

Budget goal clarity as a mediator in the relationship between budgeting practices and budgetary performance in healthcare

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Abstract

Purpose - This paper draws on the Behavioral Management Accounting (BMA) literature and propose a research model that examines how the cognitive effects of a specific budgeting practice - budgetary participation - influence budget goal clarity, which in turn affects budgetary performance. Furthermore, the model explores how the relationship between budgetary participation and performance is mediated by an underexplored individual-level variable: budget goal clarity. Budget goal clarity is recognized as particularly important in contexts where budget holders are not traditional managers but hybrid professionals - responsible for both clinical and financial outcomes - who often have limited familiarity with financial target, a circumstance that could influence their attitudes, behaviors and in turn their performance.

Design/approach - The study administered a cross-sectional survey to a sample of medical doctors working in a public hospital who were identified as budget holders.

Findings - The findings reveal that: (i) budgetary participation has a direct effect on budget goal clarity; (ii) budget goal clarity subsequently impacts budgetary performance; and (iii) budget goal clarity mediates the relationship between budgetary participation and budgetary performance

Originality/value - This paper contributes to the existing BMA literature by offering a novel perspective on how, in hybrid settings, the positive cognitive effects of budgetary participation are realized through the clarification of budget goals, thereby directly and indirectly influencing budgetary performance.

Keywords: Budget; budgetary participation; budget goal clarity; budgetary performance; healthcare hybrid manager.

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1. Introduction

One of the most tangible outcomes of healthcare reforms in the Italian National Health Service (Servizio Sanitario Nazionale, SSN), driven by the New Public Management (NPM) movement (Arnaboldi et al., 2015; Hood, 1995; Lapsley & Wright, 2004; Speklé & Verbeeten, 2014), has been the widespread adoption of budgeting and reporting systems. The introduction of the budget was intended to ensure that employees' behaviors align with the organization's objectives (Malmi & Brown, 2008; Simons, 1995) and, in turn, to promote accountability (see, for example, Anessi-Pessina & Cantù, 2010; Kuhlmann, 2010; Nuti et al., 2021; Macinati, 2010). NPM reforms devolved financial accountability to medical doctors, effectively positioning them as medical managers (e.g., Jacobs, 2005; Levay et al., 2020). This shift marked the beginning of the hybridization of the medical doctor profession (Croft et al., 2015; Haigh et al., 2015; Hellqvist & Kurkkio, 2025; Jay, 2013; Pache & Santos, 2013), as clinicians assumed managerial responsibilities, were allocated budgets, became financially accountable for their clinical units or teams, effectively appointing them hybrid budget holders (e.g., Kurunmäki, 2004; Levay et al., 2020; Macinati and Rizzo, 2014). However, since medical managers have clinical backgrounds rather than managerial training, the literature raises concerns about their effective integration into managerial roles and in pursuing financial budget goals (Blomgren & Waks, 2015; Blomgren et al., 2014; Macinati et al., 2017). These concerns are embedded in the differing logics of medicine and management, which may lead to tension when patient care imperatives conflict with financial targets (e.g. Jay, 2013; Pache & Santos, 2018; Macinati & Rizzo, 2025). Such tension can undermine the effectiveness of budgeting practices as tools for directing employee behavior toward organizational objectives (Liu et al., 2020; Macinati & Rizzo, 2014; 2025), a circumstance that may compromise the overall efficacy of the budgeting process. In this regard, the literature review by Grossi et al. (2020) identifies a gap in the literature concerning the analysis of the effectiveness of budgeting practices within hybrid organizational contexts - environments characterized by competing interests and complex power dynamics among actors with divergent and often conflicting priorities. Similarly, the ongoing debate in the public sector literature highlights that employees' budgetary behavior within the public healthcare sector often diverges from patterns observed in profit-oriented organizations (Cepiku et al., 2024; Williams et al., 1990). This divergence may undermine the efficacy of budgeting practices in guiding managerial actions toward improved performance outcomes (Pollitt, 2013; Pollitt & Bouckaert, 2017). Consequently, studies on the effectiveness of NPM-inspired managerial tools continue to evolve (Arnaboldi et al., 2015; Libby & Lindsay, 2010; Rautiainen & Järvenpää, 2012), but research remains limited, particularly in public hybrid settings (Grossi et al., 2020). These research gaps present a promising line of inquiry, especially regarding how individual-level variables can foster positive behaviors among public employees. Such behaviors may influence individual performance and, in turn, contribute to the creation of public value (e.g., Arnaboldi et al., 2015; Cepiku et al., 2024). Accordingly, this study aims to advance research on the mechanisms underpinning the effectiveness of budgeting practices in the public hybrid healthcare organization by broadening the traditional "technical" view of budget (Anthony, 1965) and adopting a behavioral perspective informed by insights from the behavioral management accounting (BMA) literature (Birnberg et al., 2006; Covalleski et al., 2003; Wibbeke & Lachmann, 2020).

BMA research reveals that budgeting practices are pivotal in influencing individuals' mental states, behaviors, and performance (e.g. Birnberg et al., 2006; Wibbeke & Lachmann, 2020). Among these practices, BMA scholars have devoted considerable attention to examining the effects of participative budgeting on performance. In particular, the literature reviews by Derfuss (2009, 2016), suggest that participative budgeting may lead to beneficial attitude and behavioral outcomes. Yet, the review highlights that existing empirical evidence on the relationship between participative budgeting and performance remains mixed (see for a review: Derfuss, 2009, 2016), suggesting that this link is not straightforward. Scholars report that this relationship may be shaped by various individual-level variables that moderate or mediate the connection - many of which - still remain underexplored (Lau

& Tan, 2006; Nouri & Parker, 1998). In light of this, Covalleski et al. (2003) call for more integrative studies that incorporate relevant intervening variables to enable a more comprehensive analysis of how budgeting practices influence mental states, behavior, and performance.

