

Influence of the Diagnostic and Interactive Use of the Budget on Managerial Performance Mediated by Organizational Commitment


Itzhak David Simão Kaveski¹

profitzhak@gmail.com |  0000-0001-8691-9904

Ilse Maria Beuren²

ilse.beuren@gmail.com |  0000-0003-4007-6408

Tayse Gomes²

taysegomes_@hotmail.com |  0000-0003-4528-2155

Carlos Eduardo Facin Lavarda²

elavarda@gmail.com |  0000-0003-1498-7881

ABSTRACT

The objective of this study is to evaluate the influence of the diagnostic and interactive use of the budget on managerial performance, as mediated by organizational commitment. A survey was carried out using Brazilian textile industry companies as a population, and the sample consists of 133 respondents to the questionnaire. Structural equation modeling was used to test the hypotheses. The results showed that the diagnostic and/or interactive use of the budget influences organizational commitment, as well as influencing managerial performance. The organizational commitment variable had a total mediating effect on the relationship between the use of budgetary control system and managerial performance, indicating that forms of budget use affect managerial performance only when managers are committed to the organization. Based on the results, we concluded that forms of budget use had influence on organizational commitment and on the managerial performance in the surveyed companies. These results advance the literature as they reveal that the diagnostic use and interactive use of the budget are antecedent variables of organizational commitment, leading to behaviors at work that can contribute to increasing managerial performance.

KEYWORDS

budgetary control system, diagnostic use, interactive use, organizational commitment, managerial performance

¹Universidade Federal do Mato Grosso do Sul, Corumbá, MS, Brasil

²Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil

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1. INTRODUCTION

Budgetary planning and control can be an asset in the development and performance of the organization (Frezatti, Relvas, Nascimento, Junqueira & Bido, 2010). The budget “requires managers to make a great effort in detailing, involvement, and specification so that decisions are operationalized, which can be summarized in strategic planning” (Frezatti, Rocha, Nascimento & Junqueira, 2009, p. 60). In turn, budgetary control “corresponds to the closing of the managerial process and takes place not only before but during and after the activities occur” (Frezatti et al., 2009, p. 61).

The concept of control, described in Simons’ framework (1995) is closely linked to budgets. The structure proposed by the author, with four levers of control (LOCs) or systems (belief systems, boundary systems, interactive control systems, and diagnostic control systems), can help managers in budget control. Accordingly, the managers use numerical comparisons, for example, budgeted versus realized, or increases or decreases in expenses, among others, in order to periodically check for possible problems. In this study, Simons’ control model (1995) was used as a theoretical reference framework.

Budgetary effects have been researched, based on psychology precepts, on a variety of behaviors, as they recognize that individuals’ responses to their social environments are complex (Covaleski, Evans III, Luft & Shields, 2007). These potentially conflicting behaviors were investigated, taking into account different manifestations, such as motivation, stress, satisfaction, commitment, relationships with superiors, and managerial performance. One of the interests of this study is managerial performance, as defined by Oh and Berry (2009) as managerial behaviors which are believed to be ideal for identifying, assimilating, and utilizing resources to support the organizational unit the manager is responsible for.

Nouri and Parker (1998) explored the links between budgetary participation and managerial performance. As limitations of the study, they pointed out several possibilities, among them: (i) organizational commitment leads to performance (causal direction generally assumed in the literature); (ii) performance leads to organizational commitment; and (iii) work performance and organizational commitment have a reciprocal relationship. A variety of approaches is found in the literature on this matter. Chong and Chong (2002) and Wentzel (2002) highlighted the relevance of studies on participative budgeting and its relationship with the commitment to budgetary goals. Young (1985), Chenhall (1986), Chow, Cooper and Waller (1988) and Shields and Shields (1998) prioritized approaches to participative budgeting. Argyris (1952) and Becker and Green (1962) focused on budget and individuals.

Covaleski et al. (2007) classify research that deals with the effects of budgetary practices in three stages. The first two discuss the different forms of the causal model for the independent variables - additive effects versus interactive effects. The third stage focuses on the relationships between the dependent variables of the models used in the first two phases - mental states, behavior and managerial performance. This approach verifies “how mental states mediate the effects of the budgetary practices on managerial behavior and performance” (Covaleski et al., 2007, p. 22).

However, other variables can influence one another and have effects on managerial performance. For example, there is little evidence in research on organizational commitment as a mediating variable influencing the managerial performance, even less when analyzed based on the levers proposed by Simons (1995), as in diagnostic and interactive use. As suggested by Mucci, Frezatti and Dieng (2016), future research could investigate the functions of the budget, the perceived importance of the instrument to the management, and decision making, or even relate these variables to the ways a budget could be used (diagnostic, interactive, coercive, or enabling).

Pondering these perspectives, there is the following research question: What is the influence of the diagnostic and interactive use of a budget on managerial performance mediated by organizational commitment? The objective of this study is to assess the influence of the diagnostic and interactive use of the budget on managerial performance as mediated by organizational commitment of companies in the Brazilian textile industry. It is assumed that this economic sector is imbued with innovative features of products and processes, with a view to meeting market demands (Rangel, Silva & Costa, 2010). This would imply the simultaneous use of diagnostic and interactive budgetary control systems, that is, concern with meeting budget goals and with flexibility to foster learning in the organization.

