Decoding task uncertainty: moderating effects on participative budgeting and budgetary slack dynamics

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Decoding task uncertainty: Moderating effects on participative budgeting and budgetary slack dynamics

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Abstract

This research examines the effects of participative budgeting on budgetary slack under different levels of task uncertainty. It also investigates the mediating factors of goal orientation and job-relevant information in the cognitive and motivational aspects of participative budgeting in situations characterised by task uncertainty. Our comprehensive analytical methodology uses partial least squares structural equation modelling and conditional process modelling. Results reveal that participative budgeting has a significant positive effect on budgetary slack, with this relationship being mediated by goal orientation and job-relevant information. Task uncertainty levels mitigate the mediation effects. However, in situations of low task uncertainty, goal orientation and job-relevant information play an essential role in conveying the effects of participative budgeting on budgetary slack.

Keywords: participative budgeting, budgetary slack, goal orientation, job-relevant information, task uncertainty, conditional process model

1. Introduction

Budgetary slack is a well-researched topic in management accounting; however, the existing literature lacks consistency (Daumoser et al., 2018). Various behavioural and economic theories, such as principal–agent theory, goal setting theory and organisational fairness theory, are employed to investigate budgetary slack (Derfuss, 2012). Participative budgeting addresses this gap by reducing information asymmetry and uncertainty (Hall et al., 2012), thereby affecting the extent of budgetary slack. According to agency theory, budgetary slack increases inefficiency and underestimates profits (Daumoser et al., 2018). However, contradictory results in prior research necessitate further investigation (Derfuss, 2012). This study aims to drive research forward by identifying and addressing these gaps.

Firstly, the multifaceted nature of participative budgeting has been emphasised in prior literature. Various elements involved in the engagement approach have been highlighted, including discussion groups with psychological factors, goal setting with motivations and information dissemination with cognitive factors (Lee & Martin, 2017). However, previous studies have often examined these aspects from a fragmented perspective, without attempting to integrate these different factors comprehensively (Brink et al., 2018; Covaleski et al., 2003; Leach-López et al., 2007; Shields & Shields, 1998).

Our theoretical model addresses this concern by combining cognitive and motivational aspects. Previous research suggests that cognitive and motivational aspects are essential dimensions of participation (Covaleski et al., 2003; Her et al., 2019). Aligned with this viewpoint, two factors—goal orientation and job-relevant information—are introduced to represent the combination of these participatory functions. Participative budgeting is expected to reduce budgetary slack by enhancing goal orientation and dedication to shared goals. It also facilitates job-relevant information acquisition and utilisation through active information sharing. This study examines the cognitive and motivational aspects of participative budgeting in great detail.

Secondly, conditional process modelling integrates moderation and mediation techniques to investigate and evaluate hypotheses regarding whether mediation effects are affected by the environment, limitations or personal characteristics. Although it is an essential aspect of research that seeks to extend knowledge in management accounting, implementations of such models are limited (Cheah et al., 2021).

Mediation analysis provides a systematic framework for comprehending the intricate dynamics of how phenomena function and interact (Arumugam et al., 2022), whereas moderation modelling delineates how contextual constraints or external factors shape and alter the effects observed in a given phenomenon (Boadu et al., 2022). They are often treated as independent, but their mechanisms and their boundaries differ from one another. Conditional process analysis synergistically combines moderation and mediation analyses, enabling the identification and investigation of hypotheses

regarding how mechanisms are impacted by environmental factors or individual characteristics (Hayes & Rockwood, 2020).

Thirdly, our research model is evaluated using latent variable structural equation modelling, specifically, partial least squares structural equation modelling (PLS-SEM) (Hair et al., 2019). The existing literature on budgeting has increasingly employed path analysis or structural equation modelling to analyse models, particularly when proposing a mediating relationship involving participative budgeting and budgetary slack. Researchers employing path analysis have typically relied on combined or composite measures to assess their research constructs, assuming that measurements are error-free (Parker & Kyj, 2006). However, a more suitable approach may be the use of PLS-SEM (Hair et al., 2019). PLS-SEM can simultaneously account for measurement errors and structural aspects, thereby offering more accurate assessments of proposed associations between unobservable variables, as compared with traditional methods like path analysis or regression (Hair et al., 2019). The conditional process model is employed to examine the consistency of hypothesised mediated relationships between focal and moderating factors under various conditions for the moderating variable. Conditional process analysis reveals that measurement errors or differences do not lead to variations in structural relationships between conditions. In management accounting studies, the covariance-based method for assessing path differences between groups or conditions, especially when correlations are demonstrated, is rarely used. Consequently, our study aims to demonstrate the relevance of SEM enhanced for participative budgeting studies in the field of management accounting.

The main contribution of this study is its positioning within the broader literature on participative budgeting and budgetary slack. Our primary contribution lies in the unique integration of cognitive and motivational aspects within the framework of participative budgeting. Although task uncertainty is undeniably a relevant factor, our central focus revolves around elucidating how these cognitive and motivational factors collectively influence the complex relationship between participative budgeting and budgetary slack. Furthermore, recognising the persistent contradiction in the literature regarding the link between budgeting participation and budgetary slack, our research addresses this challenge by providing a nuanced understanding of how participative budgeting

can either exacerbate or mitigate budgetary slack under varying conditions. This contribution aims to foster a more comprehensive and coherent comprehension of this vital area within the realm of management accounting research.

