Economia Aziendale Online

Business and Management Sciences
International Quarterly Review

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Pavia, September 30, 2025
Volume 16 – N. 3/2025

DOI: 10.13132/2038-5498/16.3.887-905

www.ea2000.it
www.economiaaziendale.it

PaviaUniversityPress

Electronic ISSN 2038-5498
Reg. Trib. Pavia n. 685/2007 R.S.P.

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Cite as:

Rizzo, M. G. (2025). Investigating the effect of budget goal difficulty on budget holders' performance in a hybrid environment. E*conomia Aziendale Online*, *16*(3), 887-905.

Section:

Refereed Paper

Received: August 2025
Published: 30/09/2025

ABSTRACT

This study advances management accounting research by proposing and testing a mediational model within a hybrid budgeting setting. Specifically, it investigates how budget goal difficulty transmits directly and indirectly on budget holders' performance the beneficial cognitive and motivational effects of budgetary participation. To explore this relationship, survey data were collected from a sample of hybrid budget holders, and the hypotheses were tested using structural equation modeling. The results confirm that higher levels of budgetary participation are associated with more challenging budget goals. In turn, increased goal difficulty prompts medical managers to invest greater effort in achieving these goals, thereby enhancing their budgetary performance. Notably, budget goal difficulty fully mediates the relationship between participation and performance. The findings suggest that the cognitive benefits of participation are internalized as stronger beliefs in one's ability to set challenging yet attainable goals, which indirectly foster improved motivation, effort, and task focus. This study contributes to the management accounting literature by offering a novel perspective on the mechanisms linking participation and performance in hybrid contexts. It also carries important policy implications, demonstrating that the introduction of business-like techniques—such as budgeting—can improve performance, provided that attitudinal and behavioral variables are adequately stimulated.

Questo studio si propone di analizzare se, e in che modo, gli effetti derivanti dalla partecipazione al processo di budget vengano trasmessi, direttamente e indirettamente, alla performance dei budget holder attraverso la percezione della difficoltà degli obiettivi di budget. A tale scopo, è stata condotta un'indagine in un'azienda sanitaria mediante la somministrazione di un questionario tutti i professionisti identificati come responsabili di budget. Per la verifica delle ipotesi di ricerca si è fatto ricorso alla tecnica delle equazioni strutturali. I risultati mostrano che la partecipazione al processo di budgeting genera effetti cognitivi e motivazionali positivi, che si traducono nella capacità di fissare obiettivi sfidanti ma raggiungibili. Tali obiettivi influenzano, a loro volta, direttamente e indirettamente i comportamenti dei budget holder, orientandoli verso livelli di performance più elevati. Il presente lavoro contribuisce all'avanzamento degli studi di contabilità analitica, offrendo spunti di riflessione sul ruolo delle variabili individuali nell'influenzare l'efficacia dei sistemi di budget, in particolare nei contesti organizzativi ibridi.

Keywords: Budget, budgetary participation, budget goal difficulty, budgetary performance, healthcare, hybrid organizations.

1 – Introduction

The role of budgeting practices – e.g. performance measures, budget targets (standards), budget-based compensation, and participative budgeting – in shaping individuals' mental states, behaviors, and ultimately their performance continues to drive ongoing inquiry in the behavioral management accounting (BMA) field (see, Birnberg *et al.*, 2006; Covaleski *et al.*, 2003; Wibbeke & Lachmann, 2020). Among these practices, a substantial body of research has focused on the behavioral effects of participative budgeting (Alhasnawi *et al.*, 2024; Bartocci *et al.*, 2022; Mahlendorf *et al.*,2015; Prümmer *et al.*, 2011). Existing literature suggests that managers' involvement and influence in the budget-setting process generally yield positive attitudinal outcomes, however empirical findings on the budgetary participation-performance relationship remain mixed, with evidence showing positive, negative, or no effects (for a recent review, see Alhasnawi *et al.*, 2024; Derfuss, 2009; 2016). These ongoing inconsistencies in empirical findings suggest that the relationship between budgetary participation and performance is complex and likely shaped by individual variables that remain underexplored (see, for example, Lau & Tan, 2006; Nouri & Parker, 1998). In light of this, scholars continue to call for further research in this area that incorporates relevant, yet under investigated, intervening variables in order to deepen our understanding of how - and under what conditions .- budgetary participation influences performance (Covaleski *et al.*, 2003; Wibbeke & Lachmann, 2020).

