately predict future organizational conditions (Magner et al., 1996). Hence, the first research hypothesis proposes that:

H_1: Budgetary participation has a positive and significant influence on budget quality.

2.2 Budgetary Participation in Budget Adequacy

Budgeting is a management tool that can facilitate decision-making when well-designed, but it can also lead to management inconsistencies when poorly planned (Lavarda et al., 2015). Moreover, participation in the budgeting process increases the influence of managers and allows them to define the budget more accurately and adequately (Milani, 1975; Oliveira & Lavarda, 2023).

Adequacy is characterized by the degree to which an individual perceives that the budgeted resources are sufficient to meet work demands (Nouri & Parker, 1998). In addition, it is the degree to which managers perceive that the established budget is sufficient to carry out work activities that will support the achievement of organizational objectives (Khaddafi, Raza & Heikal, 2015; Sugioko, 2010). The literature suggests that budgetary participation results in budget adequacy among managers of a large American company (Nouri & Parker, 1998). Therefore, the second hypothesis is assumed:

H_2: Budgetary participation has a positive and significant influence on budget adequacy.

2.3 Budgetary Participation at the Budget Goal Level

Budgetary participation refers to the degree of involvement of managers in budgeting and their ability to influence the budgetary goals of their respective areas of responsibility (Kenis, 1979; Milani, 1975). Furthermore, participation in the budgetary process contributes positively to the company by enhancing the understanding of how budget goals are set (Bernd et al., 2022).

Previous studies have shown a strong, positive link between managers' participation in budgeting and the level of budget goals set (Chong & Johnson, 2007; Lavarda et al., 2015). Consequently, when managers take part in goal setting during the budgeting process, it helps achieve these financial goals (Lavarda et al., 2015). From this insight, we can develop the third hypothesis:

H3: Budgetary participation has a positive and significant influence on the budget goal level.

2.4 Budget Quality at the Budget Goal Level

Budget quality is closely linked to informative budgets that accurately reflect the situation and provide reliable information (Hassan & Basiruddin, 2023). This suggests that a high-quality budget can positively improve the efficiency with which budget goals are achieved (Magner et al., 1996).

Kenis (1979) argues that achieving these budget goals requires considerable effort, expertise, and knowledge. This implies that although a quality budget can facilitate the process, commitment and understanding of budget goals are still necessary to effectively achieve them (Kenis, 1979). Based on the premise that budget quality can positively influence the level of budget goal, the fourth hypothesis is proposed:

H4: The budget quality has a positive and significant influence on the budget goal level.

2.5 Budget Adequacy at the Budget Goal Level

Budget adequacy is an essential element in setting the budget goal level. When the budget is planned and managed efficiently, it becomes possible to set and achieve higher budget goals (Kenis, 1979; Milani, 1975; Lavarda et al., 2015). Based on the assumption that an adequate budget can have a positive influence on the budget goal level, the fifth hypothesis is proposed:

H5: Budget adequacy has a positive and significant influence on the budget goal level.

With the definition of the hypotheses to be tested, Figure 1 illustrates the theoretical analysis model that guides the research.

