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ABSTRACT

This article aimed to highlight the relationships between these characteristics and the use of capital budgeting practices. For the selection of articles published on “capital budgeting” it was used the Proknow-C tool. It was found that the theory-practice gap is both related with the organizational and managerial characteristics from the practical point of view, but requires a review by academicians. Organizations should seek professionals with experience in capital projects appraisal and who are familiar with and knowledgeable in the use of adequate practices for decision-making. This research contributes by indicating the research gaps that need to be explored by researchers and by trying to identify the difficulties found by managers that interfere in the capital budgeting results.

***Keywords**:* Integrative review; Capital budgeting practices; Organizational characteristics; Managerial characteristics.

Uso de práticas de orçamento de capital: uma revisão integrativa

RESUMO

Este artigo teve como objetivo destacar as relações entre essas características e o uso de práticas de orçamento de capital. Para a seleção dos artigos publicados sobre “orçamento de capital” utilizou-se a ferramenta Proknow-C. Verificou-se que a lacuna teoria-prática está relacionada tanto com as características organizacionais quanto gerenciais do ponto de vista prático, mas requer uma revisão por parte dos acadêmicos. As organizações devem procurar profissionais com experiência em avaliação de projetos de capital e que estejam familiarizados e com conhecimento sobre o uso de práticas adequadas para a tomada de decisões. Esta pesquisa contribui indicando as lacunas de pesquisa que precisam ser exploradas pelos pesquisadores e tentando identificar as dificuldades encontradas pelos gestores que interferem nos resultados do orçamento de capital.

Palavras-chave: Revisão integrativa; Práticas de orçamento de capital; Características organizacionais; Características gerenciais.

1 INTRODUCTION

Capital budgeting plays a key role in the financial management strategy of any organization and, therefore, requires that managers ensure that any investment decision making is supportive of the organizational strategy and enhances its competitive advantage (BRIJLAL; QUESADA, 2009; BATRA; VERMA, 2014). The quality of such decisions requires many skills and competencies, once they does not just serve as the basis for other decisions but also determines the future corporate success and profitability (DAMOLOLA, 2007; KOCH; MAYPER; WILNER, 2009; BENNOUNA; MEREDITH; MARCHANT, 2010). For this reason, Carmona, Iyer and Reckers (2011) consider they as one of the most difficult kind of decisions. Such difficulty lies in five main aspects.

First, decisions on capital expenditure are among the most complex decisions that organizations have to make because they involve uncertainties relating to future estimated cash flow and social, technological, economic and political impacts of the investment, which increases the appraisal complexity (PANDEY, 2005). Second, almost all investment expenditures are irreversible (PINDYCK, 1988). There is also some difficulty in finding a second-hand market for the capital items acquired, i.e., any decision based on inaccurate investment projections may cause big losses to the firm (PANDEY, 2005). For these reasons, it is vital that organizations allocate their resources in a well-founded and planned manner to maximize their future outcomes. Third, decision on capital investment has a significant influence on the business' growth, profitability and strategy. Any investment decision made wrongly may ruin the organization or diminish its competitiveness (ANDREWS; BUTLER, 1986; PANDEY, 2005). Fourth, capital expenditures require significant amounts of resources, which require that organizations define the best way to obtain and return such invested funds (CHAN, 2004; OLAWALE; OLUMUYIWA; GEORGE, 2010). Fifth, most of the decisions entail a long-term liability, making imperative a careful assessment of the investment to be made (PANDEY, 2005).

In this context, corporate capital budgeting decisions have been a mature topic of discussion and urged the conduction of researches since the 1960s. Evidences in the 1960s and 1970s already indicated a certain managerial trend to use more sophisticated practices more often, based on discounted cash flows. Likewise, some researchers began to report a widening gap between the financial theory and the practices adopted by organizations (ANDRÉS; FUENTE; MARTIN, 2015).

Studies carried out on this topic involved the achievement of simple objectives, i.e., about the use of capital budgeting or which are the practices that are less or more used by managers. They also focused on detailed approaches, aiming to explain which discount rates were used, how cash flows were measured and why the theory-practice gap remained (PIKE, 1996; ARNOLD; HATZOPOULOS, 2000; GRAHAM; HARVEY, 2002; RYAN; RYAN 2002; SANDAHL; SJÖGREN, 2003; BROUNEN; JONG; KOEDIJK, 2004; LAZARIDIS, 2004; BENNOUNA; MEREDITH; MARCHANT, 2010; KHAMEES; AL-FAYOUMI; AL-THUNEIBAT, 2010; HALL; MILLARD, 2010).

Although literature mentions that more sophisticated practices have emerged and could be adopted by businesses, there are managers who do not use them (PIKE, 1983; GRAHAM; HARVEY, 2002; EGBIDE; AGBUDE; UWUIGBE, 2013). Therefore, a gap is created between what theory dictates and what is done in practice. In fact, little is known about the factors that have influence on the decision making process regarding capital budgeting, i.e., what leads to a more or less sophisticated decision. Sophistication refers to the use of theoretically higher methods and the systematic planning, assessment and control procedures of capital budgeting (PIKE, 1984). Moreover, aspects related to the external and internal environments as well as the organizational characteristics may af-

fect decision and the control processes used (PIKE, 1986).

Research suggests that the difference between theory and practice is mainly caused by the deviation of the practitioner: managers are unable to apply the practices that should be used in the analysis of investment projects (ANDRÉS; FUENTE; MARTÍN, 2015). In fact, it seems that decision-makers are unfamiliar or do not know the most appropriate methods (LAZARIDIS, 2004; BRIJLAL; QUESADA, 2009; HALL; MILLARD, 2010), in addition to having difficulties in measuring practices (PINCHES, 1982). In addition, factors such as cognitive ability, preferences, profile, function, experience and training of managers also affect capital budgeting decisions (for example, BRIJLAL; QUESADA, 2009; EGBIDE; AGBUDE; UWUIGBE, 2013). The results of these surveys indicate that several characteristics of managers interfere with the use of practices. However, such studies are not able to demonstrate which are the determining aspects for choosing one or the other practice (SOUZA; LUNKES, 2016).