To address this research gap, this study proposes an integrative research model by relying on a multi-theoretical framework that examines the relationship between budgetary participation and budgetary performance by incorporating an underexplored individual-level variable - budget goal clarity - which is posited to mediate the effect of budgetary participation on budgetary performance. Budget goal clarity is defined as the extent to which budget targets are clearly specified and fully understood by those responsible for achieving them (Kenis, 1979). This variable may play a potential pivotal role in explaining the effect of participation in budget performance in a context where budget holders are not traditional managers but hybrid professionals, responsible for both clinical and financial outcomes, who often have limited familiarity with managerial tools and financial target goals. Unclear perceptions of budget performance targets may lead to tensions (Blomgren & Waks, 2015; Macinati & Rizzo, 2025; Martinussen & Magnussen, 2011), which can, in turn, negatively impact on attitudes, behaviors, and in turn on performance.

The proposed research model - tested through a cross-sectional survey to a sample of hybrid medical managers - posits that budgetary participation enhances budget goal clarity, which in turn positively influences budgetary performance. Additionally, the model incorporates a mediating effect of budget goal clarity in the relationship between budgetary participation and budgetary performance. In particular, this study's theoretical premise is that involving hybrid budget holders in budgeting enables managers to share values, expectations, and local context-specific information through open dialogue (Alhasnawi et al., 2023; Chong et al., 2006; Kenis, 1979; Macinati et al., 2016). These participative budgeting processes may generate positive cognitive effects, allowing managers to better understand the rationale behind their budget goals, thereby enhancing budget goal clarity. According to Goal-setting theory - which identifies clear, specific goals as key drivers of improved performance (Locke & Latham, 1990; Locke et al., 1981) - this enhanced goal clarity is expected to positively influence performance both directly and indirectly.

The results of the tested model provide empirical support for the research hypotheses. The findings contribute to the BMA literature and enhance the understanding of budgeting effectiveness in hybrid, as well as to the broader public sector literature settings regarding public value creation.

The remainder of the paper is structured as follows. Section 2 outlines the theoretical background and presents our hypotheses. Section 3 describes the research method, followed by the results in Section 4. Finally, Section 5 discusses the findings and highlights the limitations of the study and indicates the future research direction.

2. Hypothesis development

The proposed research hypothesis are grounded in Goal-setting theory, which emphasizes the importance of clearly defined, understood, and accepted goals in driving high performance (Locke, 1975; Locke and Latham, 2004, 2006, 2007, 2012).

Locke and Latham (2004; 2006, 2012) highlight that goal effectiveness depends on whether individuals perceive goals as understandable, clear, salient, challenging, and attainable. In this paper, the focus is placed on budget goal clarity and on budgeting practices capable of fostering its development. A critical implication of Goal-setting theory is that management should create organizational conditions that foster the emergence of positive perceptions and a clear understanding of budgetary goals among its members. Implementing a participative budget approach aligns this perspective, as it has been recognized as a valuable budgeting practice that can promote the emergence of positive attitudes by shaping individuals' cognitive interpretations. The literature extensively highlights the informational benefits of participative budgeting, emphasizing how it enables managers to share contextual knowledge, engage in open dialogue, and explore means-end strategies with their superiors (Dunk, 1993a/b, 1995; Chong & Chong, 2002; Frederica & Augustine, 2020, Kren & Liao, 1988; Magner et al., 1996; Shields & Shields, 1998). Magner et al. (1996)

underline that participation in budget setting fosters direct communication between subordinates and superiors, providing a platform to clarify goals, work strategies, and environmental contingencies. Such interactions support the exchange of job relevant knowledge and information between supervisors and subordinates (e.g. Chong and Chong 2002; Kren, 1992; Macinati et al., 2017) and this contribute to reducing information asymmetries as well as uncertainty regarding tasks and goals (see for example: Chong et al. 2026; Kenis, 1979; Macinati & Rizzo, 2014; 2015; 2016; Sholihin et., al 2011). In the light of this, implementing a participative budget may be particularly valuable in healthcare organizations, where medical professionals - assuming hybrid role as manger - may exhibit a strong clinical orientation but possess limited familiarity with managerial and financial goals. Through a participative budget, medical managers can engage in constructive dialogue with senior management regarding priorities, operational demands, and the rationale underpinning the definition of financial targets. The informative effect of budgetary participation may support the development of goal clarity and foster the internalization of organizational goals (Dunk, 1993a/b, 1995; Chong & Chong, 2002; Kren & Liao, 1988; Macinati et al., 2016, 2017; Magner et al., 1996) thereby triggering to more informed and effective decision-making (Jones & Pendlebury, 2010). Limited prior research has examined the effects of budgetary participation on budget goal clarity. Among these few studies conducted within for-profit sectors, the results generally support a positive association between these two variables (e.g., Alawia et al., 2021; Kewo, 2014; Li et al., 2010; Rosalinda & Widajantie, 2021; Sawyer, 1992; van der Hoek et al., 2018). Within the healthcare setting, scholars have primarily investigated how budgetary participation contributes to a deeper understanding of how medical professionals perceive their managerial roles (e.g., Macinati et al., 2016, 2017), thereby reducing role ambiguity or, conversely, enhancing role clarity (see Derfuss, 2016, for a review). Despite the relevance of this issue in healthcare hybrid organizational contexts and given the scarcity of studies examining whether budget holder involvement in goal setting translates into clearer perceptions of budgetary goals, further research is needed to explore this relationship. The following hypothesis is proposed:

H1. Budgetary participation is positively associated with budget goal clarity.