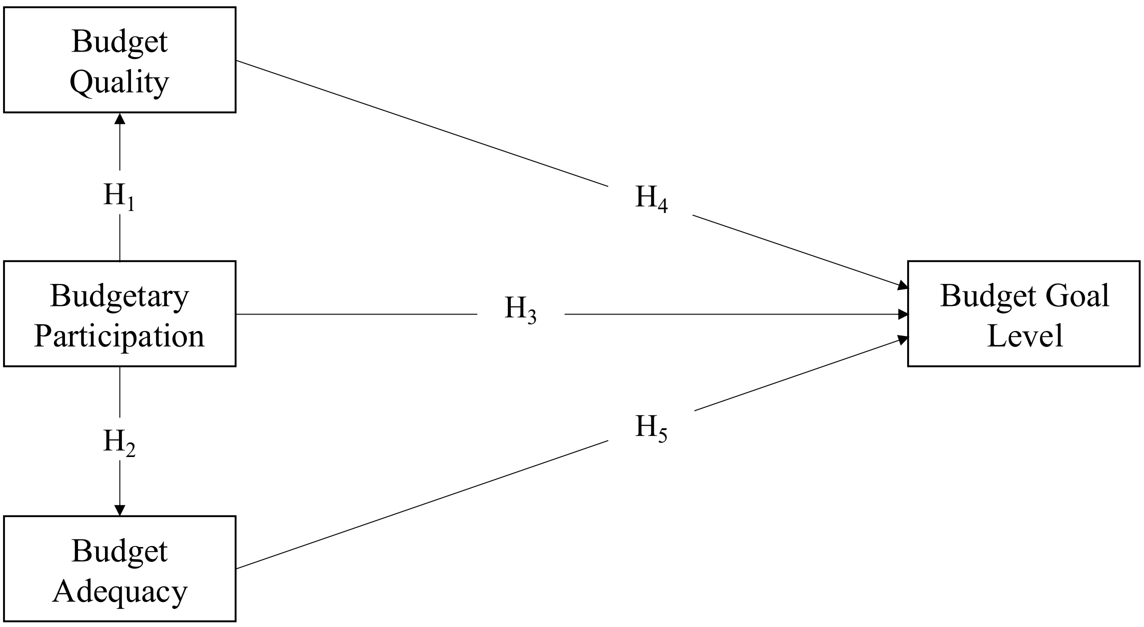

Figure 1 *Theoretical model.*
Source: *research data.*

3 Methodological Procedures

A survey was conducted with managers of port companies in Brazil holding management positions (management, supervision, coordination, and direction) responsible for budget planning and control. This sector was chosen because it plays a key role in the Brazilian economy and is responsible for the movement of a large part of the goods imported and exported by the country (*Agência Nacional de Transportes Aquaviários* [ANTAQ], 2023).

The participants were selected via LinkedIn. Data were collected between November 14, 2023, and March 7, 2024. Of the requests for connections sent, 670 were accepted, and these individuals were informed about the purpose and contribution of the study as well as the ethical procedures adopted. Anonymity and the possibility of withdrawing from the study at any time, without having to justify the decision to the researcher, were guaranteed. The participants who agreed to participate received a link to the questionnaire (Google Forms). During the data-collection period, 101 valid responses were obtained, resulting in a response rate of 15.07%. Table 1 lists the profiles of respondents and companies.

Table 1
Profile of respondents and companies

Sex	N	%	**Age**	N	%
Female	13	12.9	Up to 30 years	4	4.0
Male	88	87.1	From 31 to 40 years	50	49.5
			From 41 to 50 years	36	35.6
Academic background	**N**	**%**	From 51 to 60 years	9	8.9
Degree	23	22.8	Over 60 years	2	2.0
Specialization/MBA	65	64.4			
Master's Degree	13	12.9	**Position**	**N**	**%**
			Analyst	9	8.9
Experience in the role	**N**	**%**	Manager	31	30.7
Up to 5 years	76	75.2	Coordinator	23	22.8
6 to 10 years	14	13.9	Supervisor	30	29.7
11 to 20 years	7	6.9	Director	8	7.9
21 to 30 years	3	3.0			
Over 31 years	1	1.0	**Company region**	**N**	**%**
			North	6	5.9
Company status	**N**	**%**	Northeast	19	18.8
Private	83	82.2	Central-West	3	3.0
Public	17	16.8	Southeast	43	42.6
Mixed	1	1.0	South	30	29.7

Source: *research data.*

The sample of participants was predominantly male (87.1%). The ages of the participants ranged from 23 to 63 years, with an average of 41 years. Most participants had a specialization (64.4%), with degrees in administration, foreign trade, accounting, and law. Regarding the positions, the participants mainly occupied the positions of supervisors (30) and managers (31). Their areas of activity were mainly concentrated in the sectors of administration, controlling, planning, budget, and treasury. The time of experience in the position varied from 1 to 35 years, with an average of 5 years. As for the companies where the participants worked, most of them were private companies (82.2%). They were distributed throughout all regions of the country, with the highest percentage of respondents in the Southeast (42.6%) and South (29.7%) regions.

The companies represented in the sample are mainly involved in multimodal logistics, which includes railways, ports, and highways. Others specialize in the transportation of a range of products, such as fertilizers, grains, steel materials, and fuels. They are also involved in the purchase and export of grains, such as soybeans and corn, as well as in port operations, including loading and unloading of ships, and importing, and exporting to domestic, Asian, and European markets.

