

DOI: 10.7819/rbgn.v16i50.1236

SUBJECT AREA: ACCOUNTING AND CONTROLLING

The Relationship Between cost Management Knowledge and Budgetary Participation with Managers' Performance

Relação do Conhecimento de Gestão de Custos e Participação Orçamentária com o Desempenho dos Gestores

La Relación entre el Conocimiento de la Gestión de Costos y de la Participación Presupuestaria en el Desempeño de los Gestores

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Received on March 15, 2012 / Approved on March 12, 2014

Responsible editor: Ivam Ricardo Peleias, Dr.

Evaluation process: *Double Blind Review*

ABSTRACT

Management control systems are applied tools that may be useful to align managers' personal interests concerning organizational goals. In this context, corporate budgets are used as an organizational control tool and, historically, research reveals that their use, associated with other tools such as those referring to management and budgeting, may contribute to managers' individual performance and, globally, to organizational performance itself. However, subjective and behavioral phenomena may also affect the organizational environment; thus, it is appropriate to investigate the effect of control tools on the behavior of individuals.

This paper is based on the work of Agbejule and Saarikoski (2006), and it aims to investigate the relationship between cost management knowledge and budgetary participation with the performance of managers. The survey is descriptive as to its goal and to procedures such as surveys, and quantitative as to the approach taken to approaching the problem. The sample consists of hierarchical middle-level managers working in organizations located in Southern Brazil. Survey data was analyzed with Regression and Factor Analysis statistical methods, using 18.0 version SPSS software. Results indicate that there is an influence of cost management knowledge and budgetary

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participation on managers' performance, but only for factors considered collective managerial performance.

Keywords: Cost management knowledge. Managerial performance. Budgetary participation.

RESUMO

Os sistemas de controle gerenciais são ferramentas aplicadas que podem servir para alinhar os interesses pessoais dos gestores em relação aos objetivos organizacionais. Nesse contexto, o orçamento empresarial é utilizado como ferramenta de controle organizacional e, historicamente, pesquisas mostram que sua utilização, associada a outras ferramentas, como as de gestão e custeio, podem contribuir para o desempenho individual dos gestores e da organização de forma global. Fenômenos subjetivos e comportamentais podem, contudo, afetar o ambiente organizacional; assim, é conveniente investigar o efeito das ferramentas de controle sobre o comportamento dos indivíduos. Este estudo baseia-se no trabalho de Agbejule e Saarikoski (2006) e objetiva investigar a relação do conhecimento de gestão de custos e da participação orçamentária com o desempenho dos gestores. A pesquisa caracteriza-se como descritiva em relação a seu objetivo, quanto aos procedimentos como *survey* e quantitativa em relação à abordagem do problema. A amostra é composta por gestores de nível hierárquico médio que atuam em organizações situadas na região Sul do Brasil. Os dados da pesquisa foram analisados por meio dos métodos estatísticos de Regressão e Análise Fatorial, com a utilização do software SPSS versão 18.0. Os resultados indicam que há influência do conhecimento em gestão de custos e da participação orçamentária sobre o desempenho gerencial do gestor, mas apenas para os fatores considerados como desempenho gerencial coletivo.

Palavras-chave: Conhecimento em custos. Desempenho gerencial. Participação orçamentária.

RESUMEN

Los sistemas de control de gestión son herramientas aplicadas que pueden ser útiles para alinear los

intereses personales de los gestores en relación a los objetivos organizativos. Los presupuestos corporativos se utilizan como una herramienta de control organizativo e históricamente las encuestas muestran que su uso asociado a otros instrumentos como herramientas de gestión y presupuesto pueden contribuir al desempeño individual del gestor y de la organización global. Sin embargo, los fenómenos subjetivos y comportamentales pueden también afectar al entorno organizacional, por ello es imprescindible investigar los efectos en la conducta de los individuos. Este estudio está basado en los trabajos de Agbejule y Saarikoski (2006) e investiga la relación entre el conocimiento de la gestión de costos y la participación presupuestaria en el desempeño de los gestores. La encuesta se caracteriza como descriptiva con relación a su objetivo, respecto a los procedimientos se caracteriza como *survey*, y con relación al planteamiento del problema es cuantitativo. La muestra la componen los gerentes de nivel medio que trabajan en organizaciones ubicadas en el sur de Brasil. Los datos de las encuestas han sido analizados por medio de métodos estadísticos de regresión y análisis factorial, utilizando el software SPSS versión 18.0. Los resultados indican que hay influencia del conocimiento de la gestión de costos y de la participación presupuestaria en el desempeño de los gestores, pero solo para el factor considerado como desempeño directivo colectivo.

Palabras clave: Conocimiento sobre costos. Desempeño del gestor. Participación presupuestaria.