The Goal-setting theory is grounded in the belief that conscious goals and intentions drive performance outcomes (Locke, 1975). Specifically, goal setting initiates a series of cognitive activities wherein individuals interpret goals, search for, and select appropriate plans to guide their actions. This leads to the intention to act, which is then followed by behaviors directed toward achieving the specified goals. One of the outcomes of such actions is improved performance. In particular, Locke (1975) emphasized that conscious goals regulate behavior and human behavior is directed by clear and deliberate goals and intentions. Individuals who possess clearly defined goals and are consciously aware of them are more inclined to actively pursue their attainment (Latham, 2004). Specifically, goal clarity has been shown to foster outcome-oriented behavior (Locke & Latham, 1991), as a clear understanding of budgetary targets reduces ambiguity and provides a positive direction that may facilitate the assessment of success or failure in meeting predetermined goals. When goals are unambiguous, managers are more likely to engage in self-monitoring and align their decision-making processes with efficiency imperatives (Latham et al., 2017), thereby advancing the achievement of organizational objectives (Anderson & Lillis, 2011). Prior research highlights that goal clarity generates a range of positive work-related outcomes (Cuganesan & Free, 2021; Earley et al., 1987; Hall, 2008; Ivancevich, 1976; Macinati & Rizzo, 2016; Steers, 1976). For example, Verbeeten (2008) found a significant positive relationship between the presence of well-defined, measurable goals and effective managerial behavior. Similarly, Van der Hoek et al. (2018) observed that the explicit articulation of goals enhances team dynamics by fostering a shared understanding of collective objectives, which, in turn, encourages constructive behaviors among team members. Conversely, goals that are vague or ambiguously formulated may lead to confusion, dissatisfaction, tension, and anxiety among employees (Locke, 1975), ultimately undermining their motivation to

attain desired performance outcomes (Rosalinda & Widajantie, 2021). Fostering a strong perception of budget goal clarity may be central in healthcare settings, where budget holders - often medical doctors transitioning into hybrid managerial roles - possess a predominantly clinical focus and may lack familiarity with broader organizational, managerial, and financial goals. However, the outcomes of goal setting also depend on the individual's intention to act, which is influenced by mental states - in this context, shaped by their perceptions of goal clarity. Therefore, it is expected that a high level of budget goal clarity will support more effective decision-making related to budget targets and ultimately enhance performance outcomes. Budget holders with clearly defined goals are more likely to regulate their behavior through actions aligned with those goals, which in turn may increase performance. Accordingly, given the limited research addressing the direct relationship between goal clarity and budgetary performance in a hybrid setting, the following hypothesis is proposed:

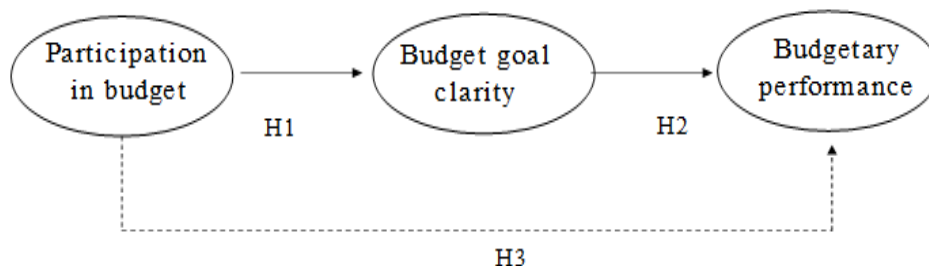
H2. Budget goal clarity is positively associated with budgetary performance

According to the Goal-setting theory perspective, Latham and Steele (1983) provide evidence that participative goal setting can enhance performance. In their field study, they found that allowing employees to take part in setting their own goals - rather than having those goals assigned - significantly improved performance outcomes. This suggests that individuals tend to perform better when goals are assigned collaboratively rather than imposed by superiors (Locke et. al., 1981). A considerable body of research has investigated the relationship between budgetary participation and performance (see Derfuss, 2016). Empirical evidence from studies such as Alhasnawi et al. (2023); Brownell and McInnes (1986), Dunk (1993a,b,1995), Nouri and Parker (1998), Subramaniam and Ashkanasy (2001), Chong and Chong (2002), Rosman et al. (2016), and Nor Yahya et al. (2008) indicates a positive association between budgetary participation and performance. However, literature also reflects some inconsistency. For example, studies by Milani (1975), Brownell and Hirst (1986), Otley and Pollanen (2000), as well as Macinati and Rizzo (2014, 2016) and Macinati et al. (2016), found no significant relationship between budgetary participation and performance. Furthermore, Gul et al. (1995) reported a negative impact, suggesting that participation may in some cases hinder performance. Given the mixed findings in prior research, and in line with call for more research from management accounting scholars (see, Lau & Tan, 2006; Nouri & Parker, 1998), this study introduces budget goal clarity as a mediating variable to test a mediation model aimed at investigating under what conditions budgetary participation becomes more effective (see for a review: Brownell, 1982), particularly in complex contexts such as healthcare. In particular, the cognitive role of participative budgeting - through the facilitation of information acquisition and sharing - is expected to enhance medical managers' perceptions of budget goal clarity (i.e., Hypothesis H1). Furthermore, it is proposed that a higher level of perceived budget goal clarity is positively associated with improved budgetary performance (i.e., Hypothesis H2). Taken together, Hypotheses H1 and H2, along with the mixed findings in the literature regarding the relationship between budgetary participation and performance, suggest that the positive cognitive mechanisms activated by participatory budgeting influence budgetary performance indirectly through their effect on budget goal clarity. This mediating relationship is formally stated as follows:

H3: The association between participative budgeting and budgetary performance is mediated by budget goal clarity.