Some companies focus specifically on the agribusiness segment, with activities related to the movement and shipment of grains. Others stand out in the logistics area, with solid bulk storage and related transportation, or have a presence in the European, Asian, and American mining markets. There are also companies that specialize in port terminals, meeting the logistical needs for containers and breakbulk in the ports of southern Brazil, carrying out various operational activities.

In addition, some companies provide comprehensive logistics services, serving the entire global supply chain, with the goal of becoming the main logistics facilitators of global trade. Their activities include the loading and unloading of various cargoes in the ports, such as agricultural commodities, sugar, mining, fertilizers, and industrial products.

As for the instruments used, all were based on previous research and adopted the Likert scale. For budgetary participation, the six-item instrument of Milani (1975) was used, with a scale from 1 (strongly disagree) to 5 (strongly agree). This instrument is widely used in management research in the Brazilian context (Oliveira & Lavarda, 2023). Budget quality was assessed using the four-item instrument of Magner et al. (1996), on a scale from 1 (strongly disagree) to 5 (strongly agree). Budget adequacy was assessed using Nouri and Parker's (1998) three-item instrument, on a scale of 1 (strongly disagree) to 5 (strongly agree). For the budget goal level, we used the Kenis (1979) study with five statements on a scale from 1 (strongly disagree) to 5 (strongly agree).

The instruments were translated into Portuguese and adapted. After translation and adaptation, four pre-tests were carried out to verify the understanding of the questions with two researchers studying for a doctorate in the area of management accounting and two managers of port companies who were not part of the final sample. Adjustments were made to the instrument, based on the feedback received.

Partial least squares structural equation modeling (PLS-SEM) was used to analyze the data using SmartPLS software (version 4) (Ringle, Wende & Becker, 2024). Following Faul, Erdfelder, Buchner and Lang (2009), it was determined that at least 77 valid responses are necessary to achieve a sample power of 80% and a significance level of 5 %. The survey yielded a final sample of 101 respondents, exceeding the minimum number necessary for the analysis.

4 Results and Analysis

4.1 PLS-SEM Analysis

Before starting the analysis using PLS-SEM, Harman's single-factor test was conducted to check for any potential biases in the method. The results suggest that the first factor explained 48.68% of the total variance, indicating the absence of such bias in the sample. This analysis was run using the SPSS software.

In the structural equation modeling process, the first step was to analyze the measurement model, aiming to ensure the reliability and validity of the variables. To achieve the necessary validity, we had to remove an assertion on the budget goal level (assertion 2) to achieve such validity. Figure 2 shows the indices of the external load indicators, the path coefficient, and the R² value.