I INTRODUCTION

Corporate budgeting, as a control tool, has become an important instrument to organizations, mostly – among other reasons – due to the need to maintain a balance between financial statements and the results actually achieved by department managers. The development of this tool sparked the interest of companies and researchers, because of its role as mediator between performance expected by the organization and that effectively

carried out by employees.

The tools of performance evaluation are not, however, anything new over the past few decades, because since antiquity man has made use of mechanisms to control or monitor people's work (BRANDÃO, GUIMARÃES, 2001). However, in the 20th century, performance focus moved from methods of time and movement control to a more comprehensive approach, that takes into account employees and their work as part of an organizational context (GUIMARÃES, NADER, RAMAGEM, 1998).

Over that period, the assumptions of scientific management acted as a factor of balance between individual and organizational interests; however, over the years, they were not sufficient to reduce conflicts of interest – other factors began to influence and organizations' solely economic motivation was impacted by individuals' behavioral and social problems.

This aspect allows us to infer that the company holds both a system of interests (power relationships) and works as an "arena" in which internal and external counterparties are thrown against each other and differentially allocate command and results (SROUR, 1994). In this context, it appears that the task of evaluating performance should not be based only on quantitative metrics, but must find out how subjective factors impact expected results.

From a scientific point of view, the research problem emerges when the existing subjective factors in the organization begin to directly or indirectly affect the performance of managers, something that can affect the overall results of the organization.

This scenario is commented on by Fauré and Rouleau (2011), who claim that corporate strategies over the last decades are strongly related to business and customer oriented; in this context, performance measurement systems have become increasingly complex. Due to the volume of research concerning budgeting, the authors consider that it is a relevant management control system, through which one can analyze the competence of accountants and middle

managers, who play an important mediating role across organizational borders when implementing strategies (ROULEAU, BALOGUN, 2011).

As such, "the budgeting process can be used as a formal way of communicating organizational norms, values and expected behaviors with regard to interpersonal relationships" (COLLINS, 1978, p. 327). Incidentally, Hopwood (1972) explains that accounting data may reflect certain dimensions of managerial performance; the dimension that includes managerial performance, however, is broad and complex, and while accounting data is primarily concerned with results, managerial activity refers to the detailed process that leads to final results.

In Brazil, behavioral research referring to budgetary participation and the performance of managers is scarce, which makes applying this study important, seeking to associate the results of international studies and understand the reality of national organizations. This study adopts Agbejule and Saarikoski's (2006) line of research, which is important and has been addressed in other international work, such as Derfuss (2009); Bonache, Maurice and Moris (2010); Aboelmaged (2012); and Cheng (2012).

Numerous studies in international accounting literature have examined the use of budgeting goals as performance standards in evaluating subordinates, and those referring to budgetary participation are relevant to this research. In this sense, the budgeting's role is discussed in the context of a management information system and there is the possibility of it influencing the behavior of managers (KYJ, PARKER 2008). In this context, the following research question arises: How does the knowledge of managers concerning cost management and budgetary participation influence their individual performance?

Given the presented scenario, this research aims to investigate the relationship of cost management knowledge and budgetary participation with the performance of managers. Following the lines of Agbejule and Saarikoski's (2006) work, this study uses as basis for discussing the topic the work of Blumberg and Pringle

(1982), whose assumptions suggest that the performance of an individual is affected by their ability, willingness and opportunity to accomplish it.

This research was structured in five sections, namely: introduction; theoretical foundation, divided into topics that address the use of budgeting in private organizations, the relationship between budgetary participation and performance of managers, knowledge about cost management and its influence on the performance of managers; methodological aspects; analysis and interpretation of results; and final considerations.

2 THEORETICAL FOUNDATION

2.1 Budgeting in private organizations

Concern as to the evolution in the use of traditional instruments of managerial control is apparently increasing nowadays. Factors such as economic growth, the emergence of multinational companies and international accounting convergence have made organizations become more complex environments; this creates a challenging scenario for managers. Given this scenario, this paper focuses its research on the assumption that budgeting is a management tool that, in a participatory environment, can influence the performance of managers.

At first, it is important to remember that in the early 20th century financial managers used traditional models of management to control costs and cash flows in large industrial organizations; years later, facing the increasing complexity in organizations' activities, budgeting began having the responsibility of conducting production in business (JOHNSON, KAPLAN, 1987).

In private organizations' environments, Lunkes (2007) states that budgets began to be studied from 1940 on, but it was seldom adopted by companies in this period. Only from the 1970s on did Brazilian companies begin to use it more often in their activities. The forerunner in the use of budgets in private organizations was Brown,

financial manager of DuPont de Nemours, in the United States, in 1919 (ZDANOWICZ, 1984).

As to applying budgeting, Welsch (1983) emphasizes that it incorporates the management plan of organizations in all phases of operations for a defined period in the future. The tool formally explicit policies, plans, objectives and targets set by top management for the company as a whole and its subdivisions.