In this regard, Grossi *et al.* (2020) highlighted a notable gap in the literature on how budgeting practices influence employee behavior, performance and accountability in hybrid environments. In such contexts, individual budgetary attitudes and behaviors often differ significantly from those observed in employees of profit-oriented organizations (Campanale *et al.*, 2021; Croft *et al.*, 2015; Ewert, 2020; Williams *et al.*, 1990; Verbeeten, 2008). Thus, the Italian National Health Service (SSN) provides a compelling hybrid setting for investigating the the behavioral effects of a participative budgeting. Reforms inspired by the New Public Management (NPM) paradigm have introduced into the SSN budgeting and reporting systems (see, Arnaboldi *et al.*, 2015; Anessi-Pessina & Cantù, 2010; Hood, 1995; Nuti *et al.*, 2021), while simultaneously devolving financial accountability to medical professionals (e.g. Haigh *et al.*, 2005; Lapsley & Wright, 2004; Macinati, 2010). This shift has effectively repositioned professionals as medical managers (e.g., Haigh *et al.*, 2015; Jacobs, 2005; Jay, 2013; Pache & Santos, 2013), and through the allocation of budgets, they have also assumed the role of budget holders (e.g., Hellqvist & Kurkkio, 2025; Macinati & Rizzo, 2014, 2025). However, as medical managers are professional with a clinical background, they are required to reconcile different institutional logics namely, professionalism and managerialism (e.g., Croft *et al.*, 2015; Ewert, 2020; Levay *et al.*, 2020). When these logics are perceived as incompatible, tensions may arise that potentially undermine the effectiveness of managerial tools (e.g. Blomgren *et al.*, 2014; Blomgren & Waks, 2015; Demartini & Mella, 2014; Demartini & Trucco, 2017; Macinati *et al.*, 2022; Vidè *et al.*, 2026). This challenge presents a promising line of inquiry, as the literature has devoted limited attention to how budgeting practices may shape positive attitudes and behaviours among hybrid budget holders, enabling them to perform effectively in both clinical and managerial roles, which, in turn, positively influence their performance and accountability (e.g. Earley *et al.*, 1988; Campanale *et al.*, 2021; Cepiku *et al.*,2024; Macinati *et al.*, 2016).

Previous management and organizational psychology literature has relied on goal-setting theory (Locke, 1968; Locke *et al.*, 1981; Locke & Latham, 1990) for examining the effect of budgetary participation on performance. Goal setting theory is grounded in the premise that

conscious goals and intentions drive outcomes, and that goal effectiveness depends on whether individuals perceive goals as clear, understandable, salient, challenging, and attainable. It is further suggested that behaviour (i.e., actions) is regulated by goal perceptions and, when managers set difficult yet attainable budget goals, employees are more likely to achieve higher levels of performance (Locke, 1968; Locke & Latham, 1990). Relying on this, budget goal difficulty emerges as a pivotal concept, whereby challenging goals - compared to moderate or easy ones - elicit greater effort and intensity toward their attainment, thereby exerting a positive influence on performance (e.g., Locke & Latham, 1990). However, drawing on an extensive body of literature, budget goal difficulty emerges as a key - yet underexplored - variable in literature examining the effects of budgetary participation on performance (see, Alhasnawi *et al.*, 2024; Bartocci *et al.*, 2022; Derfuss, 2009; Mahlendorf *et al.*,2015 for a review). Therefore, exploring the extent to which a budget target is perceived as challenging or demanding to achieve (Locke & Latham, 1990; Locke *et al.*, 1981) may illuminate the underlying mechanisms through which participative budgeting translates into performance improvements, thereby helping to address the largely mixed findings in prior research. Moreover, investigating the attitudinal and behavioural effects of budget goal difficulty within a participative budgeting context such as healthcare is particularly compelling, given that budget recipients are hybrid managers who may exhibit limited positive attitudes toward budget, a circumstance that could potentially undermine the cognitive and motivational benefits of budgetary participation on performance. Thus, as little research is available on this topic, exploring how budgetary participation influences medical managers' perceptions of budget goal difficulty - and how these perceptions, in turn, indirectly affect performance warrants further investigation.

This study aims to advance management accounting research by proposing a research model that investigates how the effects of budgetary participation are transmitted to performance, positioning budget goal difficulty as a key mediating variable. Thus, the following research question is proposed:

> **RQ1:** How does budget goal difficulty mediate the relationship budgetary participation and performance?

To this end, a cross-sectional model was tested using survey data collected from a sample of budget holders working in a hospital. The results confirmed the research hypothesis and make several contributions. In particular, results provide novel insights for both management accounting research (Birnberg *et al.*, 2006; Covaleski *et al.*, 2003; Wibbeke & Lachmann, 2020; Luft & Shields, 2003) and the accounting literature on hybrid environments (Grossi *et al.*, 2020). Furthermore, this research advances public sector studies by shedding light on the implications and effectiveness of New Public Management (NPM)-related practices (Vidè *et al.*, 2024; Pollit & Bouckaert, 2017).

This paper is organized as follows. SECTION 2 reviews the literature and formulates the hypotheses and propose the research model. SECTION 3 presents the research methodology, followed by the results in SECTION 4. Finally, SECTION 5 discusses the findings, proposes conclusions, and outlines the limitations of the study.