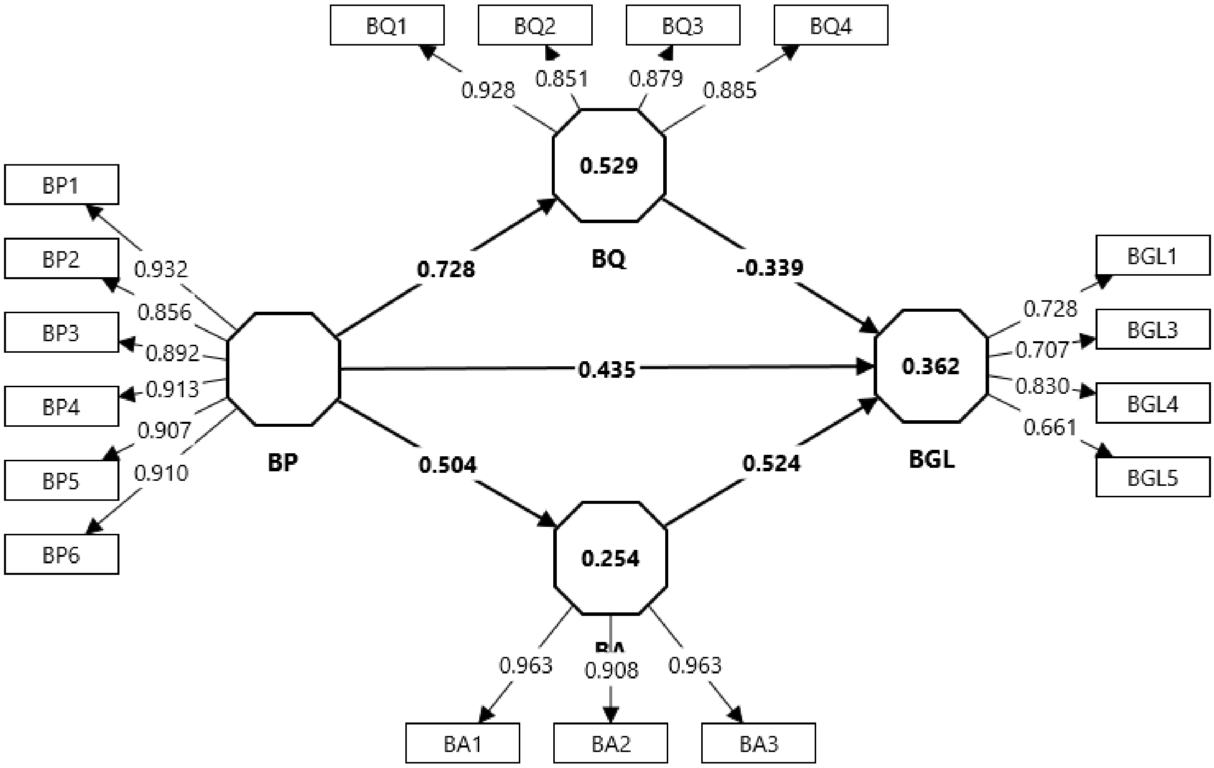

Figure 2 *Proposed model with R² values.*
Note: Budgetary Participation (BP); Budget Quality (BQ), Budget Adequacy (BA); Budget Goal Level (BGL).
Source: *research data.*

The reliability and validity data are detailed in Table 2.

Table 2
Measurement model.

	Cronbach's alpha **(α)**	***Composite Reliability*** **(CR)**	***Average Variance Extracted*** **(AVE)**
Budget Adequacy	0.940	0.962	0.894
Budget Goal Level	0.752	0.823	0.539
Budgetary Participation	0.954	0.963	0.814
Budget Quality	0.909	0.936	0.785

Discriminant Validity - *Heterotrait-monotrait ratio of correlations* (HTMT)

	BA	BGL	BP	BQ
Budget Adequacy (BA)				
Budget Goal Level (BGL)	0.508			
Budgetary Participation (BP)	0.531	0.446		
Budget Quality (BQ)	0.705	0.306	0.779	

Source: *research data.*

In Table 2, both internal consistency and convergent validity, measured by AVE, were above the limits established in the literature. According to Hair, Risher, Sarstedt and Ringle (2019), Cronbach's alpha and CR must be greater than 0.70, while AVE must be greater than

0.50. In addition, in the analysis of discriminant validity using HTMT, the values must be less than 0.85, which is in accordance with the literature, and this criterion is also met, as shown in Table 2.

The absence of multicollinearity was checked by calculating the Variance Inflation Factor (VIF). The guidelines in the literature recommend ideal values of less than 3 (Hair et al., 2019). It can be observed from Table 3 that the values were within the recommended parameters.

Table 3
Variance Inflation Factor (VIF)

	Budget Goal Level
Budget Adequacy	1.750
Budgetary Participation	2.132
Budget Quality	2.772

Source: *research data.*

Thus, once the indices of the variables are in agreement, it is possible to proceed to the next step: the structural model. The analysis of the structural model was conducted using the bootstrapping technique (Hair et al., 2019; Ringle et al., 2024), with the application of 5,000 subsamples. The details of the results are available in Table 4 and will be discussed in the next subsection 4.2.

Table 4
Structural model.

Hypothesis		**Beta (β)**	**t-*value***	**p-*value***	**Decision**
H_1	BP -> BQ	0.524	4.916	0.000***	Not rejected
H_2	BP -> BA	0.504	5.910	0.000***	Not rejected
H_3	BP -> NMO	0.435	2.994	0.003***	Not rejected
H_4	BQ -> BGL	-0.339	2.072	0.038	Rejected
H_5	BA -> BGL	0.524	4.916	0.000***	Not rejected

Notes: *** Significant at p<0.01. Budgetary Participation (BP); Budget Quality (BQ); Budget Adequacy (BA); Budget Goal Level (BGL).
Source: *research data.*

The R^2 coefficient, which indicates the explanatory power of the model, was evaluated according to Cohen (1988) and classified as small (2%), medium (13%), or large (26%). In this sense, the R^2 for budget adequacy (25%) was close to an explanatory power considered large, while budget quality (36%) and the budget goal level (53%) demonstrated explanatory power already established as large. In addition, the predictive relevance of the endogenous variables was determined by the Stone-Geisser indicator (Q^2), which revealed values above zero for all constructs: budget adequacy (0.224), budget quality (0.517), and budget goal level (0.168), as suggested in the literature (Hair et al., 2019).