In the same line of consideration, Horngren (2000) notes that budgeting represent the quantitative expression of a future action plan by the management for a given period. It may cover financial and non-financial aspects of these plans, and works as a project for the company to follow in the coming period.

In the strategic field, Sobanski (2000) believes that budgets allow for the establishment of a managerial link between the company's short-term performance and its strategies. Actions are quantified and the results are measured, ensuring that objectives are achieved efficiently. Leite et al. (2008) corroborate this, arguing that budgets should not be seen as a limiting and controlling expenditure instrument, but as a way of focusing attention on the operations and finances of the company, anticipating problems, signaling targets and priority objectives for managers, contributing to decision making in the fulfillment of the mission and the carrying out of corporate strategies.

Just as Sobanski (2000), Frezatti (2008) explains that budgets represent the financial plan to implement the strategy of the company for a certain period. "In general terms, it is considered a mainstay of management and one of the fundamental tools for accountability, the obligation to account for, can be found". In this context, regarding the operational aspects of a private company, budgeting is the transformation of strategies into an operational plan (FREZATTI et al., 2010), which provides an organized set of information that gives effective support to the formulation of strategies and actions in the short, medium and long term, encompassing business units and managers' performance (BARBOSA FILHO, PARISI, 2006).

As a result, the effects of the budgeting process on the performance of managers may be related to the approach used; presently, there are two coexisting currents of thought concerning this: the traditional one, which, according to Hansen, Otley and Van der Stede (2003), is centered on the lack of connection with strategy and operational planning, thus more directly focused on operational planning and performance evaluation (HANSEN, VAN der STEDE, 2004); and a more recent approach, which Espejo et al. (2009) mentions as references (SOUTES, DEZEN, 2005; GUERREIRO, FREZATTI, CASADO, 2006; REIS, PEREIRA, 2007; SANTOS, ALMEIDA, CROZATTI, 2007; ESPEJO, 2008), investigating management accounting based on alternative organizational approaches to economic rationality, whose research basis suggests the importance of identifying and understanding the factors that influence the use of managerial artifacts.

In the latter approach, budgeting is inserted into a broader context, which represents the measurement of strategic planning in concrete plans and actions that facilitate the achievement of organizational goals.

2.2 Budgetary participation and managers' performance

The organizational environment provides a natural setting for interaction between agents, however, depending on how the organizational policy allows and/or encourages this interaction, positive or negative results may occur. Thus, one can infer that the relationship between budgetary participation and performance of individual managers cannot be analyzed solely from an objective and quantitative point of view, but in a broader context, in which it is affected by other variables that are present in the organization.

Therefore, to address the relationship between budgetary participation, corporate budgeting and performance evaluation, Swieringa and Moncur (1975) explain that budgetary

participation refers to the application of participatory management techniques to the budget; it is a practice that allows managers to participate in decisions in which the budget is created, allowing for measuring and evaluating their performance.

Aligned to this current, Seaman, Landry Jr. and Williams (2000) claim that there is widespread agreement in literature as to the fact that budgetary participation can lead to a positive effect on the performance of managers, and there is a concentrated effort to identify the variables that explain this relationship.

These variables may refer to how the management process is applied in the organization. Brownell (1980) generally presents two philosophical currents of management; the traditional current is based on scientific management, whose assumptions correspond to the idea that the organization's participants are motivated exclusively by economic forces and that human beings are inefficient; on another front, a competing point of view emerges in the 1920s, when research by Elton Mayo, called "the Hawthorne Experience", revolutionized theory up to then, revealing that social and psychological factors influence the relationship between man and organization.

The current behavioral studies on budgetary participation gained momentum in the work of Argyris (1952), who provided qualitative evidence that budgets could adversely affect the mental state and behavior of employees. Thus, budgets are an interacting tool that cannot exist without people (MILANI, 1975) and are a variable with a strong effect on all measures of motivation (HOFSTEDE, 1968).

In sum, Covaleski et al. (2006) state that, motivated by the work of Argyris (1952), studies by Stedry (1960) and Hofstede (1968) brought significant contributions to the development of the theory based on psychology applied to budgeting, the results of which, respectively, demonstrate that performance is an interactive function of the difficulty and of the time-span of the budgetary goal imposed; and the difficulty of

the budgetary goal refers to a non-linear effect on the motivation to achieve the budget; maximum motivation occurs when the difficulty of the budgetary goal is moderate – in this case, not that easy or difficult.

Otley (1978), however, notes that the assessment of managerial performance is in itself a management task that cannot be precisely predetermined, and that different managers lead in different ways. In this sense, budgeting data

can play an important role, and can be used to represent standards of effectiveness and efficiency.