According to Rangel et al. (2010), the textile sector is divided into two types of markets. The first regards the commodity markets, with standardized products, which are destined to the population with less purchasing power. In this type of market, the strategic change is low, as competition is basically achieved through cost reductions and product prices. The second regards the segmented market, with differentiated products, aimed at the population with greater purchasing power. In this type of market, strategic change is high, as consumer demands are higher, they seek style and something unique or differentiated, design, and fashion, requiring companies to respond quickly to changes in fashion and consumer demands (Rangel et al., 2010). From this perspective, it is relevant to research the effects of using budgetary control systems in the textile industry.

The control levers proposed by Simons (1995) were used with a focus on budgets in the study conducted by Chong and Mahama (2014), to verify the impacts of interactive and diagnostic uses of the budget on the effectiveness of work teams in North American companies. This paper seeks to expand the literature on budgets, paying attention to budgetary control systems, and to the managers' performance. The scope of the research also considered the commitment of people involved in this process, as a mediating variable, having effects on the relationship between the diagnostic and interactive uses of the budgetary system and managerial performance. Our aim is to contribute to understanding deficiencies related to the deeper aspects of organizational commitment, which can be influenced by the type of control system implemented in the organizations. The provision of new information represents an expansion of knowledge in this field.

2. LITERATURE REVIEW AND HYPOTHESES OF THE RESEARCH

2.1. BUDGETARY CONTROL SYSTEM AND ORGANIZATIONAL COMMITMENT

For Mowday, Steers and Porter (1979), organizational commitment is characterized by at least three related factors: (i) strong belief in and acceptance of the organization's goals and values; (ii) willingness to exert considerable effort on behalf of the organization; and, (iii) a strong desire to maintain membership in the organization. In this perspective, organizational commitment is conceived not only by the expression of beliefs and opinions, but also by actions. In addition, the commitment can be perceived by the individual in different organizational dimensions.

Commitment focuses on strategy as perspective, that is, how people interpret the rights and responsibilities of the organizational world and their relationships with individuals who work around them (Simons, 2013). Commitment to others can also be identified in proactive willingness to share useful information with other people, or other units, in the organization (Simons, 2013). When defined in this fashion, commitment represents something beyond passive loyalty. It involves an active relationship such that individuals are willing to give something of themselves in order to contribute to the organization's well being (Mowday et al., 1979).

Commitment as a construction is more global, reflecting a general affective response to the organization. It emphasizes attachment to the employing organization, including its goals and values, and tends to be more stable over time. Thus, daily events in the workplace do not lead the individual to reevaluate his attachment to the organization in general (Mowday et al., 1979). Furthermore, when the individual's bonding behaviors or actions exceeds formal and normative expectations, these are manifestations of commitment. Mowday et al. (1979) highlights that these behaviors are reflected on the organization since individuals renounce alternative courses of action and choose to connect with the organization. That is, the individual identifies himself with a particular organization and its respective objectives and wishes to remain connected to it to facilitate the achievement of these goals.

The level of commitment in organizations can be influenced by mechanisms such as the budgetary control system. Budget is one of the managerial control systems used by managers to coordinate and communicate strategic priorities and to induce their commitment to the organization (Abernethy & Brownell, 1999). Simons (1995) proposes a model that provides interactive and diagnostic control systems. These two types of control are discussed with different effects in the approach to the use of the budget, as can be seen in the studies conducted by Abernethy and Brownell (1999), Bisbe and Otley (2004), Hofmann, Wald and Gleich (2012), Shen and Perera (2013), Chong and Mahama (2014), Laitinen, Lansiluoto and Salonen (2016), Neitzke and Espejo (2016).

The Diagnostic Use of Budget (DUB) gives motivation and direction for managers to achieve their goals, in addition to being involved in the case of major deviations in the budget, since their subordinates receive a significant level of authority and autonomy (Hofmann et al., 2012). The managers have the obligation to monitor and coordinate the implementation of the intended strategies, which can contribute to the increase of organizational commitments, since the decisions taken must be aligned with the organizational objectives (Chong & Mahama, 2014). For example, companies in the textile industry that operate mainly in commodity markets can benefit from the DUB, since the operating parameters are taken as predefined, with regard given to the level of strategic change, complexity of operations, and the number of subordinate decisions.

The Interactive Use of the Budget (IUB) allows managers to be regularly and personally involved in the budgeting process, as they monitor and actively intervene in the decision-making activities of their subordinates (Hofmann et al., 2012). The IUB can contribute to a meaningful increase in managers' organizational commitment due to greater flexibility regarding dialogue and respect for subordinates' ideas. These are able to jointly discuss, challenge and debate how to organize and execute action plans in the budgets (Chong & Mahama, 2014). For example, companies in the textile industry that operate mainly in the segmented market can benefit from the IUB when there is a strategic change at a high level, as it helps to adjust the strategies in order to capitalize on the learning generated by the new ideas of their subordinates.

According to Abernethy and Brownell (1999), the diagnostic use the budget is applied when there is a low level of strategic change, that is, there is little ambiguity in relation to the organizational priorities, and the nature of the work is relatively stable, has pre-established routines, and is understood for the execution of the tasks. The interactive use of the budget is applied when the level of strategic change is high, that is, there are frequent changes that demand rapid responses to new market opportunities (Abernethy & Brownell, 1999). However, the power of control systems lies not only in their distinct use, but in how much they complement each other and create a state of dynamic tension (Simons, 1995). This dynamic tension refers to two

contradictory but interrelated control levers, used in a dynamic way, involving competition and complementarity (Simons, 1995).