2 – Research Hypotheses and the theoretical model

The direct and indirect relationship between budgetary participation, budget goal difficulty, and performance is examined through the lens of goal-setting theory (Locke, 1968; Locke *et al.*,

1981; Locke and Latham, 1990; see also Murray, 1990; Chong and Leung, 2003). This theory is grounded in the belief that conscious goals and intentions are key drivers of performance outcomes. In particular, human conscious intentions are projected as goals and behavior is subsequently regulated by these goals. In this regard Locke and Latham (1990) further contend that the benefits of goal setting are contingent upon goal effectiveness, which, in turn, depends on individuals' perceptions of goal clarity, salience, challenge, and attainability (Locke & Latham, 2004, 2006, 2012). A critical implication of goal-setting theory is that management should create organizational conditions and practices supportive of the development of effective goals which in turn are likely to influence intentions, behavior and performance. Informed on goal-setting theory, implementing a participative budgeting approach aligns with perspective as goals established through participation are generally more effective than those imposed unilaterally (see Locke and Latham, 1990; Murray, 1990; Chong and Leung, 2003). As previously mentioned, this study focuses on one specific goal perception - namely, budget goal difficulty. Participation in budget setting has been recognized to be a pivotal in supporting the emergence of effective goal perceptions, particularly with regard to how budget targets are interpreted as appropriately challenging or demanding (see Murray, 1990; Chong and Leung, 2003). Participative budgeting allows managers to contribute to and exert influence over the budget-setting process (Brownell, 1982b). This approach facilitates a two-way exchange of information, enabling subordinates to share private insights and seek clarification on budget targets and their work environment. As a result, they are more motivated to disclose private information and to gather job-relevant knowledge (e.g. Dunk 1993; Chong & Johnson, 2012; Chong & Chong, 2002; Chong et. al., 2006; Kenis, 1979; Macinati & Rizzo, 2014). These interactions clarify the rationale underlying goals, thereby reducing information asymmetries and uncertainty (e.g. Dunk 1993; Macinati *et al.*, 2017; Chong & Johnson, 2007). In this regard, Locke *et al.*, (1997) suggested that enhanced motivation and improved cognitive understanding of goals are among the most significant benefits of participative decision-making. As a result, the informational benefits of participative budgeting influence individual cognitive processes related to the interpretation and internalization of goals making them more meaningful and salient while encouraging the acceptance of higher levels of difficulty (e,g, Chong & Johnson, 2007; Murray, 1990). Management accounting and organizational literature scholars have examined the relationship between budgetary participation and budget goal difficulty (see for a review, Alhasnawi *et al.*, 2024; Bartocci *et al.*, 2022; Derfuss, 2009; Mahlendorf *et al.*,2015).While some studies, drawing on agency theory, predicted and found a negative association between participative budgeting and goal difficulty (e.g., Shields *et al.*, 2000; Lukka, 1988), others relying on goal setting theory have demonstrated a positive relationship between budgetary participation and the perceived difficulty of budgetary goals. In particular, Latham *et al.*, (1978) and Kren and Liao (1988) found that subordinates are motivated to reveal relevant information during participative budgeting, thereby facilitating the setting of more demanding budget goals. Murray (1990, p. 110) theorizes that "participation may result in more difficult goals". Later, Wier (1993), Chong and Leung (2003), and Chong and Johnson (2007) provided additional empirical support, each demonstrating that budgetary participation enhances budget goal level. In healthcare settings, supporting the development of effective perceptions of budget goal difficulty through a participative budgeting approach may be critical for mitigating dysfunctional responses stemming from the tension between the clinical and managerial responsibilities of hybrid managers who navigate dual professional identities. The tension

between these two conflicting dimensions could ultimately undermine individuals' willingness to accept higher levels of difficulty, thus compromising the effectiveness of a participatory goal setting. Given the limited attention in the existing literature to how involving hybrid budget holders in the budgeting process may influence the setting of goals perceived as more challenging - thereby increasing their level of difficulty- the following hypothesis is proposed:

H1. Budgetary participation is positively associated with budget goal level

Budget goals can range from loosely defined and easily attainable to extremely tight and potentially unattainable. Goals that are too easily achieved often fail to challenge participants and therefore offer limited motivational value (Kenis, 1979). Based on goal-setting theory, it is broadly suggested that setting difficult but attainable goals leads to higher performance than setting moderate, easy, or vague goals (e.g., Locke & Latham, 1990). Specifically, Locke and Latham (1990) claimed that specific and challenging goals induce individuals to exert greater effort for longer periods compared to easy or nonspecific goals such as "do your best". They (p. 92) suggested that goals have two primary directional effects: (1) first, they focus attention on goal-relevant activities and materials while diverting it from irrelevant ones; (2) second, they activate stored knowledge and skills perceived as relevant to the task. Therefore, when effort is accurately directed toward the goal, the likelihood of success increases. Thus, difficult goals tend to generate greater sustained effort than easy goals, resulting in improved performance outcomes (e.g. Liu & Fisher, 2020). Kenis (1979) in this regard, promotes the use of goals that are tight but attainable to maximize motivational impact. On the contrary, overly tight or unrealistic goals may induce feelings of failure, frustration, diminished aspirations, and eventual rejection of the goals by those responsible for achieving them (Becker & Green, 1962; Dunbar, 1971). Hofstede (1967) similarly argued that tighter budget goals can enhance motivation, though only up to a certain point - beyond which further tightening leads to a decline in motivational effects. Further, it has been argued that if budget goal levels are perceived as quite easy to achieve, subordinates' levels of aspiration (and hence motivation and performance) are low, because they are able to achieve their goals with minimum effort, persistence, and creativity (Merchant, 1998, p. 387). Empirical findings on the relationship between goal difficulty and performance are mixed. For instance, Carroll and Tosi (1970) identified a significant positive relationship between managers' perceptions of task-goal difficulty and their self-assessed performance. Similarly, Blumenfeld and Leidy (1969) observed that managers assigned more demanding goals outperformed those working toward less challenging targets. By contrast, studies conducted by Stedry and Kay (1966) and Steers (1975) failed to find empirical support for a positive association between goal difficulty and either motivation or performance outcomes. Although goal-setting theory postulates that, to effectively motivate higher performance, goals should be challenging yet attainable, prior empirical research has yielded mixed findings regarding this relationship. To contribute to a deeper understanding of this dynamic within hybrid organizational contexts, the following hypothesis is proposed:

