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ScienceDirect

International Journal of Project Management 35 (2017) 763 – 782

International Journal of Project Management

www.elsevier.com/locate/ijproman

IT benefits management in financial institutions: Practices and barriers

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Received 21 November 2016; received in revised form 25 March 2017; accepted 26 March 2017
Available online 8 April 2017

Abstract

The adoption of Benefits Management (BM) is important to ensure that information technology (IT) projects add value to the organization; however, the literature still lacks empirical evidence about how organizations are adopting IT BM. The aim of this study is to further investigate how IT BM is adopted in Brazilian financial institutions. A multiple case study approach was implemented at four leading financial institutions in Brazil by means of interviews, document analysis and a survey of 186 IT professionals. The study identified six practices affecting the adoption of IT BM (bonuses are linked to benefits, PMO is responsible for developing an organisational BM process, Net Present Value is used for selecting projects, goals are set before approval, executive committee approves projects, benefits are measured after deployments) and seven barriers to its adoption (difficulty adopting BM in agile projects, benefits are difficult to quantify, process is slow and bureaucratic, controlling costs/benefits are non-mandatory activities, lack of knowledge of BM, difficulty using techniques, resistance to new controls), some of which are newly identified. Finally, an action plan to resolve these issues is presented.

Keywords: Benefits management; IT projects; Project success; Financial service industry; Resource-based view

1. Introduction

In Brazil, as in the rest of the world, the financial service industry (FSI) is one of the largest investors in information technology (IT), responsible for 13% of Brazil's total investments in IT (Deloitte, 2016; Meirelles, 2016). Thus, technology is a major risk component that demands significant attention from the agencies that regulate the FSI, such as the Central Bank of Brazil (BACEN), which uses the CobiT framework to audit IT processes and requires the adoption of benefits management (BM) to ensure the successful benefits realization of IT projects (Fernandes and Abreu, 2014; ISACA, 2013; Sun et al., 2013; Terlizzi et al., 2016).

The successful benefits realization of an IT project is strongly associated with organizational performance (Chih and Zwikael, 2015), and this subject has received increasing attention in recent years as a distinct area of academic study (Hesselmann and Mohan, 2014). However, this discipline is still in its infancy; only a small number of models and tools have been produced (Doherty, 2014; Doherty et al., 2012), and they are not used consistently across different industries (Espinoza, 2014). Therefore, justifying, proving and monitoring these benefits has become one of the great challenges of IT management (Coombs, 2015).

Organizations can derive more benefits from IT projects when benefits are stipulated up front and are managed throughout the project's life cycle (Albertin and Sanchez, 2008; Aron and Smith, 2011; Marnewick, 2016; PMI, 2013). Nevertheless, the literature still lacks empirical evidence of the value of

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http://dx.doi.org/10.1016/j.ijproman.2017.03.006
0263-7863/00

adopting IT BM (Badewi, 2016). Four recent literature reviews considered the papers available from journal articles and conference proceedings since 1981 and highlighted the extent to which the concept of benefits management within IT projects has been neglected and remains immature (Breese et al., 2015; Coombs et al., 2013; Hesselmann and Mohan, 2014; Laursen and Svejvig, 2016).

Project management theoreticians recognize that different versions of project management are required in different circumstances, depending on the country, sector and size of the organization. Thus, it is important to expand this research field in order to accumulate studies from different industries around the world (Love et al., 2005; Turner and Ledwith, 2016). So far, few studies have attempted to analyze how BM is adopted in the FSI. This study aims to address this gap and expand the research field by attempting to answer the following question:

> How is IT Benefits Management adopted in Brazilian financial institutions?

To address this question, case studies were conducted in four of Brazil's major financial institutions. We used interviews, document analysis and a survey of 186 IT professionals. The resource-based view (RBV) theory combined with the BM adoption framework of analysis by Hesselmann and Mohan (2014) were used as a theoretical lens through which to analyze theoretical implications. As a result, this study identified six main practices adopted in IT BM and seven barriers that prevent its proper adoption, some of which are newly identified. Finally, an action plan to address these issues is presented.