Considering the limited evidence regarding the influence of the budgetary control system on the level of individuals' commitment to the organization that employs them, this study analyzes how the diagnostic and the interactive use (Simons, 1995) of the budgetary control system can influence the attitudinal results of the individuals. Thus, the first hypothesis of the research is formulated:

- **H₁:** There is a positive relationship between the diagnostic and the interactive use of the budget and the organizational commitment.

The non-rejection of this hypothesis will indicate that the use of the budgetary control system by managers, whether interactive or diagnostic, has an effect on their own actions. Thus, the budgetary control system is expected to influence the level of organizational commitment.

2.2. ORGANIZATIONAL COMMITMENT AND MANAGERIAL PERFORMANCE

Organizational commitment implies identification, involvement, and a level of emotional attachment from the individual to the organization, which directly reflects on several measures of job performance (Meyer, Paunonen, Gellatly, Goffin & Jackson, 1989). The premise that individuals with strong organizational commitment outperform those with weaker commitment is prevalent in studies using self-assessment performance measures (Meyer et al., 1989; Nouri & Parker, 1998; Fu & Deshpande, 2014; Swalhi, Zgoulli & Hofaidhllaoui, 2017).

Porter, Steers, Mowday and Boulian (1974) found out that individuals with high organizational commitment have strong belief and acceptance of the organization's goals and values, willingness to exert a considerable effort on behalf of the organization and of remaining members of it. Individuals with a low level of organizational commitment are motivated to seek self-interest, while those with high levels are motivated to seek organizational interest (Meyer et al., 1989).

Previous research has revealed a strong link between organizational commitment and the performance of individuals in the workplace (Meyer et al., 1989; Nouri & Parker, 1998; Fu & Deshpande, 2014; Sharma & Dhar, 2016; Swalhi et al., 2017). According to Meyer et al. (1989), managers affectionately committed to their organizations have a sense of belonging to the organization and seek to achieve its established goals. In this perspective, committed managers will exert efforts to exceed organizational expectations, in search of greater performance (Nouri & Parker, 1998). According to Fu and Deshpande (2014), organizational commitment has a direct impact on managerial performance. In this perspective, the second hypothesis of the research is formulated:

- **H₂:** There is a positive relationship between organizational commitment and managerial performance.

The non-rejection of this hypothesis will indicate that, when the managers identify with the organization and its goals, in addition to wishing to remain members in order to facilitate the achievement of these goals, they will improve the quality of the services and their effectiveness. Thus, it is expected that organizational commitment will improve the managers' managerial performance.

The Budgetary Control System (BCS) can have an impact on organizational and managerial performance. Researchers have investigated the interactive use of the budget (Abernethy & Brownell, 1999; Bisbe & Otley, 2004; Hofmann et al., 2012) and the diagnostic use of the budget (Hofmann et al., 2012) in organizational performance. Researchers have also investigated the interactive use of the budget (Shen & Perera, 2013; Chong & Mahama, 2014) and the diagnostic use of the budget (Shen & Perera, 2013; Chong & Mahama, 2014) in managerial performance.

Abernethy and Brownell (1999), extending Simons' (1995) arguments, add that the interactive use of the BCS would be too expensive to be implemented and, therefore, the interactive use would be more appropriate in organizations with changes in the strategic typology. The authors explained that the interactive use of the budget allows the exchange of strategic information between the different levels of management. Thus, the benefits of the interactive use of the budget would outweigh the costs for carrying out the tasks. Investigating Australian public sector hospitals, the authors concluded that organizational performance is greater when managers combined high levels of strategic change and the interactive use of BCS.

Bisbe and Otley (2004) investigated whether the interactive use of the MCSs indirectly influences organizational performance through increased product innovation. In the interactive use of the MCS, they considered three control systems, budget, Balanced Scorecard and project management, but none of them had a significant relationship with product innovation, that is, they did not find an indirect relationship between the interactive use of the MCS and organizational performance. They also examined whether the interactive use of the MCS moderates the relationship between product innovation and organizational performance, and the moderation was confirmed.

Hofmann et al. (2012) analyzed the Simons' levers (1995) in the use of the budget. First, they examined the antecedents of the diagnostic and interactive use of the budget and, then, the effects of the diagnostic, and the interactive use of the budget on strategy and organizational performance. They observed that the interactive and the diagnostic use of the budget contributes to the formation of emerging strategies and the implementation of the intended strategies, in addition to significantly and directly influencing the organizational performance. The diagnostic use of the budget had a positive impact on organizational performance, helping to achieve the organization's goals, taking corrective actions when budget variations were found. The interactive use of the budget, on the other hand, had a negative impact on organizational performance, as it requires greater consumption of resources, therefore requiring more attention and more time from managers.

Shen and Perera (2013) examined the moderating effect of the strategic uncertainty on the relationship between the interactive and the diagnostic use of the budget and individual performance, using the individual's motivation as an intervening variable. They found out that the interactive and diagnostic use of the budget positively affects the individual's motivation, which increases individual performance. When strategic uncertainty is low, that is, when the external dynamics and internal competencies of the organization are stable and predictable, managers should apply the diagnostic use of the budget, as individuals are motivated to carry out their activities. When strategic uncertainty is high, managers should consider the interactive use of the budget, since more interactions in such conditions are likely to motivate individuals to carry out their activities.