Studies on participation in the budgeting field, however, are a mix of several schools of thought (Brownell, 1980), something that can be observed in Figure 1. Covaleski et al. (2006) corroborate, emphasizing that the psychological, sociological and economic research currents in the budgetary field are commonly presented in an isolated way.

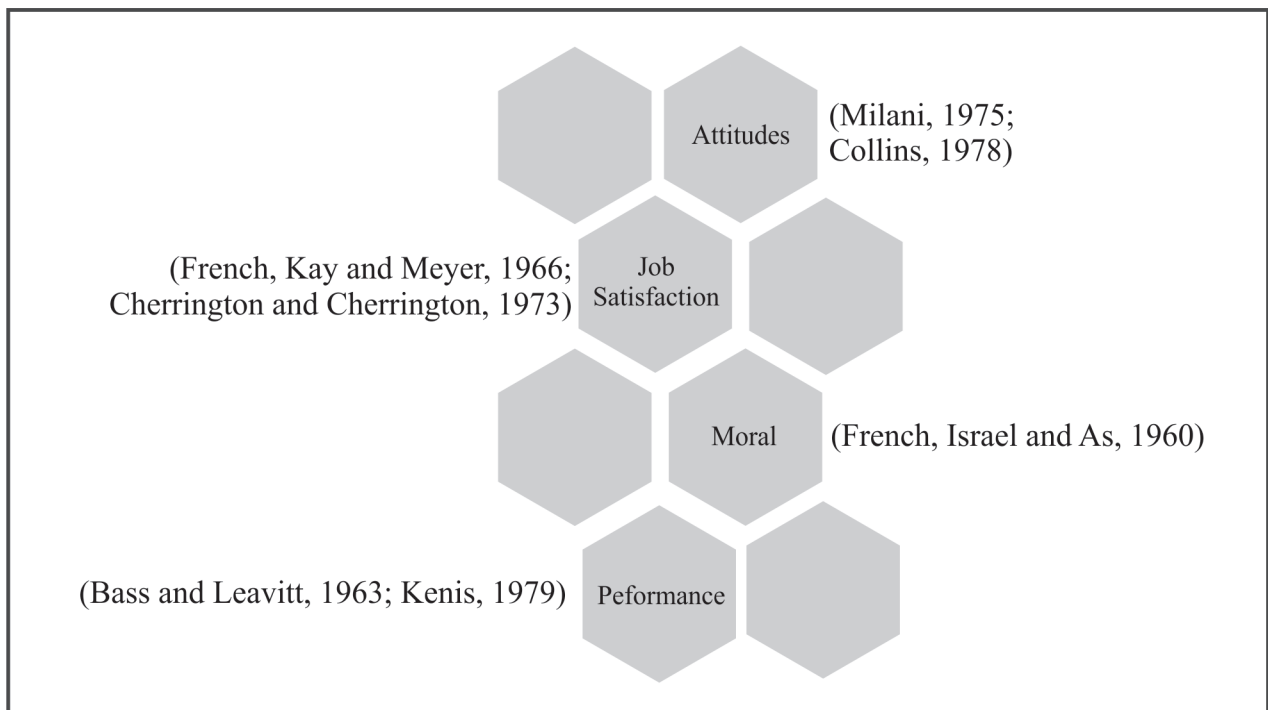


FIGURE 1 – Schools of thought on budgetary participation

Source: Adapted from Brownell (1980, p. 2).

Regarding the organization's management system, Otley and Bisbe (2004) studied the style of participatory use of formal systems of management control. To the authors, the systems of control are participatory measurement systems used to focus attention on the constantly changing information that top-level managers consider to be of strategic importance.

The discussions focused on the assumption that budgetary participation improves production efficiency by means of two mechanisms: the motivational and the informational (LOCKE,

SCHWEYGER, 1979; EREZ, ARAD, 1986; EREZ, 1993; LATHAM, WINTERS, LOCKE, 1994; SAGIE, KOSLOWSKY, 2000). To the authors, the research referring to the informational role of budgetary participation present consistent results, but as to its motivational role results are inconsistent, such as in the relationship between budgetary participation and motivation.

These inconsistent results are also reported by Frucot and Shearon (1991) when they state that certain studies have indicated a strong positive relationship between participation and

performance (ARGYRIS, 1952; BROWNELL, 1982; HOFSTEDE, 1968; KENIS, 1979; MERCHANT, 1981; BROWNELL, MCINNES, 1986), while others suggest a weak or negative relationship (BRYAN, LOCKE, 1967; CHERRINGTON, CHERRINGTON, 1973; LOCKE, SCHWEIGER, 1979).

More recently, studies in this field have continued to evolve – for example, Leach-López, Stammerjohan and Lee (2009) investigated the relationship between budgetary participation and performance at work; this research was mediated by variables such as job satisfaction and relevant job information. In turn, Jermias (2011) studied budgetary participation in reference to other variables, such as asymmetric information, commitment to goals, ambiguity, job satisfaction and performance.