This study also contributes to the existing body of knowledge through its distinctive methodology, which integrates cognitive and motivational aspects in the context of participative budgeting, with specific attention to the moderating role of task uncertainty. The study introduces the novel idea of the conditional process model to the domain of budgetary slack. This methodology aims to provide a more thorough understanding of participative budgeting by highlighting the crucial role performed by motivational and cognitive factors, particularly goal orientations and job-relevant information, in investigating the mediating factors that enhance the outcomes of this approach. This method considers various levels of task uncertainty and offers valuable results and practical recommendations for companies.

The structure of this study is as follows. After reviewing the literature and formulating hypotheses, the third section explains the study's methodology. In the fourth section, the results of the data analysis are summarised. The fifth section discusses the study's results and implications.

2. Conceptual model and hypotheses

2.1. *Effects of participative budgeting on budgetary slack*

Incorporating the perspectives of subordinate managers into the formulation of budgetary objectives is facilitated through participative budgeting, offering a strategic approach (Migchelbrink & Van de Walle, 2022). From the perspective of agency theory, although participative budgeting affords agents the opportunity to divulge their confidential information, it also presents them with the temptation to misrepresent facts and create budgetary slack (Derfuss, 2012). The application of suitable incentives, aligning the interests of principals and agents with goal achievement, results in the formulation of more precise budgets and an overall enhancement in performance (Covaleski et al., 2003; Her et al., 2019; Leach-López et al., 2007). However, stronger

incentives can also lead to budgetary slack, as supervisors strive to prevent excessive informational advantages (Kramer & Hartmann, 2014; Rafi et al., 2020).

From the perspective of goal-setting theory, participative budgeting, functioning as a conduit for information exchange, helps eliminate uncertainties arising from superiors' directives and specific situational demands. Consequently, this approach yields budgets that are precise and challenging, closely reflecting the capabilities of subordinates. Budgets crafted through participative means foster goal commitment and acceptance because they personally engage managers in the process (Derfuss, 2012; Shields & Shields, 1998). Consequently, participative budgeting is inclined to exhibit a negative association with budgetary slack (De Baerdemaeker & Bruggeman, 2015; Dunk, 1993). However, especially in situations where incentives are tied to goal attainment, managers may be enticed to incorporate some degree of slack into their budgets (Davis et al., 2006). The impact of connecting goal setting to organisational fairness becomes more evident, especially when there is a perceived inequity in the distribution of rewards (Derfuss, 2012).

According to organisational fairness theory, when organisational outcomes and processes are perceived as fair, they tend to result in a reduction of budgetary slack. Conversely, instances of perceived unfairness may prompt subordinates to respond by seeking concessions in the form of budgetary slack, leading to a positive relationship between participative budgeting and budgetary slack (Daumoser et al., 2018; Maiga & Jacobs, 2007). A budgetary setting that involves affected managers and permits their influence on budgetary objectives is likely to be perceived as equitable, irrespective of whether rewards are tied to goal achievement or not (Covaleski et al., 2003).

Previous research has extensively explored factors contributing to budgetary slack, with one such factor being participative budgeting; however, the effect of participative budgeting on budgetary slack remains inconclusive and has led to conflicting findings in multiple studies (Derfuss, 2012; Webb, 2002). Young (1985) suggested that a positive correlation between participative budgeting and budgetary slack is recognised in organisations where individuals receive rewards based on budget compliance. This viewpoint is widely supported by many other studies, such as those by Lukka (1988),

Dunk (1993) and Douthit and Stevens (2015). Thus, the following hypothesis is formulated:

H1. Participative budgeting has a significant positive effect on budgetary slack.

2.2. *Mediating role of goal orientation in the relationship between participative budgeting and budgetary slack*

Goal orientation, as discussed by Sanusi et al. (2018), encompasses the motivation driving employees to excel beyond standard performance requirements. A goal orientation is crucial for individuals to perform well in vocational fields over the long term, allowing them to comprehend and adjust to various performance scenarios effectively (Chen et al., 2023). In particular, it entails a commitment to achieving and continuously improving specific budgetary targets (Chong & Chong, 2002b). Budgetary control involves managing financial resources and influences the actions of budgetary managers (subordinates) during the budgeting process (Van der Stede, 2000). Consequently, a company's goal orientation may vary from that of its employees or groups (Sanusi et al., 2018).

Goal orientation reveals individuals' attitudes towards self-development and how these attitudes contribute to employee participation (Bhilawa & Kautsar, 2018). It plays a pivotal role in shaping employee behaviours by encouraging them to acquire new skills and cultivate innovative talents through challenging tasks (Zia, 2020).

The literature has identified the influence of goal orientation on the creation of budgetary slack (Dunk & Nouri, 1998; Merchant, 1985; Van der Stede, 2000; Yuen, 2004). Negotiating budgets can result in the creation of budgetary slack, as employees anticipate that achieving the budget will result in official rewards (Cheng et al., 2023). Fulfilling the budget is perceived as directly linked to rewards, making the inclusion of budgetary slack a favourable strategy (De Baerdemaeker & Bruggeman, 2015). Budgets often serve as evaluation criteria, and employees participate in budget planning, leading managers to shape requirements to achieve attainable budgets (Chow et al., 1991; Dunk & Nouri, 1998; McLean et al., 2017; Merchant, 1985).