In order to understand why organizations do what they do or perform as they do, one must consider the biases and dispositions of their most powerful actors: top executives (HAMBRICK; MASON, 1984). Organizations reflect what their leaders think, feel, perceive and believe in (OPPONG, 2014).

Regarding the teams of top managers, Li (2016) argues that the experience and knowledge they have can create strategic resources and capabilities for the entire company. These skills play a crucial role in the resource allocation of organizations, affecting, in turn, the growth rates (HUTZSCHENREUTER; HORSTKOTTE, 2013).

As can be seen, despite the recognized importance of investment decisions and their use by company managers, little is known about the relationship between organizational and managerial characteristics and the capital budgeting decision-making process. With the purpose of expanding such knowledge, the aim of the present review is to highlight the relationships between these characteristics and the use of capital budgeting practices.

This integrative review is justified by the intended new interpretation of the capital budgeting literature existing so far. The previous research pointed to the existence of a gap between theory and practice, but made only descriptive inferences about the use of more or less sophisticated practices by managers, but without checking or relating explanations of why such a choice for one practice or another happens or not.

It is expected that the outcomes of this review may help academicians to understand how said characteristics operate and affect decision making, in order to review the theory. It is also expected that this study may be useful for professionals to realize the effects of their decisions and take steps to improve them.

2 CONCEPTUAL FRAMEWORK – GUIDING THEORY

Capital budgeting decisions represent the organization's primary concern once they can affect the business structure (BERALDI et al., 2013). The theory that guides this research, the Upper Echelons Theory, argues that the values, experiences and personalities of the top management team interfere in the strategic choices of the organization, as well as in the success of those choices (HAMBRICK, 2007). Demographic characteristics, such as age, sex, education and functional experience, are indicative of underlying cognitive and affective managerial aspects that determine the decisions of management teams, which subsequently influence the organization's performance (BELL et al., 2011).

Among the perspectives of the mentioned Theory, Hambrick (2007) states that teams of heterogeneous upper echelons, composed of

managers with different demographic skills and profiles, can explain the differences in strategic choices, innovation and performance of companies.

The cognitive basis and values of executives in the upper echelons are based on their observable characteristics such as age, time in the position, education, socioeconomic roots and financial situation. Therefore, organizational results are associated with the observable characteristics of these professionals (CARPENTER; GELETKANYCZ; SANDERS, 2004).

In this context, the profile of managers is understood as a characteristic that impacts on capital budgeting decisions due to the level of formal education (GRAHAM; HARVEY, 2001; HALL; MILLARD, 2010; TRESIERRA-TANAKA; VEGA-ACUÑA, 2019), experience (PRUITT; GITMAN, 1987; ANDRÉS; FUENTE; MARTÍN, 2015) and function (PIKE, 1988; KLAMMER, 1972). Duly qualified managers, both in terms of academic training and work experience, must make more informed and prudent applications of capital budgeting practices (HALL; MILLARD, 2010).

Studies indicate that university-educated professionals are more likely to use discounted cash flow techniques as opposed to those without university education (LEON; ISA; KESTER, 2008). Managers with a Master of Business Administration (MBA) or a master's degree in finance are more likely to use more sophisticated techniques, compared to those without the aforementioned backgrounds (GRAHAM; HARVEY, 2001; KENGATHARAN; NURULLAH, 2018).

Capital budget forecasts can be affected by managers' lack of experience (PRUITT; GITMAN, 1987). Indeed, managers who have more years of experience in the organization tend to use more sophisticated practices (ANDRÉS; FUENTE; MARTÍN, 2015). On the other hand, older executives prefer simpler techniques (GRAHAM; HARVEY, 2001).

Bertrand and Schoar (2003) argue that managers play a critical role in investment policies, financial policies, organizational strategies and the company's operational performance. The results of the study by Bertrand and Schoar (2003) reflect the argument of Hambrick and Mason (1984) on the operations and performance of companies, summarizing the impacts of the characteristics of top executives, such as level of education, functional experience, professional experience and financial position.

In fact, the characteristics of managers are pointed out for interfering in the use of practices. However, until then it is not clear which and how they can influence the choice of using one or the other methodology.

3 METHOD

This investigation consists of an integrative literature review because it is a form of research that reviews, critiques and synthetizes knowledge from literature on a topic in an integrated way such that new frameworks and perspectives are generated (TORRACO, 2005).

The literature review began with the selection of articles on "capital budgeting". At this stage, the intervention tool used was the Proknow-C (Knowledge Development Process-Constructivist), a structured process for the construction of knowledge by the researcher on a topic or matter (DUTRA et al., 2015; WAICZYK; ENSSLIN, 2013).

The choice of articles includes: (i) definition of the keyword(s) to be used in the search; (ii) selection of databases; (iii) search of articles on the selected databases; and (iv) adherence test of keywords (WAICZYK; ENSSLIN, 2013).

The keywords defined were "capital budgeting", "investment budget" and "investment appraisal", once capital budgeting refers to the appraisal of long-term investment projects. These words combinations were used in the search for articles in seven databases (EBSCO

Academic Search Premier, ISI Web of Science, Emerald Insight, Science Direct, Scopus – Elsevier, Wiley Online Library and Scientific Periodicals Electronic Library – SPELL).

The search was conducted from May 2020 and resulted in a total of 3,997 papers. The period was not limited, i.e., the articles published until May 2020 could be selected. 3,997 articles were found, and they were filtered according to their redundancy, title alignment, scientific acknowledgement and abstract alignment. 2.342 redundant references were identified and excluded. Redundancy happens because the same article can be indexed in more than one database. Thus, when filtering different databases, the same article can be selected more than once, so it is necessary to eliminate it in the filtering.