This study proceeds by reviewing the related literature, followed by methodology, results and discussion sections. It finishes with conclusions and a discussion of the theoretical and practical implications of the findings. The relevant high-level interview questions and questionnaire are provided in the Appendix.

2. Literature review

To ground our study in extant BM theories, in this section we present the following topics: (1) important concepts about BM and the evolution of the literature; (2) the diversity of models developed by researchers and institutes for managing benefits and some established practices used worldwide; (3) BM in the FSI context, including some peculiarities of the Brazilian legislation involved; and (4) the importance of the adoption of BM, as well as its barriers and the framework of analysis that was used as a specific theoretical lens in this study.

2.1. Benefits management

BM is a discipline that manages concepts that function in parallel to project management. It aims to deliver a project's benefits and is defined as "the process of organizing and managing such that potential benefits arising from the use of IT are actually realized" (Ward et al., 1996, p. 1). Project benefits are "the flows of value that arise from the achievement of a project's outcomes" (Zwikael and Smyrk, 2012, p. 7) and to ensure that an IT project adds value to the organization (financial, quality, flexibility, innovation, etc.), its benefits and investments must be properly defined and their performance monitored throughout the project's life cycle (Albertin and Sanchez, 2008; Aron and Smith, 2011; Marnewick, 2016; PMI, 2013).

Studies about models that help make decisions on the right projects for the organization based on its costs/benefits emerged in 1981 (Laursen and Svejvig, 2016; Silverman, 1981) and the term "benefits management" in the IT context was introduced in the late 1990s (Farbey et al., 1993). It emerged from concerns about the low achievement of IT investment expectations. Although BM is still a very new discipline, a plethora of terms have been used to describe it in the literature, including "benefits realization", "realizing benefits", "value management", "value realization", and others (Hesselmann and Mohan, 2014).

Research on BM began in the mid-1990s with the study of academics in the UK. One of these studies, which was related to benefits management practices in UK industries, was conducted at the Cranfield School of Management and has generated a BM process model called the "Cranfield Method" (Breese et al., 2015). This method is still in use by over 100 organizations in the UK, Europe and the USA and has been widely cited (Hesselmann and Mohan, 2014; Ward and Daniel, 2012). The BM discipline is still evolving and, to aid comprehension of this area of study, Breese et al. (2015) used the Translation Theory as an approach to analyzing the development of BM over the last 25 years. Their study has identified four different stages:

> Stage 1 (1990s). The scholars who worked during this stage are called benefits management pioneers. This stage was characterized by consultancy and training that aimed to address the failure of IT-enabled business change programs and to set the tone for future BM development and uptake.
> Stage 2 (late 1990s–mid 2000s). This stage witnessed the early consolidation of BM into project management and IT guidance. Written guidance was produced by government agencies in those countries where BM had been pioneered, incorporating BM into policies and procedures for large parts of the public sector. There was also interest in BM from project management associations that were already recommending several activities associated with BM as part of the program and portfolio management process.
> Stage 3 (mid to late 2000s). During this stage, a network for best practice and maturity models was developed. This stage was also characterized by the widening of the networks associated with BM, creation of models to assess the capability and maturity of BM in organizations, development of Specific Interest Groups to develop and promote BM and the use of social media for collaboration.
> Stage 4 (2010s). This stage has brought about specialist accreditation in benefits management; it is characterized by the development of qualifications in BM specifically and the

incorporation of BM as a standard requirement in the education of project managers.

Preoccupied with the development of this emerging research area, in 2016, a special issue with four papers was published in the International Journal of Project Management addressing important questions (Zwikael, 2016): (1) Laursen and Svejvig (2016), in a literature review since 1981, identified six relevant theoretical frameworks and suggested four directions for future research, including the need to theorize by applying independent frameworks; (2) Marnewick (2016) highlights that IT project benefits are not correctly measured and related back to the business case, so this leaves organizations without any insight into whether IT projects contribute to organisational success; (3) Badewi (2016) described in a framework the relationship between Project Management and Benefits Management focusing on the authority and responsibility for the different processes that take place in a project during its life cycle; (4) Dupont and Eskerod (2016) studied a case from a bank in Europe and demonstrated that integrating a line manager in a formal role as a project benefit manager (project owner) can be a way to enhance benefit realization.