Chong and Mahama (2014) investigated the influence of both the diagnostic and the interactive use of BCS on the managerial performance of the team, mediated by the effectiveness of the team in biotechnology companies. The assumption was that the interactive use of the budget

can encourage team members to discuss and evaluate each other's judgment, which would trigger higher quality decisions and increase the team's managerial performance. The diagnostic use of the budget, on the other hand, can provide resources and information so that the strategies and goals of the team are achieved. They found that the interactive use of BCS has a direct positive effect on the managerial performance of the team, and that this relationship is partially mediated by the effectiveness of the team. However, the diagnostic use of BCS did not have a significant relationship with the managerial performance of the team.

These results suggest that the organizational commitment in the relationship between the use of BCS (DUB and IUB) and the managerial performance of the person responsible for meeting the budget should be analyzed both directly and through mediation. In this sense, researchers have analyzed the mediating role of organizational commitment in the relationship between organizational practices and/or psychological characteristics with managerial performance, or performance at work. Organizational commitment has been related to managerial performance, mediated by the influence of the budgetary participation (Nouri & Parker, 1998), job satisfaction (Fu & Deshpande, 2014) and organizational justice (Swalhi et al., 2017).

In this context, organizational commitment can mediate the relationship between the DUB and the IUB in managerial performance. This situation can be thought of based on the commitment effect model, in which organizational commitment, on one hand, is created by an antecedent variable (DUB and IUB), while, on the other, after its creation, it affects other variables which, in this study, would be managerial performance. Based on these arguments, we formulate third hypothesis of the research.

- **H₃:** There is a positive relationship between the diagnostic and the interactive use of the budget in managerial performance, mediated by organizational commitment.

The non-rejection of this hypothesis will indicate that use given to the BCS by the managers, whether interactive or diagnostic, will only have an effect on managerial performance if they are committed to the organization. The methodological procedures described below were used to test the hypotheses.

3. METHODOLOGICAL PROCEDURES

We surveyed companies in the Brazilian textile industry in this study. The selection of this economic sector stems from the fact that it has great competitiveness in the market, which requires companies to have the capacity for innovation in their products and processes, so that they can stand out and meet the demands of the market (Rangel et al., 2010). Therefore, it is assumed that the diagnostic use of BCS is applied to ensure control, and the interactive use to promote organizational learning.

An invitation was sent to the managers of companies in the textile industry who were registered on LinkedIn. The terms used in the search in this network included functions of different levels of management, such as directors, managers, coordinators, supervisors, and analysts, in addition to the keyword budget. A total of 400 invitations were sent to managers, regardless of whether they work at the same company, and 250 agreed to participate. To those who accepted the invitation, the survey instrument was sent through the SurveyMonkey platform, in the period from March to April 2017, having 133 valid questionnaires answered.

The sample size was calculated using the G*Power software, which implies "evaluating the latent construct or variable that receives the greatest number of arrows or has the greatest number

of predictors” (Ringle, Silva & Bido, 2014, p. 58). Three constructs were used in the study to predict managerial performance: diagnostic use of the budget, interactive use of the budget and organizational commitment. Based on Ringle et al. (2014), the size of the effect used was 0.15, the significance level of α was 0.05, the power of the $1-\beta$ sample was 0.8 and three predictors. Thus, the minimum sample for the PLS-SEM model was of 77 respondents.

3.1. CONSTRUCTS AND RESEARCH INSTRUMENT

Table 1 presents the research constructs and their respective statements, in addition to the references that supported them.

The research instruments used in the research constructs were based on studies published in English. Thus, the translation of the statements to Portuguese was carried out at first and, later, the translated statements were converted back to the English language. The purpose of this process was to ensure a reliable translation of the research instruments. Before sending the questionnaire to managers, a pre-test was carried out with two research professors of graduate programs in the area of managerial accounting to analyze the translations and understand the semantic terms. When reading the research instrument, they identified assertions that were not written in an interconnectable way, so specific corrections were made.

For the research instruments of the DUB and IUB constructs (Chong & Mahama, 2014) and Organizational Commitment (Mowday et al., 1979) only adjustments to the translation were made. In the research instrument for the managerial performance construct (Denison et al., 1995), the scale was adapted, from five to seven points. Also, punctual adjustments were made to the questions to better suit the research objectives. For example, item 4 originally was ‘my overall managerial success’, and the excerpt ‘compared to other managers in the company’ was added to it.

3.2. RESEARCH INSTRUMENT

The research instrument was structured in three parts. The first regards the Budgetary Control System (BCS), which consists of the diagnostic use of the budget (DUB) and the interactive use of the budget (IUB). These constructs are based on the questionnaire prepared by Chong and Mahama (2014) and sought to verify the extent to which managers use the budget for issues related to DUB and IUB, where 1 = Never and 7 = Frequently.

The second part regards the organizational commitment and used the questionnaire prepared by Mowday et al. (1979) to assess the extent to which managers show affective commitment to the organization. The purpose of these questions was to assess to what extent the situations described in the instrument characterize the organizational commitment of the respondent to where he or she works, where 1 = strongly disagree and 7 = strongly agree.

The third part of the questionnaire regards the manager’s managerial performance construct, based on the research instrument prepared by Denison et al. (1995), with performance self-assessment measures. The purpose of these questions was to assess to what extent the respondent’s managerial performance is present in the situations pointed out in the statements. Differentiated scales were used for each statement, as shown in Table 1.