At that moment, the 2,214 articles were read and the alignment of each of them was verified in relation to the research topic. It can be seen that the process resulted in 233 articles with titles properly aligned, and 1,981 were eliminated at this stage because they were considered misaligned. Titles such as "Economic evaluation of short rotation coppice systems for energy from biomass", "Life cycle costing: evaluating its use in UK practice" and "State highway capital expenditure and the economic cycle" were eliminated and "Capital budgeting under conditions of uncertainty", Investment Decisions on Long-term Assets: Integrating Strategic and Financial Perspectives" and "Investment appraisal techniques and constraints on capital investment" were considered aligned.

The 233 articles with aligned titles were submitted to a scientific recognition test. This test aims to verify the potential of the article for the composition of the bibliographic portfolio, that is, how much it is referenced by authors who deal with capital budget. To evaluate this recognition before the academic community, the amount of citations of each article in the Google Scholar platform was checked. The number of citations of the 233 was manually collected on June, 2020.

After assessing the scientific recognition, the data of the articles were organized in descending order according to the number of citations. In this database, the percentage of representativeness of the citations was calculated in relation to the total of 5,721. From the calculation of the cumulative percentage, a cutoff point was defined in 90% of the total citations, which corresponds to 68 articles with 22 or more citations. Such a cut is defined by the researcher. The 68 articles were incorporated into the "K Repository".

The selection of the 68 articles is justified since together they have a total of 5,149 citations, while the 165 totals only 572 citations. The 165 articles that have 10% of the citations, that is, have scientific recognition below to the cutoff point or not yet confirmed for being recent and have not received quotations from the scientific community. Such articles were incorporated into the "P Repository".

The reading of the 68 abstracts allowed to identify 31 aligned to the theme and that were incorporated into the "A Repository". These articles have scientific recognition and have title and abstract aligned. The remaining 37 articles with non-adherent abstracts were deleted.

Authors and co-authors were selected from the 31 articles in "A Repository", with the purpose of composing the "Bank of authors". This bank is used to verify if the articles in the "P Repository" were developed by authors of "A Repository", since the authors of the latter may have a scientific trajectory of studies about the capital budget.

It was noticed that 73 different researchers compose "A Repository". It is therefore possible that articles in the "P Repository" have been written by those authors or have not been cited in other research since their publication. Therefore, recent articles or authors of the "Bank of authors" need to be analyzed.

In order to avoid relevant articles being discarded from the bibliographic portfolio, the analysis

of the articles in the "P Repository" is to verify if there is any article without scientific recognition recently published. Thus, articles published in 2016 until 2020 were considered recent.

It was verified that 28 recent articles of the "P Repository" have been found. Thus, the abstracts of these articles were read, to verify the possible alignment to the subject under study. In this stage, 8 articles with aligned summary were identified and added to "B Repository". In this way, it can be observed that the other 21 recent articles were considered to be misaligned to the research topic and, therefore, do not belong to "B Repository".

In addition, the authors and co-authors of the 137 non-recent articles were analyzed to verify if they belong to the "Bank of authors" and 2 articles were identified. The abstracts of the 2 articles were read and the adherence to the research theme was verified. We found 2 articles aligned and added to "B Repository". The articles were "Measuring the use of capital budgeting techniques with the postal questionnaire - the UK perspective" by Rogers W. Mills and Richard H. Pike's "The impact of corporate investment objectives and constraints on capital budgeting practices".

Thus, "B Repository" consisted of 10 articles, of which 8 are recent and 2 are from the "Bank of authors". Finally, the 31 articles in "A Repository" and the 10 articles in "B Repository", which gave rise to "C Repository", are combined. This repository has 41 articles with title and abstract aligned.

The last stage of the filtering of the raw articles bank comprises the analysis of the gratuity and integral availability and complete reading of the articles. In this line, the 41 articles of "C Repository" were available and free of charge through the CAPES Periodicals Portal, Google Academic or databases of periodicals signed by the Library of the Federal University of Santa Catarina.

It was found that 41 articles were available completely and free of charge. From the full reading, it was found that 32 discussed, from some perspective, the use of the capital budgeting. These articles were considered aligned and were therefore kept in the "Primary Repository".

To finalize the process of construction of the bibliographic portfolio, the bibliographic references that were used by the authors of the 32 primary articles are analyzed.

Thus, the references of the articles were compiled, totaling 811 in the References Database. Firstly, 503 were identified and eliminated from redundant references or from conferences, books, and other sources. The References Database without duplicity presented a total of 308 articles, which were submitted to the analysis regarding alignment of title.

Then, the alignment of the title of 69 articles with the theme of the research was verified. The 69 articles with aligned titles were submitted to the scientific recognition test. After assessing the scientific recognition, the data of the articles were ordered in descending order according to the number of citations. The percentage of representativeness of the citations was calculated in relation to the total of 6,215. From the calculation of the cumulative percentage, a cut-off point was defined in 80% of the total citations, which corresponds to 30 articles with 71 or more citations.

The abstracts of the 30 articles were read, since 9 were already in the primary portfolio, and there were 7 adherents to the research theme. In this way, the complete reading was performed and it was verified that 7 are aligned with the research theme.

This concludes the construction of the Bibliographic Portfolio. It is constituted by 39 articles, 32 of them originate from the primary portfolio and 7 from their references. As a result, we identified two perspectives capable of being interpreted under a new perspective, not yet addressed by the literature, as shown in Chart 1.