2.2. IT benefits management models and practices

A significant number of available empirical studies related to Benefits Management have focused on BM's technical aspects (Flak and Solli-Sæther, 2013; Hesselmann and Mohan, 2014). When an organization has more projects than it has resources to conduct those projects, it must establish procedures and rules to select the ones that best match up with organizational strategies (Martinsuo and Killen, 2014; Zeynalzadeh and Ghajari, 2011). Techniques of selecting and prioritizing the best projects are based on the relationship between the benefits and costs of each one, referring not only to purely financial criteria but to the gains and efforts necessary to implement each project (Pohekar and Ramachandran, 2004; Saaty and Vargas, 2013).

When success criteria are formally defined and then measured, IT project outcomes are improved and project resources are better utilized. In addition, those companies with the most effective models for defining and measuring IT project success share some important common techniques (Thomas and Fernández, 2008). The following models have been suggested by researchers and institutes as effective ways to manage benefits:

- The Cranfield Process Model by Ward et al. (1996) is one of the most well-known benefits models. This model consists of five stages: (1) identifying and structuring benefits, linking IT investments with business changes required to realize those benefits; (2) planning benefits realization by allocating responsibilities and defining the assessment criteria for the respective changes; (3) executing the benefits realization plan; (4) evaluating and reviewing the results; and (5) discovering potential for further benefits by means of documenting new experiences.
- The Active Benefit Realization model (ABR) by Remenyi et al. (1997) argues for the continuous assessment and management of potential benefits arising from the use of IT through the identification of the principal stakeholders that must be identified at the early stages of benefits analysis. The ABR approach consists of three phases: (1) setting the course – related to the development of sets of requirements under the headings of a business picture, a financial picture, and a project picture; (2) formative evaluation – related to assessing the progress of the project by means of an open and constructive discussion; and (3) moving forward – providing a feedback loop.
- Argyropoulou et al. (2009) also suggest that IT BM should be organized in three phases: (1) pre-project; (2) implementation; and (3) post-implementation review.
- Zwikael and Smyrk (2011) developed the Project Investment Evaluation (PIE) model for analysis of project investment success focusing on the two variables which a project's investment is assessed – worth and riskiness. Additionally, the authors proposed a new methodology to assess projects where performance is judged at three separate levels: project management, project ownership and project investment (Zwikael and Smyrk, 2012).
- Badewi (2016) developed a model focusing on the responsibility and authority for the different processes that take place in a project during its life cycle. While business managers are responsible for benefits realization, IT managers are responsible for delivering the outputs of the project. The probability of the project's success is enhanced significantly when these processes are integrated.
- The Project Management Institute's life cycle of benefits management includes four processes: (1) the benefits identification process - where business benefits are identified and qualified; (2) the benefits analysis & planning process - where projects are derived and prioritized, benefits metrics are derived, the benefits realization plan is established, and benefits are mapped onto the program plan; (3) the benefits realization process - where projects are monitored, the benefits register is maintained, and benefits realization is reported; and (4) the benefits transition process - where benefits are consolidated and ongoing responsibility is transferred (PMI, 2013).
- The Gartner Group's model of benefits management has three processes: (1) planning - estimating benefits, prioritizing based on benefits, and establishing accountability; (2) execution - developing solutions, preparing enterprises, and deploying solutions; and (3) harvesting - ensuring benefits are reaped and learning from the realities of benefits realization (Aron et al., 2005).
- Some other examples are the Benefits Realization Approach to IT investments by Thorp (2002); the Benefits Realization Approach – developed by measuring benefits at the project portfolio level using Key Performance Indicators – by Sanchez and Robert (2010), and the Benefit Realization Management method by Bradley (2016).