Table 1
Research construct

Constructs	Assertions
Diagnostic Use of the Budget (Chong & Mahama, 2014)	<p>How often the budget is used to ... Scale from 1 (never) to 7 (frequently).</p> <ol style="list-style-type: none"> 1. Track the team's progress towards goals. 2. Monitor the team's results. 3. Compare the team's results with expectations. 4. Assess the competence of the team to develop the planned activities / tasks.
Interactive Use of the Budget (Chong & Mahama, 2014)	<p>How often the budget is used to ... Scale from 1 (never) to 7 (frequently).</p> <ol style="list-style-type: none"> 1. Promote discussions in meetings among superiors, subordinates and peers. 2. Stimulate the continuous challenge and debate of budget premises, assumptions and action plans. 3. Provide a common view of your team. 4. Bring the team (s) together. 5. Encourage the team to focus on common issues. 6. Encourage the team to focus on the critical success factors. 7. Develop a common vocabulary among the team
Organizational Commitment (Mowday et al., 1979)	<p>Assess the extent to which the following situations characterize your organizational commitment to the organization you work for. Scale from 1 (strongly disagree) to 7 (strongly agree).</p> <ol style="list-style-type: none"> 1. I am willing to make great effort beyond the normally expected of me, in order to help the organization succeed. 2. I tell my friends this is a great organization to work for. 3. I feel little loyalty to this organization. *(R) 4. I would accept almost any type of task assignment in order to continue to work for this organization. 5. I believe that my values and the values of the organization are very similar. 6. I am proud to tell others I am part of this organization. 7. I could work in a different organization, as long as the job is similar. *(R) 8. This organization really brings out my best to carry out the activities. 9. It would take very little change in my current situation to get me out of this organization. * (R) 10. I am extremely happy to have found this organization to work for, to the detriment of the others. 11. There is not much to gain from this organization indefinitely. * (R) 12. I often find it difficult to agree with this organization's policies on important issues related to its employees. * (R) 13. I really care about the future of this organization. 14. For me, this is the best organization to work for. 15. The decision to work for this organization was definitely a mistake on my part. * (R)

Table 1
Cont.

Constructs	Assertions
Managerial Performance (Denison, Hooijberg & Quinn, 1995)	Assess the extent to which your managerial performance is presented in the following situations.
	Scale from 1 (below most standards) to 7 (above most standards).
	1. My performance compared to the company's standard performance.
	Scale from 1 (worst performance) to 7 (best performance).
	2. My performance compared to my co-workers' performance.
	Scale from 1 (weak model) to 7 (excellent model).
	3. My performance as an exemplary model for my co-workers.
	Scale from 1 (managerial failure) to 7 (managerial success).
	4. My overall managerial success compared to other managers in the company.
	Scale from 1 (ineffective manager) to 7 (effective manager).
	5. My overall effectiveness as a manager compared to other managers in the company.

Note: *(R) = reverse scored questions.

Source: Prepared by the authors (2019)

3.3. DATA ANALYSIS PROCEDURES

Structural Equation Modeling (SEM) was applied to test the research hypotheses, using Partial Least Squares (Partial Least Square - PLS), through the SmartPLS statistical software. PLS-SEM is recommended to studies with small samples (Chin, 1998). The PLS-SEM analysis firstly checks the reliability of the individual indicator and the composite reliability of the model, in addition to assessing the convergent and discriminant validity of the constructs (latent variables). Then, the structural model is applied to verify the relationship between the constructs (latent variables), in order to analyze the possible relationships between an exogenous variable and an endogenous variable (Hair Jr, Hult, Ringle & Sarstedt, 2017).

4. DESCRIPTION AND ANALYSIS OF THE RESULTS

Table 2 shows the profile of the respondents, with an emphasis on gender, age, educational background, time in the company, current position and time in the position.

The respondents' demographic data shows a predominance of males (89%) and high concentration (47%) in the age group from 31 to 40 years. The educational background of the respondents stands out, as 68% have a specialization or MBA. As for the time in the company, half of the respondents have worked in the company for more than 4 years. Manager is the position with the highest number of responses (47%), with great concentration (39%) in the time in the position of up to 2 years. This demographic data indicates that the respondents are qualified to answer the questions of the research instrument. Table 3 presents the results of the descriptive statistics of the constructs analyzed in the research.

Table 2
Profile of the respondents

Gender	Freq.	%	Educational Background	Freq.	%	Current Position	Freq.	%
Male	118	89	Primary/Secondary	4	3	Analyst	17	13
			Degree	54	41	Supervisor	4	3
			Specialization or MBA	68	51	Coordinator	41	31
Female	15	11	Master	5	4	Manager	62	47
			Doctorate	2	2	Director	9	7
Age	Freq.	%	Time in the Company	Freq.	%	Time in the Position	Freq.	%
Up to 30	24	18	Up to 2 years	36	27	Up to 2 years	52	39
Between 31 and 40	47	35	From 2 years to 4 years	29	22	From 2 years to 4 years	34	26
Between 41 and 50	42	32	From 4 years to 8 years	20	15	From 4 years to 8 years	32	24
Between 51 and 60	18	14	From 8 years to 16 years	23	17	From 8 years to 16 years	13	10
Above 60	2	2	More than 16 years	25	19	More than 16 years	2	2

Source: Research data

In general, the responses were homogeneous for the constructs, except for organizational commitment, having greater variability of indicators, including some mean below the middle of the scale, which may indicate that managers in the textile industry don't have similar organizational commitment. According to Hair Jr et al. (2017), an analysis of the data distribution is recommended, using asymmetry and kurtosis, where the values must be between -1 and +1, and values that exceed these guidelines are considered non-normal. Although this study showed values of asymmetry and kurtosis that exceeded the desirable range, this requirement is not an assumption for the PLS-SEM model, as it does not require that the data have a normal distribution (Hair Jr et al., 2017). For this reason, variables will not be excluded at this point of the analysis.