Chart 1 – Perspectives of the integrative review

Object	Description	Related articles
Perspective 1	**Organizational and managerial characteristics in the use of capital budgeting practices:** i) Influence of the organizational characteristics in the use of capital budgeting practices; and ii) Influence of the managerial characteristics in the use of capital budgeting practices.	Klammer (1972); Schall, Sundem and Geijsbeek (1978); Aggawal (1980); Pinches (1982); Pike, (1983); Haka, Gordon and Pinches (1985); Pike (1986); Ross (1986); Pruitt and Gitman (1987); Mills (1988); Pike (1988); Pike (1989); Maccarrone (1996); Pike (1996); Arnold and Hatzopoulos (2000); Bernardo, Cai and Luo (2001); Graham and Harvey, (2002); Ryan and Ryan (2002); Bernardo, Cai and Luo (2003); Sandahl and Sjögren (2003); Lazaridis (2004); Toit and Pienaar (2005); Leon, Isa and Kester (2008); Brijlal and Quesada (2009); Hall and Millard (2010); Khamees, Al-Fayoumi and Al-Thuneibat (2010); Egbide, Agbude and Uwuigbe (2013); Hall and Mutshutshu (2013); Wnuk-Pel (2014); Andrés, Fuente and Martín (2015); Alleyne; Armstrong and Chandler (2018); Al-Mutairi; Naser and Saeid (2018); Kengatharan and Nurullah (2018); Mubashar and Tariq (2019); Tresierra-Tanaka and Vega-Acuña (2019).
Perspective 2	**Suggestions for improvements in capital budgeting decision making**	Klammer (1972); Gitman and Forrester (1977); Pike (1983); Klammer and Walker (1984); Mills (1988); Pike (1988); Pike (1996); Lazaridis (2004); Brijlal and Quesada (2009); Bennouna, Meredith and Marchant (2010); Hall and Millard (2010); Khamees, Al-Fayoumi and Al-Thuneibat (2010); Batra and Verma (2014)

Source: Authors.

It can be seen that 35 articles are associated with Perspective 1, i.e., studies that allow having a new viewpoint on the relationship between organizational and managerial characteristics with capital budgeting practices. On the other hand, there are 13 articles relating to Perspective 2, which address improved decisions on capital budgeting. Of the total articles selected, nine are related to both perspectives.

4 INTEGRATIVE REVIEW

The present integrative review is made through two lenses (perspectives). Perspective 1, which involves the relationships of organizational and managerial characteristics with the use of capital budgeting practices, depends on a separate analysis of the influences of organizational and managerial characteristics in capital budgeting practices. Afterwards, from the difficulties faced by managers, Perspective 2 consists of suggestions that may yield improvements in capital budgeting decisions.

4.1 INFLUENCE OF THE ORGANIZATIONAL CHARACTERISTICS IN THE USE OF CAPITAL BUDGETING PRACTICES

Capital budgeting decisions have a far-reaching impact on corporate performance, besides being critical to the success or failure of any business (BATRA; VERMA, 2014). For this reason, in some situations, the use of more sophisticated decisions is significantly associated with higher effectiveness of capital investments, while less sophisticated decisions are negatively associated (PIKE, 1988). The importance of sophisticated decision making primarily lies in the fact that it is able of providing more benefits to financial management when compared to the less sophisticated process of decision.

The practices considered more sophisticated include discounted cash flow, which take into consideration the value of money over time, namely: net current value, internal rate of return, modified internal rate of return and profitability. Among the simplest practices, considered classifying ratios, are payback, dis-

counted payback and accounting rate of return (HAKA; GORDON; PINCHES, 1985; PIKE, 1988; BRIGHAM; ERHARDT, 2002).

Thus, an exploratory taxonomy of the organizational characteristics in the literature is developed (Figure 1). During the process, how they influence the use of capital budgeting practices is examined. This means that the organizational characteristics are classified according to the perception of the authors, by reading the selected articles, in relation to the use of capital budgeting practices, considering the horizon of the use of less sophisticated practices to use more sophisticated practices, left to the right. For example, long-term incentives with higher effects are classified for the adoption of more sophisticated practices and long-term incentives for less sophisticated practices.

Taxonomy is a synthesis that represents how the characteristics have impact on decisions. However, it is not exhaustive, but a general classification of the practices listed in the articles selected. For this reason, many characteristics may not be included in the taxonomy and which affect the use of capital budgeting practices.

It is defined that long-term incentives, technological advances, large projects, large companies, formal structure, remuneration based on performance, and the existence of big work teams are characteristics that have more effect on the use of more sophisticated practices. On the other hand, short-term incentives, small projects, small firms, limited operational structure, and few work teams are considered impactful aspects in the adoption of less sophisticated practices.