4.2 Research Discussion

Based on the statistical results, a positive and statistically significant relationship was detected between budgetary participation and budget quality ($\beta = 0.524$; $p < 0.01$), thus not rejecting hypothesis H_1 that budgetary participation has a positive effect on budget quality. This finding is consistent with that reported by Hassan and Basiruddin (2023). This indicates that when managers actively participate in the budget process, they have more influence on defining the budget, which can lead to a more accurate allocation of organizational resources (Derfuss, 2016; Shields & Shields, 1998).

The importance of budget quality is used for planning and decision-making in organizations. This quality is defined by the accuracy and reliability of the information presented in budgets, accurately reflecting the situation and providing reliable data for management (Magner et al., 1996). In this sense, managers' participation in the budgetary process is essential to ensure that the budget is an effective planning and control tool in decision-making processes (Milani, 1975).

Therefore, including managers in the budgeting process can improve the quality of the budget because they have deeper knowledge of their respective roles and can share private information with decision-makers (Mahama, 2006). This collaboration results in a more accurate and reliable budget, which is essential for the dynamic environment of companies that are constantly adapting to the market.

Based on the statistical results, a positive and statistically significant relationship was found between budgetary participation and budget adequacy ($\beta = 0.504$; $p < 0.01$), thus not rejecting hypothesis H_2 that budgetary participation in budget adequacy is positive. This finding is in line with the study by Nouri and Parker (1998). This indicates that the budget is widely recognized as a necessary instrument for management, capable of facilitating decision-making when prepared appropriately. However, planning flaws can result in inconsistencies in management (Lavarda et al., 2015).

Thus, budget adequacy is a measure of the degree to which individuals perceive budgeted resources to be sufficient to meet job requirements (Nouri & Parker, 1998). Furthermore, it is related to managers' perception that the established budget is adequate to carry out activities that support the achievement of organizational objectives (Khaddafi et al., 2015; Sugioko, 2010).

The statistical results indicated a positive relationship between budgetary participation and the budget goal level ($\beta = 0.435$; $p < 0.01$), hence not rejecting hypothesis H_3 that budgetary participation in the budget goal level is positive, corroborating previous studies, including those by Chong and Johnson (2007) and Lavarda et al. (2015). These findings reinforce the relevance of managers' participation in the budget preparation process and setting budget goals.

Budgetary participation, as defined in the literature as the degree of involvement of managers in budgeting and their ability to influence the budgetary goals of their areas of responsibility (Kenis, 1979; Milani, 1975), plays a critical role in setting realistic and achievable goals. Furthermore, Bernd et al. (2022) highlight that participation in the budgetary process contributes positively to the company, providing a greater understanding of the definition of budgetary goals.

By allowing managers to actively participate in the process of defining budgetary goals, organizations can benefit from a better understanding of the requirements and capabilities of their units, which can lead to more realistic goals aligned with the company's strategic objectives. This can also enhance the managers' commitment to achieving goals since they play an active role in their definition (Oliveira & Lavarda, 2023). This conclusion highlights the importance of involving managers in the budgeting process as a strategy to promote more appropriate management that focuses on achieving goals.

Furthermore, according to Goal Setting Theory, managers' participation in defining these goals is crucial, as it allows them to set objectives that are challenging but still perceived as achievable (Locke, 1968; Locke et al., 1981; Murray, 1990; Chong & Johnson, 2007). This approach aims to encourage managers to achieve better results, boost performance, and contribute to achieving established objectives.

Based on the statistical results, hypothesis H_4, which postulated a positive relationship between budget quality and the budget goal level, was rejected due to the lack of statistical significance. Despite the importance of budget quality in providing accurate and reliable information that aids decision-making and organizational planning (Hassan & Basiruddin, 2023). The literature suggests that a quality budget can positively influence the efficiency with which budgetary goals are achieved (Magner et al., 1996). However, Kenis (1979) argues that achieving these budgetary goals requires not only a high-quality budget but also a lot of effort, skill, and knowledge on the part of the managers.