Thus, goal orientation emerges as a critical factor that can strengthen the relationship between participative budgeting and budgetary slack (Bhilawa & Kautsar, 2018). According to Chen and Xede (2023), organisations characterised by unclear financial goals and goal orientation are more prone to managers introducing budgetary slack. Consequently, the following hypotheses are proposed:

H2. The relationship between participative budgeting and budgetary slack is mediated by goal orientation, such that

H2a. Participative budgeting has a significant positive effect on goal orientation.

H2b. Goal orientation has a significant positive effect on budgetary slack.

2.3. *Mediating role of job-relevant information in the relationship between participative budgeting and budgetary slack*

Job-relevant information facilitates constructive interactions between decision-making processes relevant to a particular job within an organisation (Kren, 1992). Managers use information to establish goals, oversee their execution, and inspire participants (Ramos Pires et al., 2017). Employees and supervisors can enhance the likelihood of successful decisions by providing information that ensures success (Bhasin, 2012). For example, employees responsible for budget execution provide managers with confidential information, thereby improving communication between managers and employees regarding budgets (Dunk & Nouri, 1998; Merchant, 1985).

Managers can enhance their decision-making by utilizing accurate information from internal and external sources when using job-relevant information (Alexiev et al., 2010). The application of contingency theory to job-related information aims to investigate how relevant information affects the link between participative budgeting and budgetary slack (Brink et al., 2018). Job-relevant information serves as a situational factor that could enhance the connection between participative budgeting and the presence of budgetary slack (Santos et al., 2022). Budgetary slack may arise due to the knowledge gap between top-level managers and lower-level managers involved in budgeting (Young, 1985). Discrepancies in task-specific information can influence decision-making processes. Amiruddin et al. (2014) and Brink et al. (2018)

provided evidence in support of this concept, asserting that the interaction between job-relevant information and participative budgeting positively and significantly influences budgetary slack. As planning and budget preparation processes often prioritise the interests of specific individuals or groups rather than the true needs of stakeholders, they tend to permit the emergence of budgetary slack in businesses (Leach-López et al., 2009; Parker & Kyj, 2006).

Given this background, the following hypotheses are proposed:

H3. The relationship between participative budgeting and budgetary slack is mediated by job-relevant information, such that

H3a. Participative budgeting has a significant positive effect on job-relevant information.

H3b. Job-relevant information has a significant positive effect on budgetary slack.

2.4. *Direct and moderating effects of task uncertainty*

Perceived environmental uncertainty often compels organisations to adapt to their external environments (Kafetzopoulos et al., 2019). This adaptation is typically led by managers and involves implementing performance measurement systems to gauge the effectiveness of organisational responses to environmental changes (Costa et al., 2022). When organisations modify their strategies in reaction to uncertainty, individuals within the organisational context experience a rise in task uncertainty (Nguyen et al., 2023). Managers perceive high environmental uncertainty when they sense unpredictability in their surroundings (Kafetzopoulos et al., 2019). According to Lengnick-Hall and Beck (2005), a low level of uncertainty allows subordinates to anticipate situations and plan accordingly. In the context of low uncertainty, budgeting participants can predict future scenarios effectively. Subordinates have the potential to generate budgetary slack by minimising uncertainty and anticipating changes within their area of responsibility (Namazi & Rezaei, 2023).

Yuen (2004) and Her et al. (2019) proposed that the influence of participative budgeting on the occurrence of budgetary slack can be influenced by the level of task uncertainty. Forecasting future events and reducing budgetary slack can be particularly challenging in situations characterised by a high level of uncertainty (Weiss et al., 2011). Moreover, the effect of uncertainty extends beyond cognitive effects and also encompasses motivational factors (Her et al., 2019; Shields & Young, 1993). Shields and Shields (1998) concluded that participative budgeting motivates employees and varies depending on the levels of uncertainty.

Employees working in unpredictable work environments often display increased self-confidence in their ability to perform specific tasks. This heightened self-assurance stems from the uncertainty of input-output dynamics and recurring encounters with unpredictable results, compelling them to exercise caution when managing budgets (Nguyen et al., 2023).

Participation is primarily aimed at encouraging goal-oriented behaviour through its motivational effect on employees. This requires constant dedication to the achievement and improvement of certain budget targets, which makes the incorporation of budget slack an advantageous strategy, especially in scenarios of low uncertainty. According to Her et al. (2019), in such situations, a higher level of participation is essential to foster goal orientation. However, the impact of participation on goal orientation may weaken with high levels of task uncertainty (Nguyen et al., 2023).

When managers set budget objectives without prioritizing employee engagement as the guiding principle, they may face increased frustration, resentment, or resistance due to the absence of a platform to express their opinions or concerns (Her et al., 2019). Additionally, employees who refrain from engaging in activities characterised by high uncertainty often exhibit a heightened sense of goal orientation compared to their counterparts involved in low-uncertainty activities. Consequently, if participative budgeting indeed influences budgetary slack through the enhancement of goal orientation, its motivational effect tends to be notably more enduring in situations of reduced uncertainty than in circumstances of elevated uncertainty (Yuen, 2004).

In light of these considerations, the following hypotheses are proposed:

H4: Task uncertainty has a significant positive effect on goal orientation.

H5: A high level of task uncertainty weakens the relationship between participative budgeting and budgetary slack mediated by goal orientation.