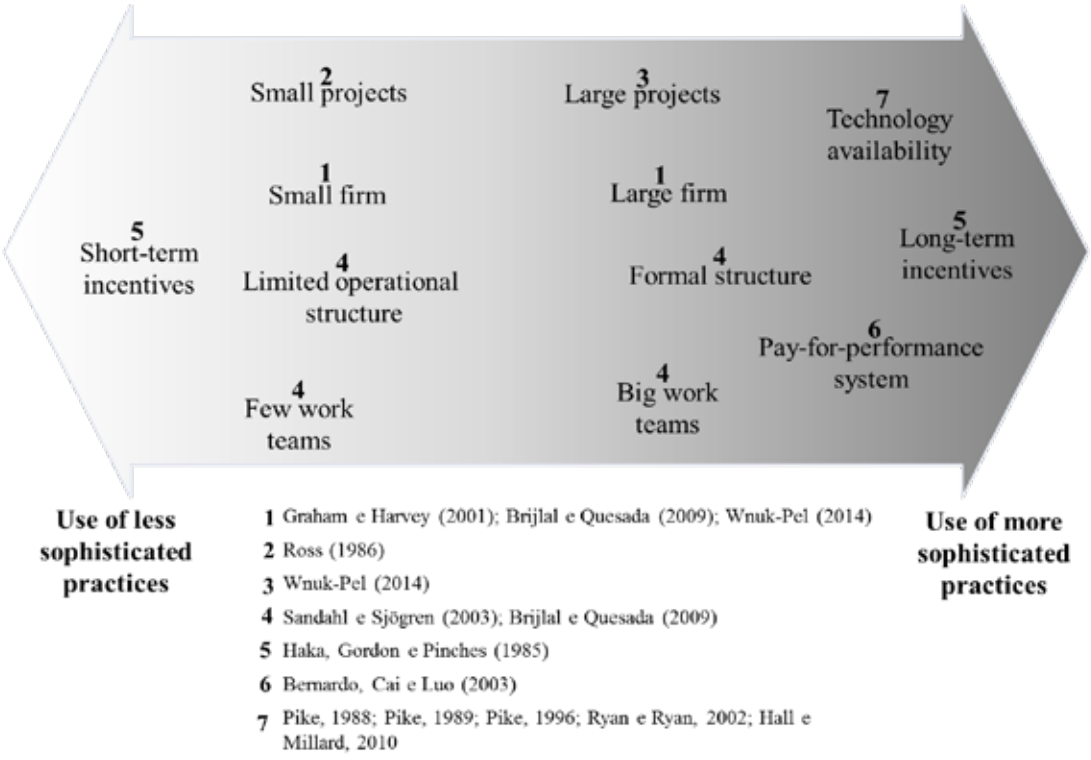

Figure 1 – Influence of the organizational characteristics in the use of capital budgeting practices

Source: Authors.

The mechanisms of incentives that influence the managerial behavior may also affect the choice of theoretically appropriate tools of capital budgeting (BERNARDO; CAI; LUO, 2001; BERNARDO; CAI; LUO, 2003; ANDRÉS; FUENTE; MARTÍN, 2015). These incentive systems have important effects on the managers' behavior, taking into account that organizational studies have shown that managers are influenced by the way they are appraised and

rewarded (MACCARRONE, 1996). The firms that rewarded their employees based on long-term incentive plans may experience more benefits from sophisticated approaches than the firms that use short-term plans (HAKA; GORDON; PINCHES, 1985). A higher remuneration based on performance entails more managerial efforts in maximizing the value of the firm. In fact, higher remuneration based on performance must be offered to managers of high-quality projects to induce them to deliver reliable reports.

According to Toit and Pienaar (2005), long-term profitability and business success lie in the management's ability to identify and select capital investments that will increase the value of the organization and provide it with the necessary competitive advantage. This means that management incentives may have positive effects (increase the firm's value), but may also lead to inaccurate reports. For this reason, it is vital to control incentives appropriately to prevent managers from attempting to maximize preferably their values or delivering information inconsistent with reality. Managers react according to the benefits they are paid and, depending on how such incentives are administered, they may influence on project choices and appraisals. It is necessary to study whether there is a difference in remuneration, whether it is based on the project's financial performance or whether it is based on cost, for example.

Empirical results show that decisions made by managers of capital budgeting are related with the firm' size (SCHALL; SUNDEM; GEIJSBEEK, 1978; PIKE, 1986; MILLS; 1988; GRAHAM; HARVEY, 2002; WNUK-PEL, 2014; ANDRÉS; FUENTE; MARTÍN, 2015; TRESIERRA-TANAKA; VEGA-ACUÑA, 2019). The size of a firm has impact on the frequency of use of all practices. The larger the organization the higher the likelihood of using more sophisticated practices, compared with smaller firms (GRAHAM; HARVEY, 2002; BRIJLAL; QUESADA, 2009; WNUK-PEL, 2014). Managers of small companies operate in businesses having limited operational structure, often controlled by owners, and, for this reason, they likely use simpler and easier practices. The same does not occur in larger companies, because they usually have formal structures, big work teams and knowledge of the necessary procedures to manage budgets (SANDAHL; SJÖGREN, 2003; BRIJLAL; QUESADA, 2009). Furthermore, large companies make high investments more often and, for this reason, it is expected that they analyze their capital expenditures very carefully to ensure long-term profitability and growth.

This does not necessarily mean that the size of a company directly determines the level of sophistication in decision. It is possible that other aspects relating to the size of the company lead to the use of more sophisticated practices. For example, Pike (1988) found that the use of computer technology in capital budgeting was an explanatory variable of the sophistication levels. However, the size of a company is strongly associated with the use of the referred technology (PIKE, 1996).

The availability of computer technology in this area and the computational skills of the end user have been considered strongly influential in the utilization of more robust practices (PIKE, 1988; PIKE, 1989; PIKE, 1996; RYAN; RYAN, 2002; HALL; MILLARD, 2010), especially in larger firms (MILLS, 1988). Firms that use sophisticated and control practices in capital budgeting must be potentially more efficient in the assessment and control of investment projects than the ones that use methods with few mechanisms of control (PIKE, 1996). These computational tools provide benefits to the managers in that they facilitate and assist in the calculation and management of the best capital budgeting decisions. However, availability of information technology is not sufficient; the users need to know how to use the practices and analyze their results. Probably, the technological advances along with the manager's knowledge and skills have favored the use of computational and stochastic practices.

The size of the capital budget is also a significant factor in investment decisions (PIKE, 1988; RYAN; RYAN, 2002, WNUK-PEL, 2014). For small projects, most of the managers simplify dramatically its discounted cash flow analysis or use simpler methodologies (ROSS, 1986). Sophisticated techniques of discounted cash flows are used more often by businesses that have higher yearly capital budget, which require more complex stochastic calculations. The size of the budget is often associated with the size of the firm, i.e., the largest ones usually have higher capital budgets. The firm size has more influence on the managers decisions because they involve aspects such as structure, available resources or capabilities, personnel, technology and annual budget.

The results showed that organizational characteristics influence the use of capital budgeting practices. In this sense, a company that has clear definitions regarding the budgeting process will have decisions made based more on sophisticated budgeting practices. On the other hand, the scarcity of guidelines opens the door to a greater use of traditional practices.

The restrictions concern barriers to the use of practices. It was not possible to attest that the existence of restrictions affects the use of more or less sophisticated techniques. This reinforces the importance of focusing on the biases and dispositions of the most powerful actors in organizations: top executives (HAMBRICK; MASON, 1984).