This conflicting results bias is commented on by Bonache, Maurice and Moris (2010), who, in a “state of the art” type paper, raise substantial literature on the subject and conclude that, depending on the country where the study was carried out, the relationship between budgetary participation and managerial performance reveals the presence of heterogeneity.

The papers cited in this section reinforce the inference that, for a better understanding of the relationship between budgetary participation and managers’ performance, it is necessary to investigate its correlation with other organizational variables, that is, their study in isolation could result in a research bias and blur theoretical construction on the topic.

2.3 Cost management knowledge and managers’ performance

To possess knowledge concerning certain variables that are present in an organization allows individuals to use it for a better performance in his or her activities/field; this does not mean, however, that they will do so, or that the organization provides adequate conditions for applying this knowledge. One can also question what would be the necessary level of knowledge to achieving a certain performance expected by the organization.

Having respected these limitations, Agbejule and Saarikoski (2006) argue that researchers in the participatory decision-making field defend that this concept is of the highest quality when participants possess relevant knowledge with which to contribute. To the authors, although relevant importance is given to the type of knowledge as an important variable performance (BONNER, 1990; BONNER, WALKER, 1994; SPILKER, 1995; DEARMAN, SHIELDS, 2001), little attention has been given to the influence of knowledge in the management accounting scenario.

By addressing the knowledge topic generically, Penrose (1959) explains that an employee’s knowledge is based on his skills, experience and ability to absorb new knowledge. Therefore, while knowledge is a resource in itself, the way in which knowledge is managed and used will affect the quality of services. From this information, one can infer that knowledge as to costs, if effectively applied, can represent improvement in the level of performance of a manager.

A study by Hunton, Wier and Stone (2000) investigated if the factors knowledge, skill and experience influence success in management accounting. Among other findings, the results revealed that technical knowledge in management accounting, skill and experience predict success in the work performance for beginner management accountants.

Given the key role of knowledge management in contemporary organizations, King, Fowler and Zeithaml (2002) studied organizational skills from the perspective of hierarchically medium-level managers and explain that they represent the sum of the knowledge present in individual skills and organizational units. To the authors, cost management should receive special attention, as it relates directly to the organization’s competitive advantage.

Searching for answers about the relationship between the heterogeneity of knowledge and performance, Rodan and Galunic (2004), using a sample of 106 hierarchical medium-level managers, investigated the influence of knowledge

heterogeneity on managerial performance and innovation. The results of this study suggest that access to heterogeneous knowledge is important to overall managerial performance and very important to innovation performance.

In more recent research, Aboelmaged (2012) investigated the impact of organizational knowledge and innovation practices on the results of strategic operations. This work revealed, through their results, the cost, quality and flexibility are influenced by specific organizational knowledge and innovative practices.

After reviewing the literature on the subject, the following research hypothesis emerges: knowledge of managers concerning cost management and budgetary participation influences their managerial performance.

2.4 Previous research

The history of state of the art research in the budgeting field is marked by significant progresses; one cannot deny, however, that there still remains a lot to be done to discover the potential of business budgets when facing behavioral variables; thus, this section of the research will briefly present some related studies and their results.

Through the analysis of previous studies, Simons (1990) argues that, up to the early 1960s, research focused on the regulatory aspects and did not seek to understand organizational practices. According to the author, during the second half of the 1960s, the work of Anthony (1965) was the basis for later research, centered on how best to design and use formal systems to help organizations implement their strategies and goals.

At the end of the 1970s, research concerning management information systems entered a new phase. Greenberg (1982) notes that the focus of organizational research began in the reactions of workers to the favorability or fairness of the results of organizational decisions, such as distribution of results. That is, the emphasis hitherto given to normative processes also passed on to the human standards

and behaviors that influence performance. This phase represented a transition from mechanistic approaches to performance evaluation hitherto found in traditional management theory, represented by TAYLOR, 1911; CHANDLER, 1962; ANTHONY, 1965.

This research period presents corporate budgets as a means of evaluating the performance of managers. Kenis (1979) states that knowledge and discussion of budgeting goals (feedforward) and information about how far those goals were achieved (feedback) gives managers a basis for measuring efficiency, for identifying problems and for cost control.

During this period, however, the results of research on budgetary participation harbored many contradictions. Covaleski et al. (2006) argue that the psychological approach was responsible for improving the understanding of the effect of budgetary variables on the behavior of individuals, resulting in the increase of interactive, contingent and intervening variables.

In seeking to understand the results of past research, Brownell (1980) carried out a literature review using a conditional factors framework in which the effects of budgetary participation are demonstrated. Depending on the variables that can impact budgetary participation, the author comments that the question to be asked is: "When does participation work?" and not just if it does work.