Participative budgeting, when approached from a cognitive perspective, contributes to making environmental uncertainty more predictable (Her et al., 2019). Participative budgeting influences the availability and needs for information, and uncertainty may address this need. Therefore, environmental uncertainty can affect how effectively participation conveys job-relevant information to participants (Chong & Chong, 2002a). Kren (2003) argued that environmental uncertainty directly affects the value of job-relevant information that participation contributes to budgeting. With adequate information, employees may be capable of fulfilling their responsibilities in high-uncertainty environments. However, they need supplementary job-relevant information to reduce uncertainty and facilitate well-informed decisions. Participative budgeting serves as a means of exchanging information and can enhance the process of gathering information, providing reliable insights into current conditions and improving decision making (Kren, 1992). Under high levels of uncertainty, job-relevant information and its relevance can be expected to become critical when gained through participation. In situations involving straightforward and predictable tasks, following established procedures and guidelines would suffice to complete tasks efficiently (Her et al., 2019).

Furthermore, excessive job-relevant information in high uncertainty conditions can lead to information overstimulation, which may negatively affect budgetary slack. Consequently, high levels of uncertainty may hinder one from realising considerable cognitive benefits from participation and reducing budgetary slack. Disparities between resources may be eliminated, or the outcome may be a reduction in the gap between what budget managers (subordinates) have access to and what they need (Elmassri & Harris, 2011; Kren, 2003). Accordingly, the following hypotheses are proposed:

H6: Task uncertainty has a significant positive effect on job-relevant information.

H7: A high level of task uncertainty weakens the relationship between participative budgeting and budgetary slack mediated by job-relevant information.

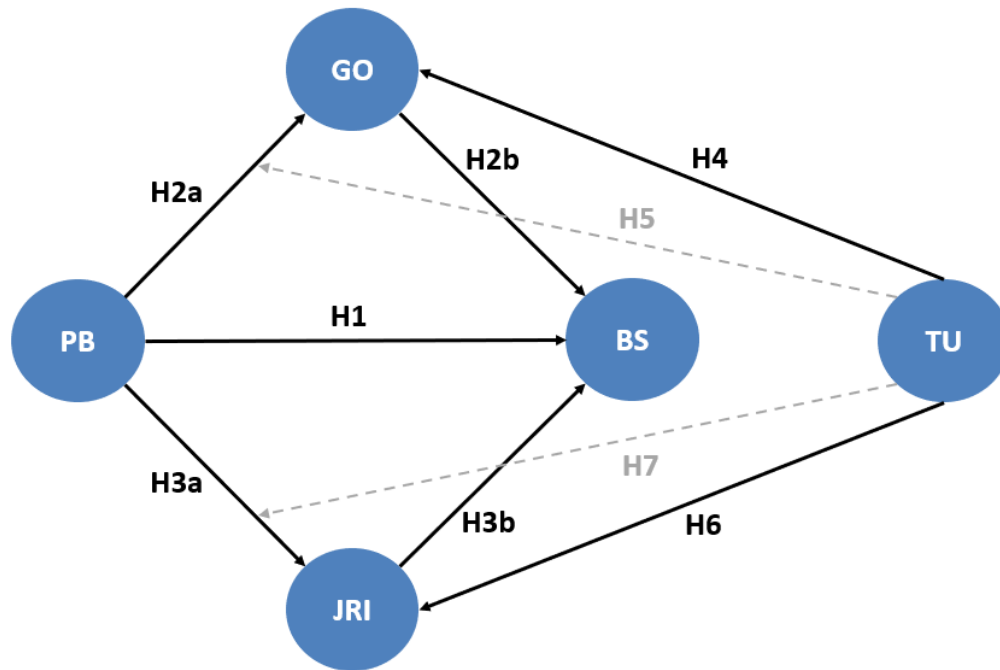The research model is illustrated in Figure 1.

Figure 1. Research model.

Note. PB: participative budgeting; BS: budgetary slack; GO: goal orientation; JRI: job-relevant information; TU: task uncertainty.

3. Method

3.1. *Participants*

The study involved participants from industrial units in Iraq's chemical industry, specifically those engaged in the production of petrochemicals and pharmaceuticals. Seven Iraqi units were contacted for data collection. A total of 523 questionnaires were distributed, resulting in the receipt of 300 completed questionnaires, yielding a response rate of 57.4%. Among these, 248 were relevant for the study. Data were collected during December 2021 and March 2022.

The majority of respondents consisted of men (73.8%), falling within the age range of 35 to 45 years. Regarding their educational background, 76.2% held a bachelor's degree or its equivalent, 10.9% possessed a master's degree, 4% had attained a

doctoral degree and 8.9% held other qualifications. Notably, a significant portion of participants had specialisations in the fields of accounting, management and economics, ensuring that the questionnaire comprehensively covered all relevant aspects. The survey participants represented a diverse group with various professional backgrounds and levels of experience. Among the respondents, 56% held managerial positions across sectors such as manufacturing and production, research and development, product development and technology.

Moreover, approximately 45.2% of the participants had 5 to 10 years of work experience, 29.8% had over 10 years of experience and 25% had less than 5 years of experience. This diverse representation ensured a well-rounded and insightful view of the subject matter (Appendix A).