If there is a diversity of models, it's not surprising that there is also a diversity of practices. Previous literature demonstrates that the IT BM practices adopted can differ according to the

Table 1
Some practices grouped according to the four perspectives of the BM adoption framework of analysis by Hesselmann and Mohan (2014).

Perspective	Contribution/practices	Research	Author(s)
BM context (organizational perspective)	IT project management mindset change: (1) from Technology delivery to Benefits delivery; (2) from expenditure proposal to business case; (3) IT implementation plan to change management plan; (4) from business management as an onlooker/ victim to business management as involved and in control; (5) from a large set of unfocussed functionality to IT investment sufficient to do the job; (6) from stakeholders "subjected to IT" to stakeholders involved; (7) from trained in technology to educated in the use of technology; (8) from technology and project audits to Benefits Review.	Results from the benefits management approach	(Ward and Daniel, 2012)
	The benefits of an e-health project (digitalization of clinical reports) is measured from three different stakeholder perspectives: (1) top management - cost, time and mistake reduction (calculated on a Net Present Value of 5 years' cash flow); (2) patients - image/reporting improvement and reduced time until the report is available for diagnostic and therapeutic purposes; and (3) local community - avoid locomotion of citizens to pick up the report, thus reducing traffic and pollution.	Case study with a health care organization in Italy	(Buccoliero et al., 2008)
	Investment evaluation techniques of IT projects should consider three critical factors as an explicit requirement: (1) disbenefits (e.g., additional cost of hardware); (2) reliability (e.g., crashing computers); and (3) utilization (e.g., underutilization of developed functionalities).	Action research with twenty construction organizations in Finland	(Fox, 2008)
BM framework and method (technical perspective)	A popular method of evaluating a project is to forecast the project's cash flows and discount them by a risk-adjusted discount rate to calculate the project's net present value (NPV).	Conceptual model of a valuation methodology	(Espinoza, 2014)
	Management of costs and benefits throughout IT lifecycle: (1) tangible and intangible costs and benefits are evaluated in the business cases, but there is little follow-up; (2) time schedules and budgets are planned, but they are too optimistic; and (3) during operation, the costs are adequately controlled, but little attention is paid to the benefits (they are taken for granted).	Case study with eight financial organizations in the Netherlands.	(Berghout et al., 2011)
	Benefits can be measured using six perspectives: (1) strategy analysis – marketing and financial metrics; (2) investment concerns – cost and time metrics; (3) process assessment – impact on process metrics; (4) user needs identification – impact on job metrics; (5) technology requirements – system's reliability and information effectiveness metric; and (6) vendor features – quality of service metrics.	Case study with two pharmaceutical companies in Greece	(Argyropoulou et al., 2009)
	Managers spend much time and effort investigating technical and financial aspects (in a strategic sense) rather than risk and benefit aspects (in a tactical/operational sense). Projects are categorized into three types, and methods vary accordingly: (1) Innovation Projects (strategic project aligned with the portfolio of tactical projects). Evaluations occur in a multi-year budget and are validated every planning cycle. Prioritization is based on achieving the maximum market-leading benefits. (2) Maintenance (on-going changes to an existing system, where it is required to have a team in place). Evaluation is quarterly and is carried out by business (board and project team members). Prioritization is based on keeping costs to a minimum in terms of overhead and running costs. (3) Support (projects necessary to maintain the operation). There is no evaluation. Prioritization occurs on demand according to the criticality of the project; the projects are business survival projects.	Case study with a manufacturing organization (engineering components) in UK	(Sharif and Irani, 2006)
BM governance (control perspective)	Framework and associated mechanisms on how to assign accountabilities for the business and the IT stakeholders. The study also reveals the constituents of successful BM implementations and provides a set of prescriptive design principles.	Design science research that resulted in a design theory	(Ahlemann et al., 2013)
	State the importance of clear and appropriate roles between business and IS, aiming to mitigate rework, delays and additional costs.	Case study of three organizations	(Ward and Elvin, 1999)
	Inadequate IT governance practices affect BM realization negatively.	Exploratory survey with 236 questionnaires and 68 interviews	(Peppard and Ward, 1999)
BM user (humanistic perspective)	Issues concerning adoption and implementation of benefits management can be grouped into three main areas: (1) cultivating an organizational context and culture of benefits management in general; (2) issues related to organizing the benefits management process; and (3) issues of choosing and improving concrete methods and tools for benefits management.	Delphi study in public sector in Norway	(Paivarinta et al., 2007)
	There is a correlation between the wide use of BM practices and the organizational maturity of strategy, structure and staff.	Survey with 106 Taiwanese companies involved in B2BEC activities	(Chad Lin et al., 2004)