The work of Brownell (1980) opened new perspectives for scientific budget research; as such, Merchant (1981) studied how the differences in enterprise-level budgeting systems are related to company size, diversity and degree of decentralization, and how different choices in the design of the system and its use are related to managers' organizational performance, motivation and attitudes. The results of this study reveal that budgeting, as part of corporate strategic control, is related to the corporate context.

The discussion about the effects of budgeting variables on the performance of individuals became more intense; however, performance is a complex variable and its meaning is explained in other fields of science. For example:

Blumberg and Pringle (1982) argue that the performance of an individual is affected by his or her ability, willingness and opportunity to accomplish it. Thus, the capacity dimension refers to the physiological and cognitive capabilities that enable the individual to perform a task effectively; the will dimension refers to the psychological and emotional characteristics that influence the degree to which an individual tends to accomplish a task; and the opportunity dimension represents situations in which, although an individual may be willing and able to perform a particular action, its consummation will depend on the presence and arrangement of certain facts in the person's objective environment.

Regarding the opportunity dimension, one can infer that it includes the budgetary participation variable, because the performance of managers is affected by the model adopted for participation and the limits imposed to their participation in decision making. Moreover, the results of research by Hunton, Wier and Stone (2000) reveal that differences in knowledge, skill and experience are associated with job performance.

The study by Magner, Welker and Campbell (1995) investigated whether employees present particularly negative emotional reactions in situations in which: (i) they have received unfavorable decisions concerning results; or when (ii) the results were established through processes of unjust decision making. The results of this study are consistent with previous studies and indicate that employees who received unfavorable budgeting decisions present attitudes that are less negative toward budgetary decision makers when they participated in the budgeting process.

Budgetary participation has been extensively researched in the field of management accounting and related to behavioral factors, but research linking budgetary participation and performance of managers, using individual variables, are few (AGBEJULE, SAARIKOSKI 2006). Thus, this fact justifies its relevance to the authors.

However, taking into consideration all the research efforts, Derfuss (2009) states that papers relating budgetary participation and financial performance measures still present conflicting findings, even with the inclusion of several variables, because, in many cases, the use of small statistics samples can lead to statistical errors, which can affect results and reveal heterogeneous results.

Related studies have investigated the relationship between budgetary participation and organizational performance. Mahjoub and Halioui (2012) used organizational performance as dependent variable, budgetary participation as independent variable and intensity of market competition as moderating variable. Although this study did not focus specifically on individual managerial performance, its result is consistent with the proposition that high performance companies are more participatory and present a higher level of competitiveness than poorly performing companies.

3 METHODOLOGY

To achieve the research objective of investigating the relationship between cost management knowledge and budgetary participation with the performance of managers, we used a typology model described by Raupp and Beuren (2003), which can be applied to accounting, and which is divided into: research typology as to objectives, research typology as to procedures and research typology as to approaching the problem.

This descriptive research was carried out based on the study of Agbejule and Saarikoski (2006), published in *The British Accounting Review*, vol. 38, in which the result of the primary work indicates that a significant perception of managerial performance is obtained when budgetary participation and managers' knowledge of management costs are intense. In this sense, the authors' study suggests that organizations

must improve the knowledge of cost management amongst managers who participate in the budgeting process.

The study population consists of hierarchically medium-level managers working in private companies located in Southern Brazil; these companies use the business budgeting tool. In this total population of 71 managers, 29 managers that made up the research sample were from five companies belonging to the following sectors: agro-chemical, communications, services, food and dental care – thus, 40.85%.

Survey respondents are employees who hold decision-making power in their organization, that is, within the hierarchical structure they are responsible for the alignment and translation of institutional strategies that come from top management to employees at the operational level, thus allowing conceptual knowledge to be transformed into more objective action plans that allow for performance measurement.

During data collection, in order to maintain the integrity of the research objective, the instruments used in the work of Agbejule and Saarikoski (2006) were reapplied. Thus, the instrument for measuring budgetary participation was Milani's (1975), containing six questions with a Likert-type 7 point scale. This instrument has been used extensively in accounting research. To measure managerial performance, we used the questionnaire of Mahoney, Jerdee and Carroll (1965), with eight questions with a Likert-type 9 point scale; to measure cost management knowledge, we used seven questions with a Likert-type 7 point scale by Shields and Young (1994).

Concerning data collection, at first the research project was submitted to the controllers of the companies surveyed, to inform them of its objective and for their approval.

Next, following authorization to do so, a meeting was held with the human resources managers of the surveyed organizations, in order to give them a general explanation of the research and its implications. In the following stage, after communication by the company to its department managers, contacts by phone were made directly with the participating medium-level managers, so

as to explain questionnaires and their meanings. The research continued by sending, by e-mail, preformatted questionnaires using the Google Docs® tool, between July and August 2011.