3.2. *Research instrument*

Constructs in the proposed model were measured with multiple items adapted from prior studies. All the statements in the instrument used were assessed on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In order to ensure internal consistency of measurement, a Cronbach's alpha reliability coefficient was calculated for each scale. Participative budgeting was measured using six items adapted from Chong et al. (2005), Parker and Kyj (2006) and Lunardi et al. (2019). For the measurement of budgetary slack, four items were adapted from Van der Stede (2000) and Kramer and Hartmann (2014). We used four items adapted from VandeWalle (2001) to operationalise goal orientation. Regarding the measurement of job-relevant information, we adapted a three-item scale from Kren (1992). Finally, task uncertainty was assessed with eight items adapted from the scale used by Her et al. (2019). The individual measures included in the instrument are shown in the Appendix B.

4. Results

4.1. *Measurement model*

Before testing the hypotheses using Smart-PLS, a Confirmatory Factor Analysis (CFA) was conducted to assess the measurement properties of the scales used (Table 1). All indicators in the study demonstrated factor loadings exceeding 0.70, as recommended by Hair et al. (2019). Moreover, Rho-A and Rho-C, along with Cronbach's alpha, scored above 0.70, supporting the model's reliability (Hair et al., 2017, 2019). Furthermore, an AVE exceeding 0.5 reveals high reliability, indicating that the construct explains at least 50 percent of the variance of its items (Hair et al., 2017, 2019).

Table 1. Validity and reliability of the constructs.

Construct/Item	Item Loading	VIF	Alpha	Rh-A	Rh-C	AVE
Participative Budget (PB)						
PB1	0.759	2.313	0.900	0.915	0.937	0.833
PB2	0.802	2.837				
PB3	0.823	3.045				
PB4	0.842	3.48				
PB5	0.829	3.118				
PB6	0.794	2.875				
Budgetary Slack (BS)						
BS1	0.906	2.887	0.894	0.896	0.919	0.654
BS2	0.927	2.861				
BS3	0.904	2.681				
BS4	0.861	2.28				
Goal Orientation (GO)						
GO1	0.891	2.83	0.895	0.897	0.927	0.761
GO2	0.881	2.75				
GO3	0.825	1.945				
GO4	0.890	2.663				
Job-Relevant Information (JRI)						
JRI1	0.881	2.569	0.893	0.900	0.934	0.824
JRI2	0.896	2.611				
JRI3	0.946	3.898				

Task Uncertainty (TU)

TU1	0.860	2.975	0.859	1.068	0.897	0.745
TU2	0.770	2.007				
TU3	0.926	1.712				
TU4	0.781	2.904				
TU5	0.877	3.390				
TU6	0.797	2.293				
TU7	0.879	2.202				
TU8	0.891	2.179				

Discriminant validity was assessed through two distinct methods. Firstly, the heterotrait–monotrait ratio of correlations (HTMT), as proposed by Henseler et al. (2015), was employed. The values consistently remained below the conservative threshold of 0.85, confirming the establishment of discriminant validity. Secondly, the correlations among the latent variables were compared with the square root of the average variance extracted (AVE), following the approach suggested by Fornell and Larcker (1981).

Table 2. Discriminant validity of measures.

Construct	PB	BS	GO	JRI	TU
PB	**0.913**	0.431	0.314	0.388	0.125
BS	0.431	**0.809**	0.668	0.604	0.300
GO	0.344	0.600	**0.872**	0.463	0.151
JRI	0.430	0.542	0.417	**0.908**	0.113
TU	0.137	0.300	0.165	0.121	**0.863**

Note. PB: participative budgeting; BS: budgetary slack; GO: goal orientation; JRI: job-relevant information; TU: task uncertainty. The diagonal values, highlighted in bold, represent the square roots of the AVE. The correlations between the constructs appear below the diagonal elements. The values above the diagonal elements correspond to the HTMT.

In evaluating common method bias (CMB), an analysis of variance inflation factor (VIF) values within the inner model was conducted. The results of this analysis indicated that the observed VIF values ranged from 1.02 to 1.329. All VIF values were below the threshold of 3.3 (Kock, 2015), affirming that the research model used remains unaffected by CMB.

4.2. *Structural equation model*

Applying the PLS technique and employing pairwise elimination of missing data, a valid and reliable measurement model for assessing the structural equation model was established. VIF scores, displayed in Table 1, consistently remained below 5, indicating the absence of multicollinearity. The VIF values should be close to 3 and lower (Hair et al., 2019).

The evaluation of the structural equation model encompassed R-square, Q-square and path significance. To assess the model's quality, R-square was computed for each structural path of each endogenous construct. The (R^2) ranges from 0 to 1, with higher values indicating a greater explanatory power (Hair et al., 2019), was exceeded by the model's R-square scores, confirming its predictive power (Table 3).

Table 3. Q-square and R-square.

Construct	Q-square	RMSE	MAE	R-square	R-square adjusted
BS	0.406	0.077	0.573	0.580	0.577
GO	0.406	0.077	0.599	0.412	0.411
JRI	0.267	0.086	0.685	0.275	0.273
SRMR= 0.085; NFI= 0.828					

Note. BS: budgetary slack; GO: goal orientation; JRI: job-relevant information.

Moreover, the predictive relevance of endogenous constructs was affirmed based on the Q-square; any Q-square exceeding 0 indicates predictive relevance (Dul, 2016).

A parameter for evaluating model fit is the standardised root mean square residual (SRMR), employed to minimise model misspecification. The SRMR was computed by combining correlation coefficients from the sample and predicted covariance matrices. The value of SRMR close to 0.08 suggests an appropriate fit (Hu & Bentler, 1999).

For determining the statistical significance of coefficients, analysis was conducted on 10,000 bootstrapped data sets. A confidence interval different from zero indicates significant relationships based on a one-tailed test at the 0.05 significance level.