Note. Source: authors.

organization, sector of the economy, and country. Table 1 presents some IT BM practices grouped according to the four perspectives of the BM adoption framework of analysis by Hesselmann and Mohan (2014).

Another useful practice is the use of a checklist during the evaluation of an IT project to guarantee that the majority of benefits and costs are considered in the cash flow of the business case. Love et al. (2005) and Yu et al. (2006) developed a list with the most common benefits and costs of an IT project. Some possible benefits are increasing efficiency and productivity, reducing marketing and operational costs, enhancing growth and competitive advantage, and improving control, service quality and customer satisfaction. Some possible costs are hardware accessories, power supply, networking security, management time, training, and staff turnover.

2.3. IT benefits management and financial institutions

To achieve their long-term goals, create economic value, gain competitive advantage and optimize the use of limited resources, financial institutions need to ensure that they select the best projects to pursue (Martinsuo and Killen, 2014; Shenhar et al., 2001; Zeynalzadeh and Ghajari, 2011). Moreover, project risks that seem to affect only the IT project budget or schedule can spread throughout an organization and affect its long-term goals (Shenhar et al., 2007). To mitigate these risks, an organization must institute a strong framework of IT governance, such as the CobiT framework, which is based on mechanisms of control such as the adoption of IT BM practices (Marnewick, 2016; Marnewick and Labuschagne, 2011; Winkler and Brown, 2013).

The adoption of IT BM is required for the FSI in Brazil. The BACEN regulates all financial institutions in the country, and the assessment model applied in its audits is the CobiT® 5 (Fernandes and Abreu, 2014; ISACA, 2013; Sun et al., 2013; Terlizzi and Biancolino, 2014). The CobiT® 5 framework organizes IT into processes, which allows managers to control requirements, technical issues and business risks. Each process can be evaluated and classified according to a specific level of maturity, from 0-Incomplete to 5-Optimizing. The process known as EDM02-Ensure Benefits Delivery can be considered to have reached level 3-Defined when IT BM is formally adopted. Reaching this level requires the existence of a standard process by which the benefits of IT projects are monitored during the full life cycle, and the respective roles, responsibilities and authorities must be defined (ISACA, 2013). The minimal maturity level required by the BACEN for all processes is 3-Defined (Fernandes and Abreu, 2014, p. 36). Table 2 shows one possible IT governance structure that clarifies the objectives of governance and supports business strategies (Colella and Nunno, 2015). At the project level, Zwikael and Smyrk (2015) propose a governance model with two main players: the project owner (accountable for the benefits realization and represents the project funder's interests) and the project manager (accountable for delivering the outputs for achievement the project benefits).

2.4. IT benefits management adoption and barriers

An understanding of benefits is very important for at least four reasons: (1) it can create expectations among top management regarding the outcomes of IT projects because it offers an opportunity to evaluate the projects; (2) it may help to better predict achievable IT project outcomes, thus helping them to be realized more often; (3) it can provide guidance to IT managers who are proposing new projects and recommending priorities; and (4) it can give researchers an opportunity to characterize IT projects thematically (Lederer and Mirani, 1995).