H2. Budget goal difficulty is positively associated with budgetary performance

A substantial body of research has examined the relationship between budgetary participation and performance (see for a review: Alhasnawi *et al.*, 2024; Bartocci *et al.*, 2022; Derfuss, 2009; Mahlendorf *et al.*, 2015). However, empirical support for this relationship has not

always been consistent (Derfuss, 2009). The conflicting findings in prior studies suggest that the relationship between participation in budgeting and performance is complex. Since this has led scholars to call for further research into intervening variables that clarify the relationship between budgetary participation and performance (Covaleski *et al.*, 2003; Wibbeke & Lachmann, 2020), the present study introduces budget goal difficulty as a mediating variable. This aims to offer a more nuanced understanding of how participative budgeting shapes individuals' mental states, behaviours, and performance outcomes. Therefore, Hypothesis 1 posits that participation in the process of setting budget goals motivates subordinates to disclose private information - thereby contributing to the establishment of more challenging budget targets - while Hypothesis 2 suggests that endorsing such challenging targets elicits greater effort from budget holders, enhancing their motivation to perform at higher levels. Together, H1 and H2, alongside the mixed findings in the literature on the budgetary participation-performance path, suggest that the positive cognitive and motivational mechanisms triggered by participative budgeting may be transmitted and amplified indirectly through budget goal difficulty. Accordingly, Hypothesis 3 posits that budget goal difficulty mediates the relationship between participation in budget setting and performance. Thes idea is expressed in the following hypothesis:

> **H3.** The relationship between budgetary participation and budgetary performance is mediated by budget goal level

The hypothesized relationships are shown in Figure 1.

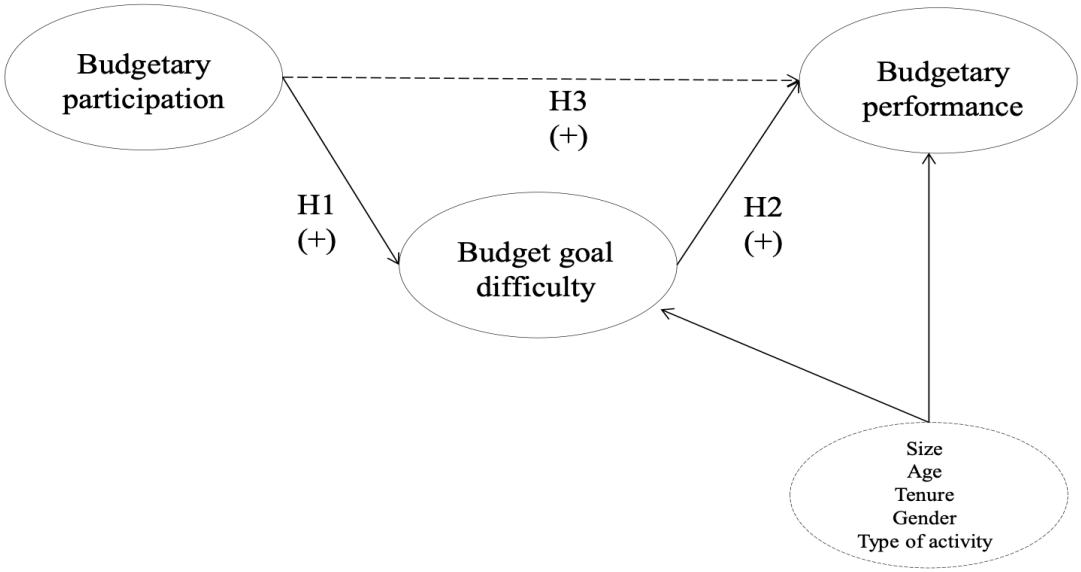

Fig. 1 –The theoretical model (*Note*: the solid lines represent direct effects while the dashed line represents the indirect effects)