4.3. *Analysis of direct and mediating effects*

Based on the results in Figure 2 and Table 4, all causal relationships were confirmed at a significance level of 0.01. Specifically, PB positively influenced BS (β = 0.139, t = 2.554, p = 0.005), GO (β = 0.947, t = 5.515, p = 0.000) and JRI (β = 1.161, t = 4.75, p = 0.000), hence supporting H1, H2a and H3a, respectively. Furthermore, H2b and H3b were supported, as BS is positively affected by GO (β = 0.379, t = 4.60, p = 0.000) and JRI (β = 0.245, t = 3.639, p = 0.000). Besides, TU significantly affects GO (β = 0.840, t = 4.021, p = 0.000) and JRI (β = 0.925, t = 3.269, p = 0.001), thus supporting H4 and H6.
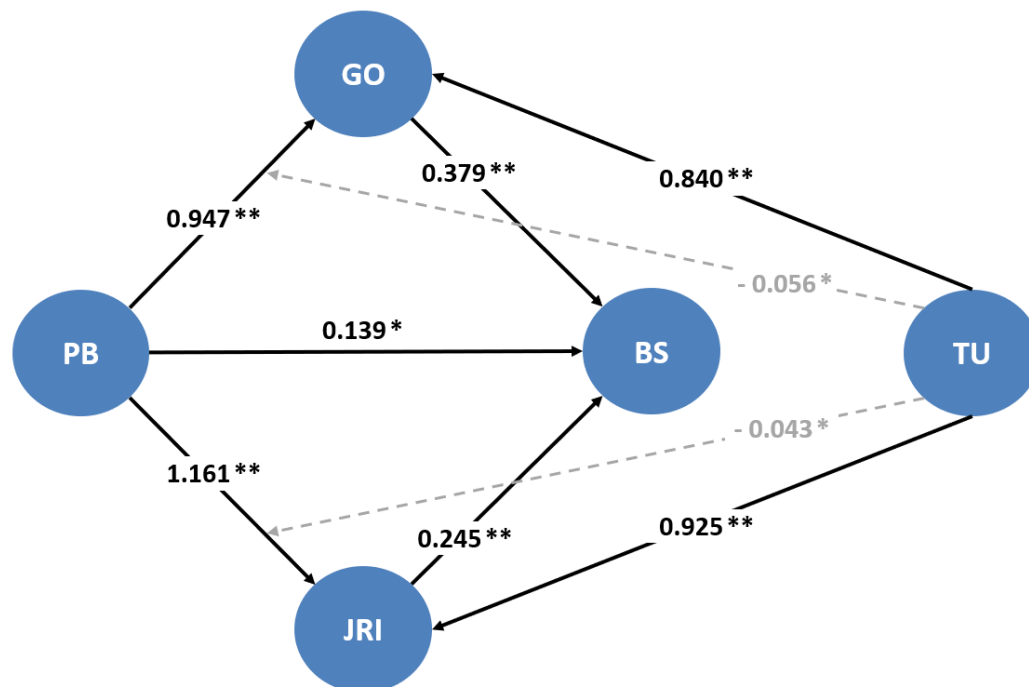

Figure 2. Structural equation model estimated.

Note. PB: participative budgeting; BS: budgetary slack; GO: goal orientation; JRI: job-relevant information; TU: task uncertainty. ** $p \leq$ 0.001; * $p \leq$ 0.01

Table 4. Direct and indirect relationship testing.

Construct	Path coefficient	S.D.	*t*-value (bootstrap)	*p*-value	CI	
Direct relationships					Lower	Upper
H1: PB → BS	0.139	0.054	2.554	0.005	0.048	0.226
H2a: PB → GO	0.947	0.172	5.515	0.000	0.686	1.242
H2b: GO → BS	0.379	0.082	4.60	0.000	0.245	0.516
H3a: PB → JRI	1.161	0.244	4.75	0.000	0.762	1.565
H3b: JRI → BS	0.245	0.067	3.639	0.000	0.136	0.357
H4: TU → GO	0.840	0.209	4.021	0.000	0.521	1.206
H6: TU → JRI	0.925	0.283	3.269	0.001	0.466	1.39
Indirect relationships (Mediating effects)						
H2: PB → GO → BS	0.359	0.1090	3.301	0.000	0.200	0.555
H3: PB → JRI → BS	0.285	0.0960	2.950	0.002	0.139	0.456

Note. PB: participative budgeting; BS: budgetary slack; GO: goal orientation; JRI: job-relevant information; TU: task uncertainty.

A mediation analysis examined the mediating effect of GO and JRI. On the one hand, the results (Table 4) indicate a complementary (partial mediation) relationship between PB and BS through GO (β = 0.359, t = 3.301, p = 0.000). As a result, participation positively affects GO, which, in turn, affects BS, supporting H2. Moreover, the results indicate a partially mediated correlation between PB and BS through JRI (β = 0.285, t = 2.950, p = 0.027). To be precise, participation affects JRI and subsequently BS, supporting H3.

4.4. *Conditional moderation mediation effects*

As indicated in Table 5, the results reveal that TU in the moderated mediation model negatively influences BS through GO (coefficient = −0.056, S.E. = 0.020, 95% CI = [−0.092, −0.028]) and JRI (coefficient = −0.043, S.E. = 0.016, 95% CI = [−0.071, −0.018]).