Upon return of the filled-out instruments, quantitative data analysis was carried out using the Factor Analysis and Linear Regression method, using SPSS 18.0 version software.

4 ANALYSIS AND INTERPRETATION OF RESULTS

In this section, we present the results obtained through applying research tools and the statistical tests used, whose results are limited to the sample which is the object of the study.

The research efforts were directed to investigating how the knowledge of managers concerning cost management and budgetary participation influence their individual performance.

Based on the analysis of responses obtained through the research instruments, we analyzed Cronbach's Alpha coefficient. This value brought a result of 0.898, which represents the reliability of responses obtained through the application of questionnaires such as the ones we used.

So as to validate the results of the research, we initially applied the Factor Analysis statistical technique, and, following in the lines of the work of Agbejule and Saarikoski (2006), used the promax rotation in Factor Analysis. The result was made up of four factors shown in Table 1, as follows:

1. (BP) budgetary participation, represented by variables, involvement in budget creation, validity of budget revisions, voluntary contributions to the budget, influence on the final approved budget, general contributions to the budget process and frequency of requests for contributions to the budget.
2. (IMP) individual managerial performance, consisting of the following variables: planning performance and research performance.

3. (CMP) collective managerial performance, represented by the following variables: coordination performance, evaluation performance, supervision performance, performance as to human resources, business performance and representation performance.
4. (CM) cost management knowledge, consisting of the following variables:

formal responsibility for managing profits, emphasizing income as a measure of performance, experience in cost management, comparison between actual and budgeted items, understanding of the effect of expenses on results, observation of each line item in the budget and evaluation of results of work and costs involved.

TABLE 1 – Factor analysis

Items	1-BP	2-IMP	3-CMP	4-CM
BP1 Involvement in budget creation	0.924			
BP2 Validity of budget revisions	0.643			
BP3 Voluntary contributions to the budget	0.632			
BP4 Influence on the final approved budget	0.946			
BP5 General contributions to the budget process	0.817			
BP6 Frequency of requests for contributions to the budget	0.782			
IMP1 Planning performance		0.803		
IMP2 Research performance		0.644		
CMP3 Coordination performance			0.677	
CMP4 Evaluation performance			0.875	
CMP5 Supervision performance			0.530	
CMP6 Performance as to human resources			0.582	
CMP7 Business performance			0.762	
CMP8 Representation performance			0.663	
CM1 Formal responsibility for managing profits				0.681
CM2 Emphasizing income as a measure of performance				0.653
CM3 Experience in cost management				0.737
CM4 Comparison between actual and budgeted items				0.793
CM5 Understanding of the effect of expenses on results				0.792
CM6 Observation of each line item in the budget				0.767
CM7 Evaluation of results of work and costs involved				0.623

Source: Research Data

It is important to observe the results above and relate them to the budget approach of the surveyed organizations. The research population consists of heterogeneous organizations, because of the different industries investigated. In all surveyed companies, the budget, however, is applied in the traditional manner, specifically for operational planning. Consequently, the strategic vision mentioned by Espejo et al (2009) is still not a reality in these organizations.

Given the described scenario, it is possible to infer that, within organizations in which the collective managerial performance is significant, if the organization uses the business budgeting according to the approach mentioned by Espejo et al. (2009), managers' performance may contribute more effectively to the results of the organization, to the extent that strategic objectives are linked to the corporate budgeting. This inference, however, requires further analysis by future research.

Next, we established the descriptive statistics of the variables analyzed. Table 2 presents a breakdown of the four factors (BP, IMP, CMP and CM). Thus, we have described both the measure of the central trend with the average

values and the Minimum, Maximum, Average and Standard Deviation measures of dispersion. This analysis allows us to demonstrate the positioning of the data analyzed.

TABLE 2 – Descriptive statistics

	N	Minimum	Maximum	Average	Standard deviation
IMP	29	8	18	14.28	2.433
CMP	29	24	54	41.07	6.617
CM	29	13	49	36.24	8.597
BP	29	12	42	33.38	7.461
Valid N (listwise)	29				

Source: Research Data

When checking the level of significance of the relationship between the factors, we used Multiple Linear Regression, with the performance of the manager factor as independent variable. The

equation of regressions, segregated into individual and collective managerial performances, is demonstrated as follows:

$$IMP = \alpha + \beta_1 BP + \beta_2 CM + \beta_3 (POxCC) + \epsilon \tag{1}$$

$$CMP = \alpha + \beta_1 BP + \beta_2 CM + \beta_3 (POxCC) + \epsilon \tag{2}$$

In this equation, IMP represents individual managerial performance; CMP is equivalent to collective managerial performance; BP is budgetary participation; and CM is cost

management knowledge. Table 3 presents the summary of the analyzed models, both of which have statistical significance (p-value <0.05).