4.2 INFLUENCE OF THE MANAGERIAL CHARACTERISTICS IN THE USE OF CAPITAL BUDGETING PRACTICES

Literature on finances has attempted to explain the difference between what is theoretically recommended and what is actually used in the practice of capital budgeting (ANDRÉS; FUENTE; MARTIN, 2015). Professionals often tend not to consider the interrelationships between the various stages of the process and sometimes have inadequate knowledge on financial theory to make a decision. On the other hand, academicians have shown a strong tendency to be concerned with the phase of selection of investment projects but without considering the process in its entirety (PINCHES, 1982).

Considering that managers make subjective judgements in capital budgeting decisions, it is implied that the managerial features affect choices for less or more sophisticated practices and, therefore, can explain the theory-practice gap. This means that the managerial characteristics are classified according to the perception of the authors, by reading the selected articles, in relation to the use of capital budgeting practices, considering the horizon of the use of less sophisticated practices to use more sophisticated practices, left to the right. Thus, an exploratory taxonomy of the manager's characteristic is developed in the literature (Figure 2).

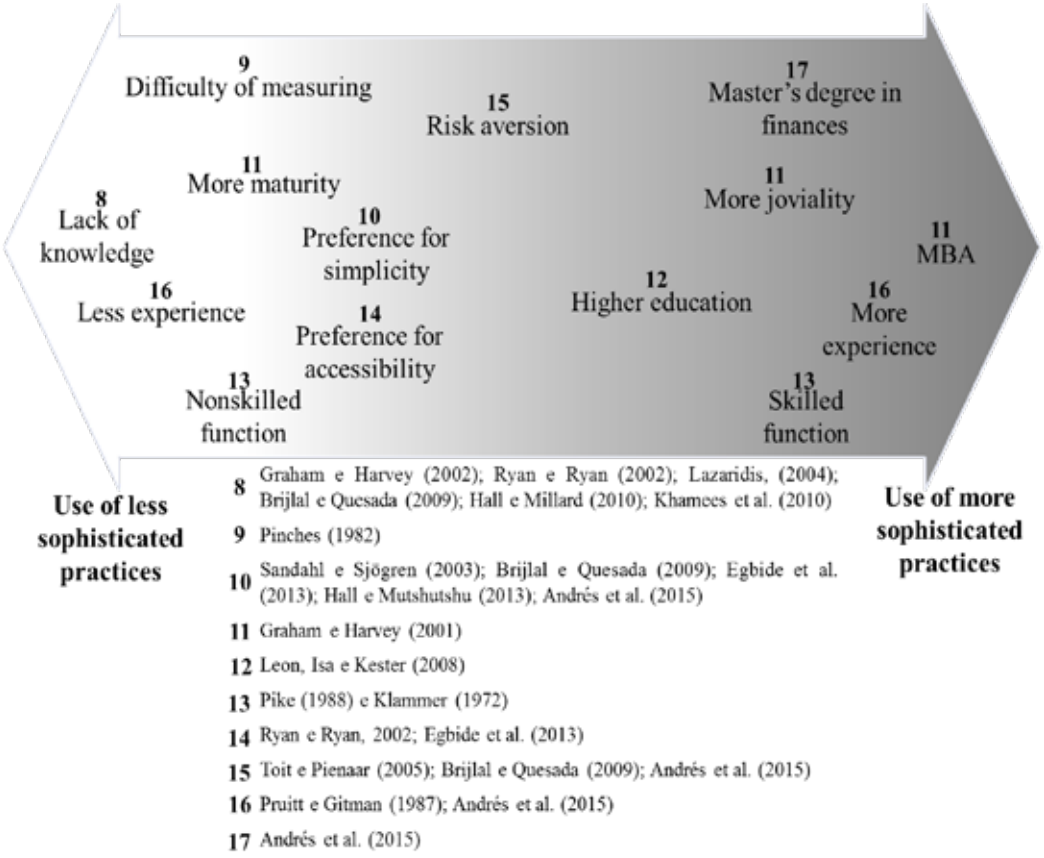

Figure 2 – Influence of the managerial characteristics in the use of capital budgeting practices

Source: Authors.

Studies suggest that the difference between theory and practice is primarily caused by a practitioner's deviation: managers fail to apply the techniques that should be used in the analysis of investment projects (ANDRÉS; FUENTE; MARTÍN, 2015). It seems that decision makers are not familiar with or do not know the most appropriate methods (GRAHAM; HARVEY, 2002; RYAN; RYAN, 2002; LAZARIDIS, 2004; BRIJLAL; QUESADA, 2009; HALL; MILLARD, 2010; KHAMEES; AL-FAYOUMI; AL-THUNEIBAT, 2010), besides having difficulties in measurement (PINCHES, 1982).

The lack of knowledge on more sophisticated practices makes managers go on applying the simplest and easy-to-calculate methods. The most robust practices are difficult to be measured and understood by managers and, therefore, they are afraid of using them. Furthermore, it should be investigated whether the lack of familiarity is theoretical or practical. Managers may have the required education level to perform the function, but not necessarily they master or understand what the practices represent, and for this reason, they do not use them. To ensure the required knowledge managers should have such information and relate them with the use of the practices.

There are managers who know the most robust practices but would rather use the simplest and easiest methods to calculate (SANDAHL; SJÖGREN, 2003; BRIJLAL; QUESADA, 2009; EGBIDE; AGBUDE; UWUIGBE, 2013; HALL; MUTSHUTSHU, 2013; ANDRÉS; FUENTE; MARTÍN, 2015) or use readily-available accounting data and present the analyses in percentages that can be easily accessible to users (RYAN; RYAN 2002; EGBIDE; AGBUDE; UWUIGBE, 2013). To prevent a project to be carried out mistakenly, it is vital to know how the manager behaves when making decisions, which factors he takes into consideration and at which priority level. The firm could encourage the manager to adopt certain procedures and practices in an attempt to diminish the subjective effect and increase the impartial effect in decision-making.