Specifically, the proposed model integrates both the motivational and cognitive aspects of budgetary participation and depicts the connection between budgetary participation and budget goal difficulty (H1), as well as the relationship between budget goal difficulty and budgetary performance (H2). Additionally, the model highlights the mediating role of budget goal difficulty in the relationship between participative budgeting and performance, as indicated by the dashed line (H3). The proposed mediation model not only assess the extent to which participation affects performance, but also to identify the specific conditions under which

this relationship is most effective (Brownell, 1982, p. 146) The model also incorporates a set of control variables to account for potential confounding effects on the dependent variables, namely budgetary performance and budget goal difficulty. Specifically, with respect to budgetary performance, literature suggests that performance dynamics may be influenced by: the number of employees reporting to a budget holder (size); tenure within the position; the type of the of clinical activity overseen by the budget holder (see for similar use: Ahmed, 2025; Macinati and Rizzo, 2025; Maiga *et al.*, 2014; Ng & Feldman, 2013) Regarding budget goal difficulty, literature suggests that individual beliefs, cognitive orientations, and value systems may be shaped by individual characteristics (Marginson *et al.*, 2014) such as gender (Yukl and Latham, 1978), tenure (Mathieu & Zajac, 1990), and age (Locke *et al.*, 1981).

3 – Research methodology

3.1 – *Data collection and sample*

Data for this study were gathered data from a survey (see Section 3.2 for details) and archival sources (see Section 3.3 for details). Participants in the survey were 70 medical doctors employed at a public hospital, identified by the Planning and Control Function as budget holders. Each of them was formally designated as responsible for a "cost center," allocated a budget for management and control purposes, and held financially accountable for managerial decisions. They served either as heads of care units (i.e., Heads of organizational units) or as leaders of specific interdisciplinary care teams.

Of the 70 questionnaires distributed, 67 were returned (96%). Three of the returned questionnaires were incomplete and thus excluded from the analysis. As a result, 65 valid responses were used for the statistical analyses, resulting in a final response rate of 93%. Despite the high response rate, a test for non-response bias was also conducted by comparing the early and late respondents on key variables. The mean value for each scale and the characteristics of respondents did not differ significantly between the two groups, leading to conclude that the likelihood of non-response bias is minimal.

3.2 – *The survey instrument*

The questionnaire was designed online, sent via email to all budget holders. The questionnaire comprised two sections. The first section gathered demographic and organizational data, including age, gender, organizational tenure, number of employees under the respondent's supervision, and the type of clinical activity provided (medical or surgical). These variables were subsequently used as controls in the analysis (see Section 3.3 for details). The second section included a series of multi-item scales to measure budgetary participation and budget goal difficulty (see Section 3.3 for details). The survey was administered following the implementation strategy proposed by Dillman *et al.*, (2014). Since the questionnaire was distributed in Italian, the back-translation method recommended by Behling and Law (2000) was employed to ensure both linguistic and conceptual equivalence.

3.3 – *Measurement of variables*

Budgetary participation (BP) was measured using the six-item version of the budgetary participation measure developed by Milani (1975) in which respondents were asked to rate their perceived level of involvement and influence in core budgeting activities (an example item is:

"My contribution to the budget is very important").This instrument has been extensively used and validated in accounting studies of budgetary participation (e.g., see Derfuss, 2006).

Budget goal difficulty (BGD) assesses how challenging or demanding the goal is perceived to be. The four-item version of the budget goal difficulty measure developed by Kenis (1979) was used. An example item is: "How difficult is it to attain your budget goals?". All responses on the above multi-item scales were assessed using a seven-point Likert-type scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Budgetary performance was assessed using the global performance index (ranging from 0 to 100) derived from internal budget variance reports. Each budget holder is assigned both clinical and financial goals, with each goal weighted according to its relevance. At the end of the year, controllers evaluate the budgetary performance of each manager by calculating the global weighted performance index. This index summarizes the percentage of budget targets achieved by each budget holder at the end of the year (see Macinati *et al.*, 2022, for a similar approach). In this study, objective performance metric was preferred over individual-level self-reports, such as managerial performance, as this choice helps mitigate the risk of common method bias (CMB, see Section 3.4) (Podsakoff *et al.*, 2003).

Regarding control variables, size was operationalized as the natural logarithm of the number of full-time employees under the budget holder's supervision, as reported in the survey instrument. Tenure as budget holders was measured as the number of years the respondent had worked in the hospital as budget holder. The type of activity overseen by budget holders (medical vs. surgical), was captured using a dummy variable coded as 1 for surgical activity. Gender was treated as a dummy variable (coded as 1 for male) and age was measured in years. Table 1 presents the descriptive statistics for the multi-item constructs and continuous control variables. For the categorical (dummy) variables: 75% of respondents were male, while for the type of clinical activities of budget holders – whether medical or surgical – 47% of respondents were involved in surgical activities.

Table 1 – Descriptive statistics for scale variables (n = 65).