TABLE 3 – Summary of models

Independent Variables	R	R ²	Standard error	F	P-value
IMP (1)	0.635	0.403	1.990	5.628	0.004
CMP (2)	0.580	0.337	5.704	4.226	0.015

Source: Research Data

Analysis of the regression coefficients is presented in Table 4. One can observe that, although the two regression models point to an acceptable level of significance, the coefficient of the independent variable that represents

the moderation of knowledge about the costs concerning budgetary participation does not reach the same level, except in model two, where the dependent variable is collective managerial performance.

TABLE 4 – Regression coefficients

Dependent Variable	Independent Variables	Standardized coefficient	T	Sig.
IMP	CM	0.291	0.334	0.741
	BP	0.194	0.261	0.797
	BP x CM	0.210	0.152	0.880
CMP	CM	-1.872	-2.037	0.052
	BP	-1.478	1.881	0.072
	BP x CM	3.385	2.319	0.029

Source: Research Data

Regarding the research hypothesis, one can infer that managers' collective performance is influenced by the interaction (moderation) between the knowledge of cost management and budgetary participation. The regression results indicate that budgetary participation and knowledge of cost management, together, have a significant relationship with managers' collective managerial performance (CMP), a fact that is aligned to the work of Agbejule and Saarikoski (2006). This can be observed by the correlation index and the level of significance in the linear regression, which was less than 0.05 (sig = 0.029).

Thus, the research hypothesis "managers' knowledge about cost management and budgetary participation influence their individual performance, considering the moderated model" was confirmed only for collective managerial performance. One must consider as to this result the relevant observation of Otley (1978), who highlights the difficulty in objectively and precisely assessing managerial performance, taking into account the weight of subjective variables and the different ways of carrying out this task.

This contradiction presented in reference to individual and collective managerial performance can be explained by Derfuss (2012), who states that heterogeneous results may be related to sample size or even the statistical method used.

In view of the contradictory results mentioned in the theoretical framework of this study, we suggest a more integrated analysis of the variables in literature that relate to individual managerial performance. Without the intention of creating any kind of reductionism in this very complex subject, we can, as proposed by Frezatti

et al. (2010), suggest an integrated proposal of this conflicting relationship, with possible groupings of variables.

In the work of Agbejule and Saarikoski (2006), we found five factors resulting from factor analysis; the instrument to measure managers' self-assessed performance was divided into two factors: managers' internal performance and managers' external performance.

The results of this research, unlike the work of Agbejule and Saarikoski (2006), lead to four factors. Two factors of the instrument to measure managers' self-assessed performance emerged; however, here the variables represent managers' individual managerial performance and managers' collective managerial performance.

Although no specific statistical test has been applied, we can see, in the responses of certain managers surveyed, that budgetary participation has an important informational role, because, whilst it enables participation in the process, managers can acquire relevant knowledge that positively influences their performance. This finding may be related to international research findings such as that of Leach-López, Stammerjohan, Lee, 2009.

In this context, considering the influence of the heterogeneity of knowledge on managerial performance, the factor managers' knowledge of costs allows for, in a participatory environment, contribution to the rationalization of decisions, taking into account the profit factor in the organization (RODAN, GALUNIC, 2004).

Finally, we can infer that, in a broader context based on the work of Aboelmaged (2012) and the results of this research, knowledge about

costs when, used collectively by managers, may result in improvement of strategic operations in the organizations surveyed, if managers go beyond the boundaries of individual budgeting goals and begin to contribute more significantly to achieving the organization's global strategies (ROLEAU, BALOGUN, 2011).

5 FINAL CONSIDERATIONS

This study aimed to investigate the relationship between knowledge of cost management and budgetary participation with managers' performance. The analyzes carried out using the statistical methods of Factor Analysis and Multiple Regression were used as means for achieving results consistently.

The conclusions reached are relevant to the literature review carried out and indicate that managers' performance is influenced by factors that are not always objective. These results are aligned with the research by Hunton, Wier and Stone (2000), who emphasize that job performance can be affected by factors such as knowledge, skill and experience.

We can infer, in the results reached, that in organizations in which managers are better trained in issues concerning the management of costs and budgetary participation is encouraged, their performance can be better, thereby also contributing to the global performance of the organization.

During data collection, we found that managers with less working time tend to overvalue their own performance, and this fact can be related to lack of experience in their field; accordingly, it is recommended that, in future research in this field, company managers are divided by working time in the field and/or company.

We cannot assert and sustain that knowledge about costs alone is isolatedly the main factor that affects the budgeting performance of managers; the study of isolated variables, inductively, allows us, however, to understand

findings more widely, thereby contributing to improving the understanding the managerial performance topic.

Finally, we recommended that future research include, in its analysis, other variables that may affect managers' performance, thus allowing greater generalization of results and a broader contribution to the theoretical construct referring to budgeting studies and individual managerial performance.

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