This implies that, although a quality budget can facilitate the process, significant commitment and understanding of budgetary goals are still required to effectively achieve them (Kenis, 1979). Thus, our results suggest that budget quality may not be the only determining factor for attaining budgetary goals. Other elements such as participation in the budget preparation process and its adequacy, as highlighted by the managers in the sample, also exert a significant influence in this context.

This conclusion highlights the complexity involved in the relationship between budget quality and the budget goal level and highlights the need for further research to better understand these dynamics and identify the factors that truly influence the achievement of budgetary goals in companies.

According to the statistical results, a positive and statistically significant relationship was found between budget adequacy and the budget goal level ($\beta = 0.524$; $p < 0.01$), not rejecting hypothesis H_5 that budget adequacy in the budget goal level is positive. Studies by Milani (1975) and Lavarda et al. (2015) have reported that appropriate use of the budget plays a significant role in establishing and achieving budget goals. When managers perceive that the budget is sufficient to carry out their activities, they tend to have a greater commitment to achieving established goals. This suggests that budget adequacy takes into account managers' perceptions of the adequacy of available resources and can contribute significantly to achieving budget goals.

5 Final Considerations

Based on the research results, the study successfully achieved its objective of analyzing the influence of budgetary participation on the budget quality, budget adequacy, and budget goal level of managers with budgetary responsibilities in port companies. The findings suggest that the managers' participation in the budgeting process positively and significantly influences budget quality, budget adequacy, and budget goal level, thereby contributing to the achievement of organizational goals. Furthermore, the results indicate that budget adequacy has a positive and significant relationship with the budget goal level, which suggests that managers who can effectively adjust their budgets are more likely to meet higher organizational goals.

5.1 Study Contribution

Theoretical contribution: In theoretical terms, this study expands the understanding of the relationship between budgetary participation, budget quality, budget adequacy, and budget goal level, with specific results for the context of Brazilian port companies. In addition, this study provides evidence of the relevance of managers' engagement in the budgetary process, encouraging future researchers to further investigate this relationship. Additionally, this research contributes to the literature by integrating the Goal Setting Theory approach, providing new evidence for this field of study.

Managerial contribution: The results suggest that managers' participation in the budgetary process significantly contributes to improving budget quality, reinforcing the importance of these professionals' active involvement in budget preparation. This finding shows that including managers in the decision-making process improves the quality and effectiveness of management practices and promotes a more effective alignment with organizational objectives.

Moreover, the results suggest that managerial participation positively influences the perception that budgeted resources are sufficient to meet work demand. This perception highlights the importance of ensuring that port managers feel an integral part of the budgeting process, thus strengthening their commitment to achieving established goals.

The positive relationship between participation in the budgeting process, budget adequacy, and budget goal level emphasizes the key role of port managers in setting goals during budget preparation. This evidence highlights the need to foster adequate communication and promote individuals' engagement in budgetary decision-making. However, the lack of significance between budget quality and budget goal level points to the inherent complexity of budget management, suggesting the need for more integrated approaches to deal with these challenges.

5.2 Limitations

Generalizability of results: The results of this study were obtained from a sample of port company managers, which may limit the generalizability to other organizational contexts.

Variables not addressed: This study focuses on the relationship between budgetary participation, budget quality, budget adequacy, and budget goal level, excluding other variables that may also influence these relationships.

Cross-sectional nature of the study: The cross-sectional nature of this study limits its ability to establish cause-and-effect relationships between the variables investigated. Longitudinal studies can provide a comprehensive view of these relationships over time.

5.3 Suggestions for Future Research

Replication in different sectors: Future studies should replicate this research in different sectors to assess the generalizability of the results and check for possible differences in the relationships between the variables investigated.

Consideration of additional variables: Future research can investigate the effect of additional variables, such as leadership style, managerial competence, budget satisfaction, and managerial commitment, among others. In addition, it is relevant to explore the mediating and moderating variables in this relationship. It would also be pertinent to consider control variables that can influence budget goal levels, such as age, gender, education, and length of experience.

Longitudinal studies: Longitudinal studies offer the opportunity to investigate the relationships among budget participation, budget quality, budget adequacy, and budget goal level over time. This approach allows for a more detailed analysis of the dynamics involved, offering insights into how these variables influence the ability to achieve budget goals over time.

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