4.1. MEASUREMENT MODEL

Before applying the PLS-SEM model, some tests of the reflective measurement model must be performed to assess the adequacy of the model, namely: convergent validity; reliability of internal consistency; and discriminant validity (Hair Jr et al., 2017). To meet these requirements, some questions of organizational commitment were removed from this construct, as they had a low factor load: number 3 (-0.137); number 4 (0.442); number 7 (0.005); number 9 (-0.411); and number 15 (-0.489). Table 4 presents the summary of results for the measurement model.

Table 3
Descriptive statistics

Latent Variable	Indicators	Minimum	Maximum	Mean	Standard Deviation	Kurtosis	Asymmetry
Diagnostic Use of the Budget (DUB)	DUB1	1	7	5.301	1.642	0.048	-0.880
	DUB2	1	7	5.368	1.545	0.031	-0.838
	DUB3	1	7	5.308	1.629	0.281	-0.980
	DUB4	1	7	4.797	1.618	-0.194	-0.591
Interactive Use of the Budget (IUB)	IUB1	1	7	4.940	1.623	-0.049	-0.744
	IUB2	1	7	4.902	1.660	-0.443	-0.518
	IUB3	1	7	4.662	1.678	-0.659	-0.359
	IUB4	1	7	4.263	1.687	-0.644	-0.212
	IUB5	1	7	4.617	1.465	-0.483	-0.131
	IUB6	1	7	4.752	1.484	-0.001	-0.608
	IUB7	1	7	4.451	1.654	-0.682	-0.311
Organizational Commitment (OC)	OC1	4	7	6.421	0.751	0.412	-1.089
	OC 2	2	7	6.083	1.128	1.290	-1.321
	OC 3	1	7	1.744	1.560	5.065	2.440
	OC 4	1	7	3.737	1.946	-1.110	0.134
	OC 5	1	7	5.444	1.495	0.638	-1.030
	OC 6	3	7	6.150	1.138	1.107	-1.365
	OC 7	1	7	4.947	1.785	-0.566	-0.642
	OC 8	1	7	5.421	1.468	0.713	-1.083
	OC 9	1	7	3.068	1.831	-0.776	0.621
	OC 10	2	7	5.684	1.328	-0.081	-0.878
	OC 11	1	7	2.564	1.676	-0.446	0.833
	OC 12	1	7	3.444	1.860	-1.088	0.327
	OC 13	2	7	6.271	0.986	3.237	-1.677
	OC 14	1	7	4.940	1.476	0.247	-0.728
	OC 15	1	6	1.459	1.077	7.249	2.771
Managerial Performance (MP)	MP1	1	7	5.677	1.105	3.276	-1.519
	MP 2	3	7	5.782	0.772	0.830	-0.604
	MP 3	2	7	5.714	0.918	4.429	-1.430
	MP 4	3	7	5.684	0.899	0.165	-0.536
	MP 5	3	7	5.692	0.914	0.199	-0.675

Source: Research data.

Convergent validity was examined through the external factor loads, reliability of indicators, and average variance extracted (AVE) (Hair Jr et al., 2017). In the final factorial loads, three assertions (CO11, CO12 and CO13) presented loads slightly below 0.70, but still higher than 0.40, which should only be removed when their exclusion leads to an increase in the AVE above the recommended value. The AVE value above 0.5 suggests an adequate convergent validity for all constructs (Hair Jr et al., 2017).

Table 4
Summary of the results of the measurement model

Latent Variable	Indicators	Convergent validity		AVE	Internal consistency reliability		Discriminant validity HTMT confidence interval does not include value 1
		External factorial loads	Reliability of indicators		Composite Reliability	Cronbach's Alpha	
Diagnostic Use of the Budget (DUB)	DUB1	0.914	0.835	0.828	0.951	0.931	Yes
	DUB2	0.933	0.870				
	DUB3	0.928	0.861				
	DUB4	0.865	0.748				
Interactive Use of the Budget (IUB)	IUB1	0.800	0.641	0.728	0.949	0.937	Yes
	IUB2	0.822	0.676				
	IUB3	0.918	0.843				
	IUB4	0.831	0.691				
	IUB5	0.861	0.741				
	IUB6	0.897	0.804				
	IUB7	0.836	0.699				
Organizational Commitment (OC)	OC1	0.663	0.439	0.535	0.843	0.736	Yes
	OC 2	0.788	0.621				
	OC 5	0.861	0.741				
	OC 6	0.843	0.711				
	OC 8	0.761	0.580				
	OC 10	0.823	0.677				
	OC 11	-0.568	0.322				
	OC 12	-0.549	0.301				
	OC 13	0.603	0.363				
	OC O14	0.768	0.590				
Managerial Performance (MP)	MP 1	0.789	0.623	0.579	0.873	0.836	Yes
	MP 2	0.721	0.520				
	MP 3	0.758	0.575				
	MP 4	0.734	0.538				
	MP 5	0.799	0.638				

Note: Values recommended for: external factor loads ≥ 0.7 ; AVE ≥ 0.5 ; composite reliability ≥ 0.7 ; Cronbach's alpha ≥ 0.7 ; HTMT confidence interval < 1 (Hair Jr et al., 2017).

Source: Research data.

The internal consistency reliability was tested by using composite reliability and Cronbach's alpha, and the values of each construct must be greater than 0.60 (Hair Jr et al., 2017). The composite reliability and Cronbach's alpha reached the minimum necessary values, that is, the indicators used to represent the constructs have satisfactory internal consistency reliability.