Variable	Mean (SD)	Theoretical range	Actual range
Budgetary participation	3.6 (1.5)	1-7	1-7
Budget goal difficulty	4.8 (1.4)	1-7	1-7
Budgetary performance	66 (26)	0-100	30-100
Age (years)	59 (3)	-	-
Tenure as budget holder (years)	9 (6)	-	-
Size (ln n. employees)	1.8 (0.4)	-	-

3.4 – *Preliminary data checks*

The data for this study were collected from a single source using a self-reported questionnaire administered at a single point in time for these reasons both statistical and procedural remedies as recommended by Podsakoff *et al.* (2003) were followed to mitigate potential issues related to

common method bias (CMB). From a statistical standpoint, results of Harman's single-factor revealed that the total variance explained by the first factor was well below the recommended 50% threshold (Podsakoff *et al.*, 2003). Additionally, all variance inflation factors (VIFs) were below the threshold of 3 (Kock, 2015) (Inner VIFs: Budgetary participation→ Budget goal difficulty= 1.1; Budget goal difficulty→ Budgetary performance= 1.4; Budgetary participation→ Budgetary performance= 1.5). Statistical tests suggest that CMB did not significantly influence participants' responses. From a procedural standpoint, careful attention was paid to questionnaire design to minimize potential bias (see for details, Jordan & Troth, 2020; Podsakoff *et al.*, 2003). Furthermore, data for dependent and independent variables were collected from multiple sources, including both the web-based questionnaire and archival data on budgetary performance. Overall, CMB was unlikely to be a significant problem in this. study

3.5 – *Partial least squares structural equation modeling (PLS-SEM)*

To test the research hypotheses, Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach (using Smart PLS, software was employed (Ringle *et al.*, 2024). PLS estimates simultaneously the measurement model and the structural model there are interpreted in two distinct stages, as detailed in the following sections (Sarstedt *et al.*, 2019). All calculations for significance testing were based on 5,000 bootstrap samples (Hair *et al.*, 2019, 2020).

4 – Data analysis and results

4.1 – *Measurement model*

The statistics derived from the PLS measurement model were used to assess the reliability (both item-level and composite) and validity (convergent and discriminant) of the constructs employed in the study. Reliability was examined at two levels: individual item reliability and overall construct reliability. The cross-loadings for each construct confirm the reliability of the individual items. All items loaded above the 0.50 threshold on their respective constructs, indicating acceptable item-level reliability (Hair *et al.*, 2019, 2020) (results are available upon request). Construct reliability was confirmed by the composite reliability (CR) scores and Cronbach's alpha values (Table 2), all of which exceeded the commonly accepted threshold of 0.70.

Table 2 – Composite reliability (CR), Cronbach's alpha, and average variance extracted (AVE) for each construct. The diagonal (bold) shows the square roots of the AVEs.

	CR	Cronbach's alpha	AVE	BP	BGD	BPERF
Budgetary participation (BP)	0.91	0.88	0.63	**0.79**		
Budget goal difficulty (BGD)	0.89	0.86	0.71	0.51 ***	**0.84**	
Budgetary performance (BPER)	-	-	-	0.31**	0.45**	-
Note: *p<0.05; **p<0.01; ***p<0.001 (two-tailed)						

Convergent validity was supported by the average variance extracted (AVE) values, which were all 0.50 or higher, indicating satisfactory convergence for each construct. Discriminant validity was assessed through multiple criteria. First, all items showed higher loadings on their intended constructs than on any other construct (results are available upon request), supporting item-level discriminant validity. Furthermore, the square roots of the AVEs were greater than the correlations among latent variables (Fornell & Larcker, 1981), providing additional evidence of discriminant validity.

Taken together the statistics from the PLS measurement model confirm that the constructs used in the study were both reliable and valid. Table 3 presents the latent variable correlations among the validated constructs and the other variables included in the model.

Table 3 – Full latent variables correlations matrix between validated constructs and all control variables included in the model (n=65)

	BP	BGD	BPERF	Age	Gender	Tenure	Size
Budgetary participation (BP)	-						
Budget goal difficulty (BGD)	0.51***	-					
Budgetary performance (BPE)	0.31**	0.46***	-				
Age	-0.05	-0.12	-0.04	-			
Gender[+]	-0.31**	-0.15	-0.07	0.02	-		
Tenure	-0.20*	-0-07	-0.13	0.30**	0.03	-	
Size	-0.08	-0.02	0.01	0.30**	0.23**	0.09	-
Activity Type[++]	0.07	0.10	0.04	0.08	0.10	-0.02	0.19
Note: *p<0.05; **p<0.01; ***p<0.001 (using a two-tailed test); [+]Male is the reference category; [++]Surgical is the reference category							

4.2 – *Hypotheses testing*

Statistics derived from the PLS structural model output were examined to test the hypotheses. The stability of the structural model was assessed using two prediction-oriented measures: the coefficient of determination (R^2) and the Stone–Geisser Q^2 test (cross-validated redundancy). Overall, the results suggest that the model exhibits good predictive power. Specifically, the R^2 values indicate that 22% of budget goal difficulty and 30% of budgetary performance are explained by the model, supporting the model's in-sample explanatory power (Hair *et al.*, 2019). In addition, the Q^2 values were all above zero, confirming the predictive relevance of the model's constructs. The structural model's path coefficients and their statistical significance, reported in Table 4, were examined to test whether the hypothesized relationships align with the data. The findings reveal a positive ($\beta = 0.50$) and significant ($p = 0.000$) association between budgetary participation and budget goal difficulty, supporting H1. Additionally, budget goal difficulty was positively ($\beta = 0.42$) and significantly ($p = 0.000$) related to budgetary

performance, confirming H2. Taken together, the results of H1 and H2, along with the non-significant association between budgetary participation and budgetary performance, suggest the presence of a probable indirect effect of budget goal difficulty.