Table 5. Analysis of conditional mediation effects.

Construct	Path coefficient	S.E.	*t*-value	*p*-value	CI	
Moderated indirect relationships					Lower	Upper
H5: TU x PB → GO → BS	−0.056	0.020	2.849	0.002	−0.092	−0.028
H7: TU x PB → JRI → BS	−0.043	0.016	2.673	0.004	−0.071	−0.018
Testing the moderated indirect relationships						
PB → GO → BS conditional on TU at +1 SD	−0.006	0.040	0.152	0.000	−0.073	−0.057
PB → JRI → BS conditional on TU at +1 SD	0.010	0.029	0.347	0.004	−0.061	−0.031
PB → GO → BS conditional on TU at −1 SD	0.157	0.047	3.320	0.000	0.086	0.241
PB → JRI → BS conditional on TU at −1 SD	0.132	0.045	2.974	0.001	0.065	0.210
PB → GO → BS conditional on TU at Mean	0.075	0.033	2.287	0.011	0.026	0.134
PB → JRI → BS conditional on TU at Mean	0.071	0.030	2.397	0.008	0.029	0.125

Note. PB: participative budgeting; BS: budgetary slack; GO: goal orientation; JRI: job-relevant information; TU: task uncertainty.

Consequently, the indirect consequences of the correlation between PB and BS occur at a higher level of TU. A combination of GO (coefficient = −0.006. t = 0.152, p < 0.000) and JRI (coefficient = 0.010, t = 0.347, p < 0.004) are significant and smaller than the indirect effect through GO at lower levels (coefficient = 0.157, t = 3.320, p < 0.000) and mean levels (coefficient = 0.075. t = 2.287, p < 0.011) and through JRI at lower levels (coefficient = 0.132, t = 2.974, p < 0.001) and mean levels (coefficient = 0.071, t = 2.397, p < 0.008). Thus, the effect of PB on BS is mitigated by high levels of TU. Therefore, the moderated mediation model supports H5 and H7.

These results are further supported by Figure 3, which displays a steeper gradient for low and mean levels of TU. BS is more significantly affected by PB at lower and mean levels of TU. However, as TU increases, the line tends to straighten, and PB does not lead to a similar change in BS. Accordingly, the effects of PB on BS through the mediating variables weaken at high levels of TU.
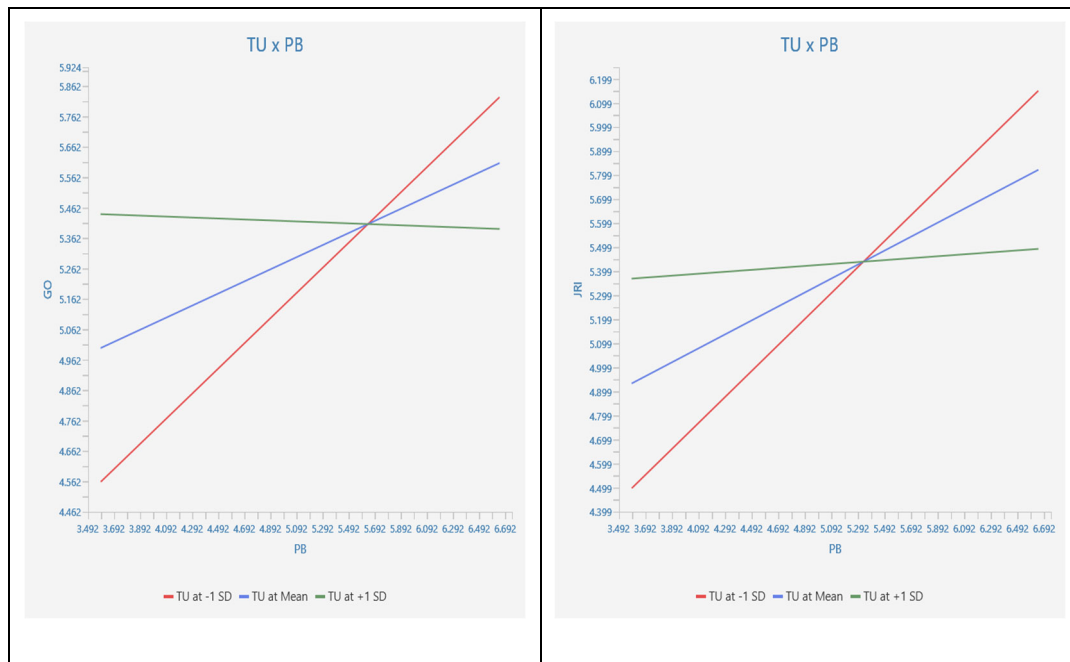
Figure 3. Moderation mediation plot.

5. Discussion and conclusion

Our study delves into the intricate dynamics of participative budgeting, shedding light on the nuanced interplay between motivational and cognitive aspects in relation to budgetary slack. By adopting an intervening approach, we contribute to the existing body of knowledge, aligning our findings with prior research (Kren, 2003; Van der Stede, 2000). The results reveal that participative budgeting has a direct impact on budgetary slack. Also, a comprehensive analysis on the entire sample was conducted to examine the mediation effects of goal orientation and job-relevant information. The findings suggest that both variables mediate the relationship between participative budgeting and budgetary slack. Thus, our study reinforces the idea that participative budgeting's effects on budgetary slack are not solely direct but are intricately intertwined with cognitive and motivational elements (Derfuss, 2012).