Finally, discriminant validity was analyzed using the Heterotrait-Monotrait ratio (HTMT), which evaluates the estimates of the true correlation between two latent variables (Hair Jr et al., 2017). We that, in all latent variables, the HTMT confidence interval does not include the value 1, which indicates that the discriminant validity has been established.

4.2. STRUCTURING MODEL

A company in the textile industry can produce standardized products for department stores and/or segmented products for boutiques, so the manager of a specific department can apply the diagnostic and/or interactive use of the budget to serve both types of market. As the respondents were not asked about the level of strategic change, or the type of market the company serves, which could have been used as control variables, the decision was made to analyze the DUB and IUB in separate models, as shown in Table 5.

Table 5
Results of the structuring model

Panel A – DUB Direct Relationship								
Structural Relationship	Structural Coefficient	Standard Error	t- value	p- value	VIF	R ²	Q ²	f ²
DUB → MP	0,041	0,073	0,556	0,579	1,385	0,259	0,101	0,002
OC → MP	0,486	0,060	8,081	0,000*	1,385			0,230
DUB → OC	0,527	0,062	8,555	0,000*	1,000			0,278
Panel B – DUB Mediation analysis								
Structural Relationship	Effects	Structural Coefficient	Standard Error	t- value	p-value	Type of Mediation		
DUB → OC → MP	Indirect	0.256	0.046	5.562	0.000*	Total mediation		
	Total	0.297	0.072	4.129	0.000*			
Panel C – IUB Direct Relationship								
Structural Relationship	Structural Coefficient	Standard Error	t- value	p-value	VIF	R ²	Q ²	f ²
IUB → MP	0.027	0.095	0.282	0.778	1.590	0.256	0.098	0.001
OC → MP	0.489	0.075	6.538	0.000*	1.590			0.202
IUB → OC	0.609	0.049	12.315	0.000*	1.000			0.371
Panel D – IUB Mediation analysis								
Structural Relationship	Effects	Structural Coefficient	Standard Error	t- value	p-value	Type of Mediation		
IUB → OC → MP	Indirect	0.298	0.058	5.184	0.000*	Total mediation		
	Total	0.325	0.072	4.533	0.000*			

Note: Size of the effect f²: ≥0.02 small, ≥0.15 medium and ≥0.35 large; Variance explained R²: ≥0.25 weak, ≥0.5 moderate and ≥0.75 substantial; Recommended value for VIF<5 (Hair Jr et al., 2017). *Significance at the level of 1%.

Source: Research data.

The mediation models presented four pieces of information: (i) direct effect, which refers to the direct relationship between the exogenous (DUB and IUB), mediator (OC) and endogenous (MP) variables in the model; (ii) indirect effect, which refers to the relationship between the exogenous (DUB and IUB) and endogenous (MP) variables, by the mediator variable (OC); and (iii) total effect, which refers to the sum of the direct and indirect effect; and (iv) type of mediation.

It was possible to notice that the DUB and the IUB have direct positive and significant effects on OC, but they do not have on DG, this occurs when there is strong evidence of mediation. The OC also demonstrated a direct and significant positive relationship with the MP. As for indirect effects, the DUB and the IUB showed a significant and positive relationship with MP, denoting that OC has the function of totally mediate this relationship.

4.3. DISCUSSION OF RESULTS

Hypothesis H_1 predicts that there is a positive relationship between the diagnostic and the interactive use of the budget and organizational commitment, and, based on the results, H_1 is not rejected for diagnostic use (great effect, $f^2=0.385$; $\beta=0.527$; $p<0.01$) and interactive (great effect, $f^2=0.590$; $\beta=0.609$; $p<0.01$) of the budget. That indicates that the diagnostic and the interactive use of the budget positively influences the organizational commitment of the managers. Therefore, managers of companies in the textile industry that use the budget both to achieve the pre-established objectives by upper management (diagnostic use) and to stimulate the team's organizational learning (interactive use), have a strong belief and acceptance of the goals and values of the organization (organizational commitment).

In accordance with previous literature (Simons 1995, 2013; Hofmann et al., 2012; Chong & Mahama, 2014), it was noticed that, in the Brazilian textile industry, under the DUB approach, subordinates receive a significant level of authority and autonomy, in which the managers responsible for the budget are only involved in the decision-making process when there are significant discrepancies between the expected and actual results. Therefore, the high level of empowerment embedded in DUB is considered an important factor that contributes to improving the level of organizational commitment. Likewise, under the IUB approach, it allows the managers responsible for the budget in the textile industry to be regularly and personally involved in the activities and decisions of the subordinates. Thus, face-to-face communication between manager and subordinate, besides the flexibility and adaptation of the budget based on the IUB, helps to increase organizational commitment.

The H_2 hypothesis predicts that there is a positive relationship between organizational commitment and managerial performance, and the results lead to the non-rejection of the H_2 both for DUB (medium effect, $f^2=0.230$; $\beta=0.486$; $p<0.01$) and for IUB (medium effect, $f^2=0.202$; $\beta=0.489$; $p<0.01$). Thus, it can be said that managers of companies in the textile industry who are affectionately committed to the organization are more likely to better develop their tasks, presenting superior managerial performance when compared to other managers. The findings support the H_2 , in accordance with the studies carried out by Nouri and Parker (1998), Fu and Deshpande (2014) and Swalhi et al. (2017).