Table 4 – PLS structural model results: path coefficients. standard deviation (SD) and p-values[2] (n=65)

Paths:			Hyp	Path coefficient	SD	p-value
from:		to:				
Budgetary participation	→	Budget goal difficulty	H1	0.51	0.08	0.000***
Budget goal difficulty	→	Budgetary performance	H2	0.42	0.12	0.003**
Budgetary participation	→	Budgetary performance	control	0.08	0.14	0.270
Age	→	Budget goal difficulty	control	0.28	0.12	0.01*
Gender[+]	→	Budget goal difficulty	control	-0.04	0.22	0,410
Gender[+]	→	Budgetary performance	control	-0.05	0.25	0.420
Tenure	→	Budgetary performance	control	0.09	0.13	0.240
Tenure	→	Budget goal difficulty	control	0.07	0.12	0.260
Size (ln)	→	Budget goal difficulty	control	-0.03	0.116	0.389
Size (ln)	→	Budgetary performance	control	-0.05	0.18	0.330
Type of activity[++]	→	Budget goal difficulty	control	0.32	0.22	0.007
Type of activity[++]	→	Budgetary performance	control	-0.11	0.21	0.295

Notes: *p<0.05; **p<0.01; ***p ≤ 0.001 (using a one-tailed test for hypotheses and a two-tailed test for control paths); [+] Male is the reference category; [++] Surgical is the reference category

Thus, to assess if mediation occurs, the specific indirect effects were evaluated using the Smart-PLS output. The analysis showed a significant and positive indirect effect of budget goal difficulty (β = 0.21, p = 0.009), providing support for H3. To further explore the type of mediation, the Baron and Kenny (1986) approach was applied. First, a model was estimated only with the direct relationship between budgetary participation and budgetary performance. This effect was found to be significant (β = 0.31; p = 0.005; R^2 = 0.10). Subsequently, the full model was tested by incorporating budget goal difficulty as a mediating variable (see Table 4). The inclusion of the mediator rendered the direct path from budgetary participation to budgetary performance non-significant, while also improving the model's explanatory power (ΔR^2 = 0.20), thereby indicating full mediation. These results provide additional support for Hypothesis 3.

5 – Discussion, conclusion, limitations and future research directions

This study seeks to extend prior research on the relationship between budgetary participation and performance relying on Goal-Setting Theory. Specifically, it explores how the cognitive and

motivational effects of participation are transmitted to budgetary performance by introducing budget goal difficulty as a mediating variable.

The results broadly support the hypothesized relationships. First, the findings confirm H1, revealing that participation in budget setting leads to the establishment of more challenging budget goals. The cognitive role of participation enables medical managers to gather and share job-relevant information with both superiors and peers, thereby enhancing their understanding of the tasks and goals involved. These beneficial effects serve as cognitive anchors, helping to clarify expectations and priorities amidst competing professional and organizational demands. They also illuminate the rationale behind budgetary goals, while reducing information asymmetries and uncertainty (e.g., Dunk, 1993; Chong & Johnson, 2007; Macinati *et al.*, 2017). As a result, medical managers are more capable of setting budget goals that are difficult yet attainable. This result aligns with the study's theoretical expectations from earlier accounting studies (e.g. Chong & Johnson, 2007; Chong & Leung, 2003; Kren & Liao, 1988; Murray, 1990; Wier, 1993), particularly supporting the arguments put forward by Locke *et al.* (1997) that enhanced motivation and improved cognitive understanding of goals are among the most significant benefits of participative decision-making. Second, the results reveal that as the level of goal difficulty increases through the participative budgeting process, medical managers exert greater effort toward achieving those goals, thereby positively influencing their budgetary performance. This finding lends support to H2, which posits that, in order to effectively motivate higher levels of performance, goals must be both challenging and attainable. These results corroborate a central tenet of goal-setting theory - namely, that difficult yet realistic goals yield superior performance outcomes compared to goals that are moderate, easy, or vague (e.g., Locke & Latham, 1990). This conclusion aligns with earlier theoretical assertions by Kenis (1979) and Hofstede (1967), who advocate for the use of tight but attainable goals to maximize motivational impact. Moreover, these findings are consistent with a substantial body of prior empirical research (e.g., Carroll & Tosi, 1970; Blumenfeld & Leidy, 1969; Liu & Fisher, 2020); nevertheless, they offer a novel perspective when examined within hybrid settings. In this context, hybrid budget holders are characterized by the need to reconcile professional and managerial responsibilities within environments marked by institutional complexity and strong professional subcultures. In such settings, difficult yet attainable goals enhance cognitive focus and effort, particularly when they are perceived as relevant and achievable. The development of effective and challenging budget goals is likely to shape intentions that guide behaviour and ultimately enhance performance outcomes. Third, central to the inquiry of this paper is the examination of the role of budget goal difficulty in shaping the relationship between budgetary participation and performance. The findings confirm H3, indicating that budget goal difficulty fully mediates this relationship. Specifically, participation in the budgeting process strengthens managers' beliefs in their capacity to set challenging yet attainable goals, which in turn enhances motivation, increases effort, and improves performance. Budget goal difficulty thus serves as a catalyst, indirectly transmitting the positive cognitive and motivational effects of participative goal setting into improved performance outcomes. The mediation effect plays a crucial role in analysing the effectiveness of the budgeting process in this context due to the absence of a direct link between participation and budgetary performance. Consequently, it emerges that the positive effects of budgetary participation on improvements in budget performance occur only indirectly, due to budget goal difficulty