Figure 1 presents the theoretical model, illustrating the hypothesized relationships among participative budgeting, budget goal clarity, and budgetary performance. The model reflects the mediating role of budget goal clarity in the link between participative budgeting and performance, as indicated by the dashed line.

Figure 1. The theoretical model



Notes: the solid lines represent direct effects while the dashed line represents the indirect effects

3. Research methodology

3.1 Sample and data collection

Data for this study were collected through a web-based questionnaire. The survey participants comprised 70 medical doctors working in a public hospital who were identified as budget holders. The web-based questionnaire was designed and administered in accordance with Dillman's et al., (2014) guidelines. It consisted of two main sections: the first included general demographic and background questions, while the second employed well-established multi-item scales to measure the constructs of the proposed model (see section 3.2). As the questionnaire was administered in Italian, the back-translation method recommended by Behling and Law (2000) was used to ensure linguistic and conceptual equivalence. Prior to the full survey rollout, a draft version of the questionnaire was pretested for clarity, comprehensibility, and ambiguity by five hybrid budget holders (not included in the sample), resulting in minor wording adjustments to enhance item precision.

Out of 70 questionnaires distributed, 67 were returned, yielding a high response rate of 96%. All submitted questionnaires were fully completed and thus included in the analysis. Despite only three individuals not responding to the survey, a test for non-response bias was also conducted, leading to conclude that the likelihood of non-response bias is minimal.

3.2 Variables measurement

The web-based questionnaire consisted of two sections. The first section collected demographic and organizational information from respondents, which was subsequently used as control variables (see Section 3.2.2). The second section comprised a series of multi-item scales drawn from validated instruments in the extant literature, designed to measure the constructs included in the research model.

3.2.1 Dependent and independent variables

Budgetary participation (BP) defined as “a process in which individuals, whose performance will be evaluated, and possibly rewarded, on the basis of their achievement of budgeted targets, are involved in, and have influence on, the setting of these targets” (Brownell, 1982, p.124) was measured using a six-item scale originally developed and validated by Milani (1975). Respondents were asked to assess their perceived level of involvement and influence in key budgeting activities.

Budget goal clarity (BGC) defined as “the extent to which budget goals are stated specifically and clearly, and are understood by those who are responsible for meeting them” (Kenis, 1979, p.709) was operationalized using the five-item scale developed by Li et al. (2010), which measures the extent to which respondents perceive the budgetary goals they receive as clear and specific. All items of the the above scales were rated on a seven-point Likert scale, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”), with higher values reflecting more favorable responses.

Budgetary performance was assessed using the global performance index (ranging from 0 to 100) derived from internal budget variance reports. This index summarizes the percentage of budget targets achieved by each budget holder (see Macinati et al., 2022, for a similar approach). Each budget holder

is assigned both clinical and financial goals, with each goal weighted according to its relevance, which depends on the relative importance attributed to each dimension by the controller. At the end of the year, controllers evaluate the budgetary performance of each manager by calculating the global weighted performance index, reflecting the extent to which the assigned budget targets were met (see similar use: Macinati et al., 2022). In this study, objective performance metric was preferred over individual-level self-reports, such as managerial performance (see Mahoney et al., 1963), as this choice helps mitigate the risk of common method bias (CMB, see Section 3.3) (Podsakoff et al., 2003).

3.2.2 Control variables

Informed by extant scholarly literature, the research model incorporates a set of control variables to account for potential confounding effects on the study's dependent variables - namely, budgetary performance and budget goal clarity. In particular, as budgetary performance can be influenced by several contextual and demographic factors; therefore, the model was controlled for the following variables: (i) size, operationalized as the natural logarithm of the number of full-time employees under the respondent's supervision, as reported in the survey instrument (see Maiga et al., 2014 for similar use); (ii) tenure within the organization, measured as the number of years the respondent had worked there (Ng & Feldman, 2013); (iii) type of activity overseen by budget holders (medical vs. surgical), captured using a dummy variable coded as 1 for surgical activity; and (iv) gender, also treated as a dummy variable (coded as 1 for male) (see for similar use: Ahmed, 2025). Regarding budget goal clarity, empirical evidence from suggests that individual beliefs, cognitive orientations, and value systems may be shaped by individual characteristics (Marginson et al., 2014), such as gender (Yukl & Latham, 1978), tenure (Mathieu & Zajac, 1990), and age (Locke et al., 1981). Hence, these variables were therefore included as controls for budget goal clarity.