Nouri and Parker (1998) observed that organizational commitment is related to positive results for manager's tasks and, as a consequence, it increases managerial performance. The authors found out that budgetary participation can also increase the organizational commitment, and this can lead to positive performance results. Fu and Deshpande (2014), when analyzing Chinese industrial companies, found a positive relationship between organizational commitment and

managerial performance. Therefore, individuals feel more committed to the organization and perform better when they feel a sense of shared values with the employer.

Swalhi et al. (2017) clarified that organizational commitment plays a mediating role in the relationship between procedural and interactional justice and job performance. Therefore, organizational commitment plays an important role in managerial performance, since managers who want to belong to an organization will exert a greater effort to carry out their activities when compared to other managers, besides their mediating role between performance and other variables that can affect it.

Hypothesis H_3 postulates that there is a positive relationship between the diagnostic and the interactive use of the budget and managerial performance, mediated by organizational commitment. The results support the hypothesis, since there was no significance in the direct relationship between the DUB and the IUB with managerial performance, only in an indirect and total way, based on the mediator variable organizational commitment. According to Hair Jr et al. (2017), total mediation occurs when the mediated effect is significant, not the direct effect. Thus, the mediating variable fully explains the relationship between an exogenous and an endogenous latent variable. In this context, the DUB and the IUB can only act in achieving the managerial performance of managers of companies in the textile industry through the mediation of organizational commitment. Therefore, H_3 is not rejected as it has total mediation.

The DUB is used to establish the level of production expected by the organization as accurately as possible, in order to measure the result of managers and the team, to reward the achievement of expected results, to make adjustments to the budget and to take action if problems are identified (Shen & Perera, 2013). Thus, managers who work for companies in the textile industry that have low strategic change can benefit from the DUB to track, monitor, compare and evaluate the team in the development of the department's activities, which leads to greater organizational commitment. Consequently, they have a better performance managerial compared to the other managers of the company.

We observed that the DUB and the IUB are antecedent variables with an important role in creating or increasing organizational commitment. Thus, the organizational commitment created by the use of the BCS directs to certain behaviors at work that can contribute to the increase in managerial performance. In this study, the total mediation of the organizational commitment provided a more dominant contribution to managerial performance, which reinforces the increase and development of organizational commitment for the managers of these companies.

5. CONCLUSIONS

The objective of this study was to evaluate the influence of the diagnostic and the interactive use of the budget on managerial performance, mediated by organizational commitment. The research results provide support for the use of Simons' levers (1995), regarding the relevance of the diagnostic and/or interactive use of the budget as a stimulus to the managers' organizational commitment, thus corroborating with the H_1 . These two systems are relevant to model the behavior of managers towards performing their tasks in line with the organization's goals.

The results indicate that organizational commitment positively affects managerial performance, which allows the non-rejection of the H_2 . Managers who are affectionately committed to their workplace identify with the organization and its goals, in such a way that they develop a sense of loyalty and seek to improve their performance to benefit the organization, in accordance with Nouri and Parker (1998), Fu and Deshpande (2014) and Swalhi et al. (2017).

The study also confirmed that the use of the budgetary control system positively affects managerial performance, and that organizational commitment eases the relationship between them, leading to the non-rejection of the H_3 . The diagnostic or interactive use of the budget inspires loyalty, the desire to stay and the efforts of managers towards the goals and values of the organization, increasing the organizational commitment (mediating variable), in addition to encouraging them to do their the best in their tasks in the organization, increasing managerial performance.

Based on the results, it is concluded that the budgetary control system influences the managerial performance, through the mediation of organizational commitment, in companies in the textile industry that were surveyed. It is noteworthy that the diagnostic and/or interactive use of the budget influences the organizational commitment, just as commitment influences managerial performance, in addition to being a mediating variable between the BCS and the managerial performance.

The study contributes to the literature by jointly addressing the use of the budget, based on two of Simons' levers (1995) (diagnostic control systems and interactive control systems), organizational commitment and managerial performance in Brazilian companies in the textile industry. It also contributes to the daily lives of these organizations, since stimulating organizational commitment can foster better managers' performance, mainly by fully mediating the relationship between the DUB and the IUB with managerial performance. Despite the study's contributions to the researched scope, they are subject to limitations.

As limitations of this study, the research data represent the respondents' perceptions and it is possible that they correspond to the desired practices, not those effectively performed in the companies where they work. Another limitation is that the level of strategic change and the type of market that companies in the textile industry seek to serve were not identified, and this information could be antecedent variables of how the company uses the budget. The research sample is made up of companies in the textile industry and, certainly, this sample is not representative of the other segments, limiting the generalization of the research results.

It is recommended for future studies to investigate the relationship between the diagnostic use and the interactive use of the budget and other types of behaviors, such as organizational citizenship and altruism, and also, to consider the level of strategic change or strategic uncertainty as an antecedent of the diagnostic and interactive use of the budget. Other mediation variables can be used, such as job satisfaction, creativity, motivational factors, cognitive factors and role autonomy. It is also recommended to adopt the other levers of Simons (1995), the belief system and the boundary system to verify how the budget is designed within organizations.

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AUTHOR'S CONTRIBUTION

The first author made the following contributions to the work: i) design of the study; ii) data curation; iii) formal analysis; iv) methodology; v) visualization; and vi) first draft. The second author made the following contributions to the work: i) design of the study; ii) investigation; iii) methodology; and iv) first draft. The third and fourth authors made the following contributions to the work: i) design of the study; ii) management of the project; iii) supervision; and iv) writing, review and editing.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest that could constitute an impediment to the publication of this article.