This study contributes to the existing literature in several ways. First, this study advances the BMA literature by clarifying how budgeting practices influence individuals' mental states, behaviors, and performance (e.g., Birnberg *et al.*, 2006; Wibbeke & Lachmann, 2020). In response to Covaleski *et al.*'s (2003) call, the proposed mediational model incorporates an underexplored variable - budget goal difficulty - as a mediator in the budgetary participation–performance relationship. This approach contributes to deepening the understanding of the mixed findings reported in prior research (Covaleski *et al.*, 2003; Wibbeke & Lachmann, 2020). The findings of this paper further confirm the effectiveness of goal-setting theory in explaining the motivational mechanisms through which budgetary participation influences performance. Central to goal-setting theory is the idea that participative budgeting involves both positive motivational and cognitive components that directly and indirectly influence performance (Locke, 1968; Locke *et al.*, 1984). These effects operate through individual-level psychological states arising from goal perception, which in this paper are captured by budget goal difficulty. Second, by examining the participation-performance relationship within a hybrid setting, this study contributes to the growing body of accounting literature on hybrids (Croft *et al.*, 2015; Ewert, 2020; Grossi *et al.*, 2020). The findings support the notion that the informational effects of budgetary participation foster medical managers' understanding of the budgeting process and the rationale behind the goals they receive. This improved understanding reduces professionals' uncertainty about their managerial roles, strengthens their confidence in the goals they set, and fosters a positive self-perception as budget holders- thereby enhancing the overall effectiveness of budgeting tools, particularly in terms of improving performance and accountability. Finally, this research contributes to the public sector literature by illuminating how managerial tools, introduced as a consequence of NPM-inspired reforms (Arnaboldi *et al.*, 2015; Pollitt, 2014; Williams *et al.*, 1990) are perceived by public employees. Findings demonstrate that reinforcing effective goal perceptions through a supportive participatory budgeting approach shapes medical managers' beliefs and attitudes, strengthens financial accountability, and enhances budgetary performance. These positive effects improve the overall effectiveness of the budgeting process. When the budgeting process is effective, it serves as an indication that the implementation of policy reforms has achieved the desired outcomes - namely, ensuring that employees' behaviours and decisions align with the organization's strategic objectives.

This study is subject to several "limitations" that offer avenues for future research. First, our sample consisted of hybrid managers operating within a hybrid setting; consequently, the findings are potentially generalisable only to similar contexts since the specific characteristics of the Italian NHS may differ from other healthcare systems in terms of institutional logics, professional roles, and budgeting practices. Second, the study was conducted within a single organization. While this design choice allowed us to control for many contextual factors that might otherwise confound the relationships under investigation, it also limits the broader applicability of the results. Third, the study, relies on a cross-sectional survey and it is therefore limited in its inferences about causality. Future studies could adopt a longitudinal research design to better support causal inferences regarding relationships. Fourth, this study employs a quantitative research approach; future research may benefit from incorporating qualitative methods (e.g., interviews or case studies) that could provide richer insights into how and why budgeting tools succeed or fail in hybrid organizational settings. Moreover, future research could investigate antecedents of budgetary participation, such as task uncertainty, or employ alternative measures to assess budget goal difficulty or performance - such as superiors' ratings or objective managerial performance indicators. Additionally, it would be valuable to examine

potential moderating effects in the relationship between budgetary participation and budgetary performance, particularly with reference to variables that reflect managers' cognitive frameworks, such as professional identity or paradoxical mindsets. These factors remain underexplored in current research and could provide deeper insights into the psychological mechanisms linking budgeting practices to performance in hybrid settings.

Despite its limitations, this study offers preliminary evidence on hybrid budget holders' attitudes, budgeting behaviors and performance, specifically, in how budgetary participation influences medical managers' perceptions of budget goal difficulty, and how this latter, in turn, indirectly affects performance.

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