Table 1 presents the descriptive statistics for the multi-item constructs and continuous control variables. For the categorical (dummy) variables: 78% of respondents were male, while for the type of clinical activities of budget holders – whether medical or surgical – 64% of respondents were involved in medical activities, compared to 36% who were engaged in surgical activities

3.3 Common method bias (CMB)

Because the data for this study were collected from a single source using a self-reported questionnaire at one point in time, CMB could potentially introduce measurement error. To mitigate this risk, both statistical and procedural remedies were applied in accordance with Podsakoff et al. (2003). Statistically, Harman's single-factor test revealed a multi-factor solution, and the total variance of the first factors is well below the recommended 50% threshold (Podsakoff et al., 2003). Additionally, a full collinearity test showed that all variance inflation factors (VIFs) were below the threshold of 3, indicating no evidence of lateral collinearity (Kock, 2015). The procedural remedies employed are linked to questionnaire design such as careful wording of items and randomization of question order (see for details: Jordan & Troth, 2020; Podsakoff et al., 2003). Furthermore, measures for dependent and independent variables were collected from multiple sources, including both the web-based questionnaire and archival data (Podsakoff et al., 2003). Collectively, these statistical and procedural remedied indicate that CMB did not significantly influence participants' responses.

Table 1. Descriptive statistics for scale variables (n = 67).

Variable	Mean (SD)	Theoretical range	Actual range
Budgetary participation	4.8 (1.31)	1-7	1-7
Budget goal clarity	4.6 (1.2)	1-7	1-7
Budgetary performance	68 (22)	0-100	30-100
Age (years)	62 (4.7)	-	-
Job tenure (years)	10 (7.4)	-	-

Size (ln n. employees)	2.3 (0,4)	-	-
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3.4 Partial least squares structural equation modeling (PLS-SEM)

Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to test the research hypotheses (see for details: Hair et al., 2019, 2020). PLS includes both the measurement model and the structural model, which are estimated simultaneously but interpreted in two distinct stages, as reported in the following sections. SmartPLS 4.1.0.6 software was used for statistical computation (Ringle et al., 2024), where all calculations for significance testing were based on 5,000 bootstrap samples (Hair et al., 2019, 2020).

4. Results

4.1 Measurement model

The statistics from the PLS measurement model provided an assessment of the reliability (item and composite) and validity (convergent and discriminant) of the reflective scales used in the study. Reliability was assessed at two levels: item reliability and construct reliability. As presented in Table 2, cross-loadings for each variable confirm each individual item's reliability. All items loaded higher than 0.5 on their respective variable, demonstrating adequate individual item reliability (Hair et al., 2019, 2020).

Table 2. Item loadings and cross-loadings from the PLS measurement model (n = 67).

Variables:	Item label	Item loadings BP	Item loadings BGC	p-values*
Budgetary participation (BP)	BP1	0.704	0.428	0.000
	BP2	0.791	0.409	0.000
	BP3	0.858	0.536	0.000
	BP4	0.838	0.490	0.000
	BP5	0.796	0.464	0.000
	BP6	0.652	0.480	0.000
Budget goal clarity (BGC)	BGC1	0.406	0.731	0.000
	BGC2	0.509	0.775	0.000
	BGC3	0.493	0.689	0.000
	BGC4	0.418	0.655	0.000
	BGC5	0.302	0.775	0.000
Note: All loadings are statistically significant at 0.000 level tested with a two-tailed test				

Construct reliability was confirmed by the values of the composite reliability (CR) scores and Cronbach's alphas (Table 3), which are above their threshold values of 0.70. Regarding each variable's convergent validity, the average variance extracted (AVE) for all constructs (Table 3) is at least 0.50 or higher, demonstrating acceptable convergent validity for each variable. The cross-loadings, as shown in Table 3, loaded higher on the respective variable than on any other variable, thus providing evidence of acceptable discriminant validity. Table 3 reports that the square roots of the AVEs were all greater than the respective latent variable correlations (Fornell & Larcker, 1981), further supporting the measures' discriminant validity, as do the heterotrait-monotrait (HTMT) values in italics shown in Table 3, which are below the threshold of 0.85 (Hair et al., 2020). The statistics of the PLS measurement model confirmed that the measures were reliable and valid. Table 4 reports the latent variable correlations between the validated constructs obtained from the validated PLS measurement model and the other variables considered in the study.

Table 3. Composite reliability (CR), Cronbach's alpha, average variance extracted (AVE), and inter-construct correlations with square roots of AVEs shown in diagonal (bold-faced). In italics the Heterotrait-monotrait (HTMT) ratios estimated with 10.000 bootstrap samples (one-tailed) (n=67)

	CR	Cronbach's alpha	AVE	BP	BGC	BPERF
Budgetary participation (BP)	0.88	0.86	0.60	0.77	<i>0.740</i>	<i>0.33</i>
Budget goal clarity (BGC)	.76	0.75	0.52	0.60**	0.79	<i>0.59</i>
Budgetary performance (BPER)	-	-	-	0.32***	0.52***	-

Note: *p<0.05; **p<0.01; ***p<0.001 (two-tailed)

Table 4. Full latent variables correlations matrix between validated constructs and all control variables included in the model (n=67)

	BP	BGC	BPERF	Age	Gender	Tenure	Size
Budgetary participation (BP)	-						
Budget goal clarity (BGC)	0,60***	-					
Budgetary performance (BPE)	0,34**	0,52***	-				
Age	-0,14	0,18	0,01	-			
Gender⁺	-0,20	-0,19	-0,08		-		
Tenure	-0,12	-0,11	0,04	0,31**	0,23	-	
Size	-0,01	0,13	0,02	0,31**	0,22**	0,06	-
Activity Type⁺⁺	0,15	0,10	-0,01	0,09	0,08	0,11	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

The study's hypotheses were tested using the results of the PLS structural model. The stability of the structural model was assessed using two prediction-oriented measures: the coefficient of determination (R^2) to evaluate the model's predictive accuracy, and the Stone–Geisser Q^2 test (cross-validated redundancy) to assess the predictive relevance of all endogenous latent variables. Together, these measures provide an indication of the structural model's stability and predictive capability. The R^2 values for each endogenous latent variable ranged from 47% (for budget goal clarity) to 29% (for budgetary performance), supporting the model's in-sample explanatory power (Hair et al., 2020). The Stone–Geisser Q^2 statistics for all endogenous latent variables were above 0, supporting the predictive relevance of the corresponding explanatory variables. Together, these reliability and validity measures provided sufficient evidence that the PLS structural model was a satisfactory fit for this study.