Risk aversion can explain the managers' choice of not abandoning the traditional practices and continuing to use them as a complement to the results obtained by the theoretically most adequate ones (TOIT; PIENAAR, 2005; BRIJLAL; QUESADA, 2009; ANDRÉS; FUENTE; MARTÍN, 2015). First, this may happen because no single appraisal is simple enough for managers to understand it (PIKE, 1983). Second, by accumulating various practices and results, managers might consider that the analysis is enriched and their responsibility diminished (ARNOLD; HATZOPOULOS, 2000). Finally, earlier approaches have numerous qualities that modern techniques seem to be unable to provide (ARNOLD; HATZOPOULOS, 2000). Risk aversion and fear of making a wrong decision discourage the abandonment of using simpler practices and encourage even more the accumulation of multiple ones. A consequence of such behavior is that the tools considered theoretically inappropriate will not be replaced by the professionals, and this will maintain or enlarge the distance between theory and practice.

The managers' profile is also considered a characteristic that affects capital budgeting decisions, i.e., the formal education (PIKE, 1996; GRAHAM; HARVEY, 2002; HALL; MILLARD, 2010), experience (PRUITT; GITMAN, 1987; ANDRÉS; FUENTE; MARTÍN, 2015) and job function (PIKE, 1988; KLAMMER, 1972). Highly qualified managers, both in terms of education and work experience are expected to make well-informed and prudent applications in capital budgeting practices (HALL; MILLARD, 2010).

Studies indicate that professionals with higher education will likely use discounted cash flow techniques in opposition to those who have basic education (LEON; ISA; KESTER, 2008). Managers with a Master in Business Administration (MBA) or a master's degree in finances will probably use more sophisticated techniques, compared to those who do not have a degree (GRAHAM; HARVEY, 2002; ANDRÉS; FUENTE; MARTÍN, 2015). This is because various kinds of investment appraisals are more commonly taught in finances programs and MBA.

By reading 7 papers that analyse the respondents, the profile of the financial manager may be observed. The person is usually over 30 years old, an accountant, has an MBA or post-graduate degree and has occupied their current position for over five years (for example, Hall and Millard (2010) and Nurullah and Ken-gatharan(2015)).

It was expected that the most experienced ones and those with a university degree used formal and more sophisticated practices to analyse capital budgeting, but this was not seen (LEON; ISA; KESTER, 2008; HALL; MUTSHUTSHU, 2013). According to the research conducted by Andrés, Fuente e Martín (2015), the use of simple practices is explained by the fact that the managers progressively accumulate a higher number of practices over time, rather than avoiding and abandoning simple practices and using only sophisticated practices. On the other hand, it may indicate the need for managers to search for other means to learn advanced methodologies to be used, in addition to the ones they learned at their university. Some courses include little or no approach about sophisticated capital budgeting practices.

Capital budgeting estimates can be affected by managers' lack of work experience (PRUITT; GITMAN, 1987). Managers with more years of experience in the organization will likely use more sophisticated practices (ANDRÉS; FUENTE; MARTIN, 2015). On the other hand, older managers would rather use simpler techniques, such as the payback period (GRAHAM; HARVEY, 2002). It has been observed that younger managers, with experience in capital budgeting, tend to use more sophisticated practices compared to senior managers.

This approach allows for the observation that managers have physical and psychological characteristics that influence their perspectives

and analysis in decision-making. These characteristics involves schooling, technical knowledge, experience, age, gender, and more and may be applied to capital budgeting. However, only 6 studies (for example, Batra and Verma (2014) and Vecino, Rojas and Munoz(2015)) evaluated the relationship between the attributes of the manager and decision-making in investments, but it did not really verify the implications of characteristics in choosing simpler or more sophisticated practices.

The values, experiences, and personalities of managers intervene with the organization's strategic choices and the success of these choices (HAMRRICK; MASON, 1984). Characteristics such as age, gender, education and functional experience are indicative of the underlying cognitive and affective management aspects that determine the decisions of management teams, which subsequently affect organizational performance (BELL et al., 2011).

Capital budgeting can be considered an expertise in business functions, but can also be performed by different kinds of professionals (such as fiscal or treasury professionals) (PIKE, 1988; KLAMMER, 1972). It means that an investment appraisal can be assigned to each manager and does not require a managerial expertise in capital budgeting. This may affect the bottom line because professionals who do not have the specialized assignment of assessing investment proposals will not have a sound knowledge on the techniques and procedures to be employed.

4.3 SUGGESTIONS FOR IMPROVEMENTS IN CAPITAL BUDGETING DECISIONS

After the synthesis of relationships between the organizational and managerial characteristics in the use of capital budgeting practices, Perspective 2 presents suggestions for improvements in decisions based on the difficulties indicated by the literature.

It is expected that researchers consider the difficulties and obstacles that firms face when they evaluate decision making in this area. It is also expected that the suggestions will be observed by professionals to ensure an advancement in investment decisions.

Financial managers consider the financial analysis and cash flow estimation the most difficult stages of the process of deciding on investments (GITMAN; FORRESTER, 1977; BRIJLAL; QUESADA 2008; HALL; MILLARD, 2010; BATRA; VERMA, 2014), because of the problems they have in ensuring sufficiently profitable investments (PIKE, 1983). Thus, they do not feel comfortable in using discounted cash flow techniques, risk analysis and are surprised with the existence of multiple approaches for investment appraisal (BATRA; VERMA, 2014).

This difficulty is not surprising because cash flows specification involves numerous forecasts and decisions (GITMAN; FORRESTER, 1977). Approaches that are more sophisticated are particularly more difficult to estimate, but there are spreadsheets and financial planning models that can be used to produce cash flow forecasts, set recovery times and calculate internal rates of return (MILLS, 1988).

In fact, this can reinforce the assumption that managers do not have knowledge and training in budgeting (HALL; MILLARD, 2010). Actually, there is a statistically significant difference between the diverse levels of education of the financial manager and the level of difficulty (BATRA; VERMA, 2014). In other words, it means that education affects the perception of difficulty, and the higher the education level more knowledge and less difficulty exist.