Furthermore, our research reveals that task uncertainty levels negatively influence the mediation effects. This is in line with previous studies such as Weiss et al. (2011). However, under conditions of low task uncertainty, goal orientation and job-relevant information remain crucial in mediating the effects of participative budgeting on

budgetary slack. Therefore, participative budgeting may be beneficial in terms of cognitive and motivational factors when task uncertainty is low and there is a strong relationship between these factors (Her et al., 2019).

Our findings contribute to the nuanced understanding of when and how participative budgeting can be most effective, offering practical insights for organisations facing varying levels of task uncertainty. This study not only advances academic knowledge, but also provides valuable implications for practitioners seeking to optimise budget processes by taking into account the intricate interplay of motivational and cognitive factors in the implementation of participative budgeting strategies. As organisations continue to evolve in dynamic environments, our research underlines the importance of considering contextual factors to realise the full potential of participative budgeting in improving organisational performance.

5.1. *Implications*

Management accounting academics and practitioners can benefit from our contributions, particularly the introduction of conditional process Modelling to the literature on budgetary slack. Our study underscores the pivotal role of motivational and cognitive factors, such as goal orientations and job-relevant information, whilst considering different levels of task uncertainty. Although previous research has often focused on either psychological motivational or cognitive strategies, our comparative model integrates these factors into a single model, highlighting its relevance in the management accounting literature.

Prior research has acknowledged task uncertainty as a moderating factor in the cognitive consequences of participative budgeting (Her et al., 2019). However, our findings suggest that task uncertainty also has the potential to moderate the motivational effect of participation. Therefore, further exploration is needed to understand how this contextual factor interacts with cognitive and motivational factors to modify their mediating roles. In situations of high task uncertainty, participative budgeting reduces budgetary slack through motivational and cognitive factors, namely, goal orientations and job-relevant information.

Our study's findings offer practical guidance to organisations facing various forms of uncertainty. To reduce budgetary slack under uncertain conditions, employees should have access to a wide range of budgeting activities. Enhancing participative budgeting through government legislation and programs that consider motivational and cognitive factors (goal orientation and job-relevant information) and task uncertainty levels can effectively reduce budgetary slack.

5.2. *Limitations and further research*

This study has several limitations. The results rely on subjective assessments by participants. Although the study aims to demonstrate validity, the possibility of non-response bias cannot be entirely ruled out. Future research should explore other potential mediating factors in this relationship as well as examine moderating factors such as individual capacities, teamwork and self-motivation.

By using budgetary slack as an exogenous factor, researchers are forced to assess its beneficial effects (Van der Stede, 2000). They need to explore this issue in depth because determining when budgetary slack is advantageous or detrimental to enhancing performance remains challenging.

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Appendix A. Profile of respondents

Variable	Frequency	%
Gender		
Male	183	73.8
Female	65	26.2
Age		
Less than 35 years	22	8.9
35 to 45 years	179	72.2
Above 45 years	47	18.9
Education		
Bachelor's Degree or equivalent	189	76.2
Master's Degree	27	10.9
Doctoral Degree	10	4
Other	22	8.9
Field of specialisation		
Accounting	107	43.1
Management	65	26.2
Economics	76	30.6
Professional background		
Financial Manager	50	20.2
Budget Director	60	24.2
Manufacturing and Production	35	14.1
Product Development	39	15.7
Research and Development	37	14.9
Technology	27	10.9
Work experience		
Less than 5 years	62	25
5 to 10 years	112	45.2
More than 10 years	74	29.8

Appendix B. Measurement scales

Participative Budgeting (PB)

PB1   I am involved in budgeting in my unit.

PB2   My superior provides ample information when my unit's budget is reviewed.

PB3   I have the autonomy to express opinions or make suggestions on the budget for my superior, even without being asked.

PB4   I have an influence on the final budget of my unit.

PB5   My contribution to the budget process in my unit is great.

PB6   I am frequently sought by my superior to exchange information, issue opinions and suggestions on the forecasts made.

Budgetary Slack (BS)

BS1   I succeed to submit budgets that are easily attainable.

BS2   Budget targets induce high productivity in my business unit.*

BS3   Budget targets require costs to be managed carefully in my business unit.*

BS4   Budget targets have not caused me to be particularly concerned with improving efficiency in my business unit.

Goal Orientation (GO)

GO1   Further development of my work ability is important enough to take risks.

GO2   I am willing to take on challenging work assignments.

GO3   I often look for opportunities to develop new skills and knowledge.

GO4   I enjoy challenging and difficult tasks at work.

Job-Relevant Information (JRI)

JRI1   I am always clear about what is necessary to perform well on my job.

JRI2   I have adequate information to make optimal decisions to accomplish my performance objectives.

JRI3   I am able to obtain the strategic information necessary to evaluate important decision alternatives.

Task Uncertainty (TU)

TU1   My tasks are the same from day-to-day.*

TU2   I encounter a wide variety of cases, claims, clients, or things in my working day.

TU3   My work is routine.*

TU4   People in this unit do about the same job in the same way most of the time.*

TU5   Basically, unit members perform repetitive activities in doing their jobs.*

TU6   There is a clearly defined body of knowledge or subject matter which can guide me in doing my work.*

TU7   There is an understandable sequence of steps that can be followed in doing my work.*

TU8   I can rely on established procedures and practices to do my work.*

* Questions were reverse-scored for analysis.