The analysis of the structural model's path coefficients and their significance, reported in Table 5, allowed us to verify whether the hypothesized relationships are consistent with the available data. The results reveal a positive ($\beta = 0.60$) and significant ($p = 0.000$) association between budgetary participation and budget goal clarity, supporting H1. Similarly, budget goal clarity shows a positive ($\beta = 0.53$) and significant ($p = 0.000$) relationship with budgetary performance, confirming H2. To evaluate whether the effect of budgetary participation on budgetary performance operates indirectly through budget goal clarity, the specific indirect effects were assessed using the SmartPLS output. The results provide evidence of a positive ($\beta = 0.33$) and significant ($p = 0.001$) indirect effect of budgetary participation on budgetary performance via budget goal clarity, supporting H3.

To further investigate the nature of this mediation, the approach proposed by Baron and Kenny (1986) was applied. First, a model was tested that included only the direct relationship between budgetary participation and budgetary performance, along with the control variables. The results showed that the direct effect was significant ($\beta = 0.37$; $p = 0.000$; $R^2 = 0.14$). Next, the full model

incorporating budget goal clarity as a mediator and including all hypothesized paths with control effects was tested (see Table 5). The mediation model revealed that the strength of the direct effect from budgetary participation to budgetary performance decreased when the mediator was included. Since the direct effect remained significant after adding the mediator, this indicates partial mediation, further supporting H3. Additional support for the mediation model is found in the increased explanatory power since the R^2 for budgetary performance increased to 0.29 compared to 0.14 for the baseline model, indicating an improvement in explained variance of 0.11 ($\Delta R^2 = 0.11$).

Table 5. PLS structural model results: path coefficients, standard deviation (SD) and p-values² (n=67)

from:	Paths:	to:	Hyp	Path coefficient	SD	p-value
Budgetary participation	→	Budget goal clarity	H1	0.60	0.08	0.000***
Budget goal clarity	→	Budgetary performance	H2	0.53	0.14	0.000***
Budgetary participation	→	Budgetary performance	control	0.21	0.15	0.101
Age	→	Budget goal clarity	control	0.28	0.12	0.010*
Gender ⁺	→	Budget goal clarity	control	-0.24	0.21	0.130
Tenure	→	Budget goal clarity	control	-0.13	0.11	0.110
Size (ln)	→	Budget goal clarity	control	0.11	0.10	0.100
Gender	→	Budgetary performance	control	0.12	0.21	0.280
Tenure	→	Budgetary performance	control	0.11	0.15	0.243
Size (ln)	→	Budgetary performance	control	-0.05	0.10	0.327
Type of activity ⁺⁺	→	Budgetary performance	control	-0.13	0.22	0.285

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p \leq 0.001$ (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

5. Discussion, conclusion, limitations and future research directions

5.1 Discussion

Relying on the BMA literature and adopting the lens of Goal-setting theory, the proposed research model investigates how the cognitive effects of budgetary participation influence budget goal clarity, which in turn affects budgetary performance both directly and indirectly. To explore these relationships, a cross-sectional quantitative study was conducted using PLS analysis on data collected from a survey of 67 medical managers serving as budget holders in a hybrid setting. The results support the hypothesized relationships and offer valuable insights into the cognitive mechanisms through which participative budgeting influences individual mental states, behaviors, and ultimately, budgetary performance.

First, the findings affirm that the cognitive role of participative budgeting enhances subordinates' levels of budget goal clarity (Hypothesis 1). The beneficial cognitive effects of budgetary participation are realized through the elucidation of budget goals. This result aligns with both our theoretical expectations and prior empirical studies conducted outside the healthcare (e.g., Alawia et al., 2021; Kewo, 2014; Li et al., 2010; Rosalinda & Widajantie, 2021; Sawyer, 1992; van der Hoek, et al., 2018). While previous research has predominantly explored the effects of budgetary participation on role clarity or role ambiguity our findings represent one of the few empirical investigations of this relationship within the healthcare. Specifically, the present research explicitly explores the role of the often-overlooked variable of budget goal clarity, providing evidence that engaging hybrid medical doctors in the budget-setting process facilitates the sharing of contextual knowledge, fosters open dialogue, and encourages inquiry into the rationale underpinning the formulation of financial and clinical objectives. Such interactions serve to diminish information asymmetries and alleviate uncertainties regarding organizational goals by promoting enhanced information exchange. This engenders a more profound comprehension of the goals embedded within the budget which in turn mitigates tensions stemming from ambiguous or ill-defined objectives, reducing in this way the

likelihood that budget holders will perceive such conflicts as insurmountable dilemmas, thereby attenuating the potential negative impacts on individual mental states.