In this regard, professionals involved in capital budgeting should attend training courses in finances to improve their skills in decision-making (LAZARIDIS, 2004; KHAMEES; AL-FAYOUMI; AL-THUNEIBAT, 2010). Suggestion is that firms provide constant and specific training for managers and analysts in order to ensure that robust procedures of capital budgeting, in general, and discounted cash flow techniques,

in particular, be employed. Bennouna, Meredith and Marchant (2010) indicate the areas that should be emphasized during training and considered in decision making: real options analysis; provision of a policy manual; dedicated staff; supportive capital budgeting information systems; software products to make the required analysis easier; post-investment audits and review for compliance.

The use of a global capital budgeting process as an integrated organizational culture is an indication of improvement (KHAMEES; AL-FAYOUMI; AL-THUNEIBAT, 2010). The business culture should encourage financial directors to keep themselves updated and emphasize that investments appraisal is a key element in the curriculum of financial managers (PIKE, 1996). There is also the possibility of creating within the company a follow-the-leader effect in managers to encourage them to use methods that are more sophisticated in decision-making (KLAMMER; WALKER, 1984). There are research opportunities about how the organizational culture can influence in the use of capital budgeting practices and if is there any indication for low or high sophistication in investment analyses.

Another fact is that capital budgeting management is not always considered a function of specialists by the firms, being performed by the most diverse areas and professionals (KLAMMER, 1972; PIKE, 1988). It means that investments are assigned to each manager and a distinct function is not required. However, this affects the results found in the articles, because people who do not have the specialized assignment of conducting investment proposals appraisals are not likely acquainted with the techniques and procedures to be employed. Perhaps the most adequate alternative would be to verify how the decision process is conducted. It is necessary research if a team or a manager make decision and if is the person who performs the appraisal the same one who makes decision. It seems that decisions are made by top management teams (e.g., board of directors), each one with specific assignments in the appraisal, and not by a single and exclusive professional (e.g., the controller). For this reason, it is suggested to compose a qualified, full-time team, which will have more time, opportunity, skill and interest in maintaining a long-term capital budgeting.

One of the reasons for not making sophisticated decisions is the lack of people, time and experience to handle capital expenditures (KHAMEES; AL-FAYOUMI; ALTHUNEIBAT, 2010). For this reason, improvements in constant training of professionals, in considering capital budgeting as part of the organizational culture and by a skilled team, both in an integrated manner, may produce improved capital investment decisions. Based on the taxonomies of the two perspectives and the critical analysis, suggestions for further research are indicated. In the next section, the research agenda is presented, with issues and indications for in-depth studies on the theme.

5 CONCLUSION AND RESEARCH AGENDA

Since the 1960s, there have been evidences of a theory-practice gap in capital budgeting. Business managers have not used the most sophisticated practices suggested by academicians. Studies carried out in the 2000s show that the gap persists.

Despite the importance of the decision making of capital investments, it is curious to think that investment proposals are assessed in a manner that is contrary to theory, with chances of risks to the organizations. More than that, there is no explanation for the fact in the literature, who and which factors influence the use of less or more sophisticated practices.

It was observed the need for an integrative review, which allowed a new approach about the use of capital budgeting practices, i.e., examining the relationship between the organizational and managerial characteristics with the use of

the practices. Based on what previous studies described, it was observed that there are organizational and managerial relationships and explanations that affect the adoption of less or more sophisticated practices.

It was found that the theory-practice gap is related both with the organizational and managerial characteristics from the practical point of view, but also requires a review by researchers. The business' structure has influence in terms of its size, capabilities, personnel, technology and the manager selection. Organizations should seek professionals with experience in capital projects analysis, who are familiar with and knowledgeable in the use of more adequate practices to make decisions. On the other hand, researchers should have data available to validate the relationships that are proposed, once the gap may be in theory, not in practice.

While research shows, for example, that younger CFOs and senior managers with business experience are associated with more innovative and / or sophisticated accounting and control systems, a range of promising opportunities for future research remains open (HIEBL, 2014). Is it possible that managers and organizations deny the use of the most sophisticated practices, that such practices are simply not suitable for all contexts, or that it is research that fails to portray them?

Valuable contributions can be made, addressing the effect of additional accounting and management control systems, in addition to higher-level characteristics and investigation of variables moderators of the Higher Level Theory.

For Tacheva (2007), although research on the effects of managers' characteristics on business results is abundant, questions about whether their demographic constructs have positive or negative effects on corporate performance are still open.

Thus, the realization of this research, in addition to contributing to the evolution of the proposed th*eme, increases the understanding of the relationship between the characteristics of top management and the way they use the accounting and management control systems.*

The search can also result in relevant suggestions for the professionals responsible for appointing suitable candidates for management positions. If it is possible to determine the desirable characteristics for a top manager, in the same way it will be possible use them for strategic people management, such as recruitment and training.

It is understood that there are both managerial characteristics that affect and explain the adoption of capital budgeting practices. Each of them has different impacts and can clarify the reasons why the gap between theory and practice in this topic remains, in addition to highlighting which aspects need improvement and investigation.

This study suggests that firms should provide continuous and specific training for managers and analysts to ensure that robust procedures of capital budgeting in general and discounted cash flow techniques in particular are employed. One of the reasons for not making sophisticated decisions is the lack of people, time and experience to handle capital expenditures. For this reason, improvements in constant training of engineering professionals (in considering capital budgeting as a part of the organizational culture and by a skilled team, both in an integrated manner) may produce improved capital investment decisions.

An explanation for the low use of sophisticated practices, as reported on empirical surveys, may be that capital budget decisions are made by a team and not by a single person, who had responded the questionnaire or the interview. In this regard, it is important to examine how the decision-making process regarding capital budgeting is conducted. Who are the decision makers? Are the persons who analyze the projects the ones who also make decisions? How tasks are assigned?

In summary, it is necessary to study in depth on how the managerial characteristics may affect the managers' selection, how firms make capital investments decisions and which is the impact of using more or less sophisticated practices on the business performance.

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