Second, the findings of this study demonstrate that budget goal clarity is positively associated with budgetary performance, thereby supporting Hypothesis 2. This result corroborates and extends the extant literature, which has consistently highlighted the beneficial effects clear goals on various performance outcomes (e.g., Cuganesan & Free, 2021; Earley et al., 1987; Hall, 2008; Locke & Latham, 1991; Verbeeten, 2008), enriching these insights by confirming the positive effects of having clear and understandable goals on work-related outcomes and performance such as the budgetary. Rooted in the foundational tenets of Goal-setting theory, as articulated by Locke and Latham (1990, 2002), goal clarity functions as a critical antecedent to effective performance by providing a precise cognitive framework within which individuals regulate their behavior and allocate resources efficiently. Accordingly, the present study aligns with the core propositions of Goal-setting theory, which suggests that clearly defined and well-understood goals enhance performance by reducing ambiguity and uncertainty, thereby enabling budget holders to pursue their targets more effectively and translate them into improved outcomes. Higher level of budget goal clarity may diminish the likelihood of dysfunctional behaviors and contributes to a more harmonious and productive budgetary process, ultimately fostering individual performance.

Finally, the findings confirm Hypothesis 3, as budget goal clarity was found to mediate the relationship between participation and performance - an effect that remains relatively underexplored in the existing literature with specific reference to hybrid settings. Results reveal that by participating in budgeting decisions and discussions, managers effectively enhance their comprehension of budget goals (supporting H1), and if a strong feeling of goal clarity emerges, it acts as a catalyst for improved positive behaviors, facilitating a clearer path toward the achievement of a higher level of budgetary performance (supporting H2). These two findings, along with the presence of an indirect effect of budget goal clarity (supporting H3), underscore that budget goal clarity operates indirectly, and through this mechanism, the positive cognitive effects of budgetary participation are indirectly transmitted to budgetary performance. This indicates that goal clarity, acting as a partial mediator, plays an instrumental role in fostering better alignment between managerial actions and organizational goals. These findings suggest two important conclusions. First, participation in the budgeting process enhances individuals' understanding of organizational priorities by clarifying the goals embedded within the budget. This clarity, in turn, serves a cognitive function, enabling managers to align their actions more effectively with expected outcomes and ultimately improving performance. Second, the results underscore the pivotal role of budget goal clarity in indirectly translating participatory practices into tangible performance outcomes - particularly in environments where financial and clinical imperatives coexist and are entrusted to budget holders with clinical expertise. The way these professionals interpret such budget goals can significantly influence the emergence of tensions stemming from the clarity - or ambiguity - of those goals. This, budget goal clarity thus emerges as a critical intervening variable, helping to explain the conditions under which participatory budgeting becomes more effective.

5.2 Conclusion

This study aims to examine the direct and indirect relationships among budgetary participation, budget goal clarity, and budgetary performance within the complex context of a hybrid public healthcare environment. The proposed conceptual model was tested and revealed: (i) a direct effect of budgetary participation on budget goal clarity; (ii) a subsequent impact of goal clarity on budgetary performance; and (iii) a mediating role of goal clarity in the relationship between budgetary participation and budgetary performance in a hybrid setting.

The findings of this study make several important contributions to literature in several meaningful ways. First, our findings reinforce the core principles of Goal-setting theory, which posits that involvement in goal-setting processes shapes individuals' cognitive interpretations - such as perceived goal conflicts - and influences their behavior and, ultimately, their performance (Locke,

1968; Locke et al., 1984). At the same time, this study extends the management accounting literature of BMA research (Birnberg et al., 2006; Covalleski et al., 2003; Wibbeke & Lachmann, 2020) by providing deeper insights into previously underexplored direct and indirect relationships between budgetary participation and performance, incorporating the mediating role of an often-overlooked individual-level variable: budget goal clarity. By incorporating this budget goal clarity into the budgetary participation–performance relationship, the study offers a novel perspective on the cognitive and perceptual dynamics that shape the psychological mechanisms linking budgeting practices to work-related attitudes and, ultimately, to performance outcomes in hybrid organizations. Second, this study advances our understanding of budgeting effectiveness within hybrid organizations, responding to the call by Grossi et al. (2021) in their literature review for more research in this area by demonstrating that hybrid budget holders with clear goals perceptions respond positively to participatory budgeting practices. Specifically, it highlights how individuals' beliefs, particularly their perceptions of clarity regarding budget targets, can be shaped through well-designed management accounting systems that emphasize a participatory rather than a top-down approach. The findings confirm that budgetary participation effectively reduces hybrid professionals' uncertainty about the goals and standards associated with their managerial roles. This reduction in uncertainty is critical for sustaining medical managers' confidence in their ability to act as budget holders. These insights offer practical guidance for hospital managers on how to better support hybrid professionals through the strategic design and implementation of budgeting systems. Finally, this research contributes to the public sector literature by shedding light on the real-world implications of NPM-inspired reforms (Arnaboldi et al., 2015; Pollitt, 2014; Williams et al., 1990). It highlights how public employees not only perceive the management accounting tools introduced by the new health policies but also how they consequently use them and perform. Findings show that reinforcing perceptions of budget goal clarity through supportive, participatory budgeting practices can shape medical managers' beliefs and attitudes, sustaining their managerial engagement and, enhancing both financial accountability and budgetary performance. This, in turn, contributes to budgeting effectiveness and supports the successful implementation of policy reforms. In doing so, hybrid professionals move beyond formal role labels, enabling medical managers to bridge the traditional divide between management and professionalism. Such alignment is crucial for implementing policies that require balancing potentially conflicting objectives, such as quality and efficiency.

The findings also carry significant implications for practitioners and policy makers. When designing a budgeting system, top management should consider that budgeting practices - such as budgetary participation - serve as key mechanisms for enhancing hybrid medical managers' accountability and improving their performance outcomes. Accordingly, it is recommended that hospital management place particular emphasis on the communicative, control, and forecasting functions of the budgeting system during its design and implementation. In particular, the effectiveness of budgetary participation can significantly enhance the clarity of budget goals, thereby facilitating their achievement. This, in turn, positively influences both individual and organizational outcomes, ultimately contributing to the creation of public value. The ways in which these benefits may manifest can be twofold. On the one hand, from a micro-level perspective, our findings underline that the positive effects of participation in the budgeting process - particularly its contribution to greater clarity of the goals outlined in the budget sheets of medical managers - are pivotal in enhancing individual outcomes. Improved goal clarity is likely to lead to better results, as it shapes the execution of clinical and operational processes that support the budget targets assigned, thereby influencing the individual performance of hybrid budget holders. In particular, the achievement of budgetary targets is closely linked to the clinical and managerial processes performed by hybrid medical managers. A clear understanding of these targets enhances their individual decision-making, leading to a better grasp of how the activities underlying their work processes (both clinical and non-clinical) must be carried out to simultaneously achieve the pre-set clinical and financial goals. Indeed, goal clarity provides budget holders with the essential information needed to perform effectively in their dual roles as clinicians and managers, supporting their decision-making processes and guiding

the necessary courses of action to improve care processes and outcomes. In this regard, prior research in healthcare organizations has shown that the implementation of effective management accounting tools can enhance managerial decision-making (Grigoroudis et al., 2012; Naranjo-Gil, 2012). Improved decision-making is, in turn, expected to contribute to more efficient and effective care processes and better patient outcomes (Varabyova et al., 2016; Schultz et al., 2012) by facilitating enhancements in care delivery (Berta et al., 2013; Demartini & Trucco, 2017; Demartini & Mella, 2014). Ultimately, this leads to improved individual performance (see, for example, Macinati & Rizzo, 2025; Macinati et al., 2016, 2017; Wentzel, 2002) and organizational performance (see Macinati & Anessi-Pessina, 2014). On the other hand, from a macro-level perspective, when an organization operates in a dynamic and complex hybrid environment such as healthcare, the top management team should be aware of the need to foster positive perceptions among hybrid managers regarding the clarity of the goals they receive. Given that this aspect plays a critical role in shaping managerial behaviors toward enhanced performance, it represents a fundamental determinant of the overall effectiveness of the budgeting process. In this context, although budgeting and reporting systems are widely recognized as key mechanisms for fostering public value creation (e.g., Papi et al., 2018; Brusca et al., 2015), the extent to which budgeting contributes to value creation is contingent upon its effectiveness. This effectiveness is primarily manifested through the system's capacity to produce improved outcomes, encompassing both financial and clinical dimensions. In the healthcare domain, outcomes are a key determinant of the public value created (Gray, 2017; Nuti et al., 2017). This underlines the importance of aligning organizational conditions and practices - such as goal clarity, a developmental organizational culture, and the maturity of performance management systems, participative budgeting - with individual-level motivational factors to ensure that public managers engage meaningfully with budgeting and reporting systems. Such purposeful engagement can positively contribute to the value creation process by enhancing budgeting effectiveness, which in turn promotes transparency, fosters equity, and improves resource allocation for the population served. Budgeting and reporting systems may thus play a critical role in guiding public hospitals toward the creation of value for their reference communities. To achieve this, assessments of the effectiveness of these systems should consider the role of individual-level variables and managerial practices in shaping how these tools influence performance. This implies that contemporary management accounting and budgeting practices must move beyond traditional concerns with efficiency, effectiveness, and a purely technical view. The adoption of a behavioral approach may better support the evolving strategic orientation of the public sector - namely, the creation and delivery of public value.

5.3 Limitations and future research directions

Although this study offers several theoretical insights, its findings must be interpreted with due regard to the limitations inherent in the employed methodological approach, which in turn may inspire fruitful avenues for future research. First, the results are sample-specific and therefore not generalizable to other contexts. To enhance the generalizability of the findings, future research could administer the survey to a larger sample of managers than that considered in the present study, as well as include organizations from sectors beyond healthcare. This would diversify the sample, extending the research to other countries or regions, and not focus exclusively on physicians in managerial roles. In particular, as cultural or systemic differences in budgeting practices may characterize different healthcare systems, the findings of this study should also be interpreted in light of the specific features of the Italian NHS which in turn limits the generalizability of the results to healthcare organizations operating in other healthcare contexts. Second, this research relies on cross-sectional data, which limits the ability to infer causal relationships among the examined variables. Future studies could adopt a longitudinal research design to better support causal inferences regarding the relationships between feedback orientation, satisfaction with reporting system information, and budgetary performance. Third, 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, the research model proposed herein may be affected by the omission of potential variables. Shields et al. (2000, p. 186) suggest that there is a practical limit to the number of variables that can be included in a study model relative to the sample size in order to maintain adequate predictive power. Consequently, future research could explore antecedent variables of budgetary participation, such as task uncertainty, as well as mediation or moderation variables representing managers' cognitive frameworks - such as professional identity, managerial self-efficacy, organizational citizenship behaviors, or paradoxical mindsets - which to date remain underexplored in analyses of the relationship between budgetary participation and budgetary performance.

Despite its limitations, this study conducted within a hospital of the Italian SSN offers preliminary evidence that hybrid budget holders' attitudes and budgeting behaviors are positively shaped by budget goal clarity, which significantly influences - both directly and indirectly - the relationship between budgetary participation and budgetary performance.

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