Despite the body of evidence that the adoption of IT BM is associated with an increased likelihood of success in achieving organizational objectives by means of IT investments (Ashurst, 2011; Doherty et al., 2012; Ward and Daniel, 2012), the full life-cycle approach to IT BM is very limited and is still considered immature (Breese et al., 2015; Hesselmann and Mohan, 2014).

IT value is still very much an act of faith for many firms. Even if they perform rudimentary cost-benefit analysis, firms typically fail to do any post-implementation auditing to determine whether

Table 2
Three levels of IT governance.

Level	Structure	Characteristics
First	Board governance	Provide oversight of executive leadership and protect shareholder value. Defined by regulations that are specific to the enterprise's industry.
Second	IT investment council	Establishes guidelines for IT investments based on corporate strategy. Composed of a group of C-level executives (CEO, CIO, CRO, CFO, etc.) and directors. Prioritizes investments in case of conflicts.
Third	Business-IT project prioritization council	Prioritizes IT projects based on the business cases and information provided by the portfolio management office. Composed of 80% business executives and 20% IT executives.
	Enterprise architecture	Sets technical standards and establishes the methodologies of project management and software development.
	Portfolio management office	Creates and maintains the "supply side" of the IT portfolio. By understanding the types of resources and their availability, the project Management Office (PMO) works with the IT investment council and business-IT prioritization team to determine when projects can be implemented.
	Financial management	Verifies business cases, tracks the financial benefits of projects in progress and verifies financial results as part of benefit realization.
	Risk management	Calculates risks of investments and recommends the disapproval of those that are above the organization's appetite for risk (credit, image, liquidity, strategic, operational, environmental, etc.).

Note. Source: Colella and Nunno (2015).

IT is delivering what was expected (Bannister and Remenyi, 2000). In a survey of 196 firms from different sectors, Tallon and Kraemer (2007) found that managers typically use their perceptions, instead of formalized processes, to measure the benefits of IT projects.

Formal methodologies for estimating projects' benefits are generally used, but less formality is applied to managing and realizing those benefits (Lin and Pervan, 2003), and bureaucracy is one of the main barriers to the adoption of project management practices (Turner and Ledwith, 2016). The inherent difficulties of identifying and assessing the benefits and costs of IT adoption are often a cause for uncertainty about the impact the investment might have on the business. It is often all too easy for businesses and management to ignore, or ineffectively evaluate, their IT investments (Love et al., 2005). Furthermore, table 3 lists some barriers to the adoption of IT BM that have been identified in the literature.

According to Jenner (2009), there is a lack of agreement regarding benefit classification and measurement. The literature on BM adoption tends to focus on 'how to' guides (Bradley, 2016) and does not provide insights or explanations related to other perspectives on BM uptake (Breese et al., 2015; Hesselmann and Mohan, 2014).

Considering the postulate of Wernerfelt (1984) related to the RBV, which recognizes that an organization's resource position should be considered when strategic options are examined, in order to create a competitive advantage, we claim that developing BM practices is an important issue that contributes to business value.

The RBV started from an economic foundation (Acedo et al., 2006; Barney, 1991), appeared in information systems research in the mid-1990s in an attempt to identify and define either a single IT resource or sets of IT resources (Wade and Hulland, 2004), and was finally mentioned in the BM research in 2004 (Laursen and Svejvig, 2016). It was when Melville et al. (2004) developed a model of IT business value based on RBV and Peppard and Ward (2004), also based on RBV, proposed a perspective on the management of IT that takes into account how organizations can leverage value through IT in a continuous way.

Ashurst et al. (2008) by means of a scrupulous review of literature and 25 projects analysis, developed a benefits realization capability model that is enacted through a coherent set of benefits realization competencies closely related suite of benefits realization practices. Braun et al. (2010) in their study with 29 organizations applied RBV theory in order to understand how organizations translate their resources into benefits management competencies, the authors argued that BM resources increase the organization's capability to exploit IT resources.

There are some studies in the BM field underpinned on RBV that discuss how organizations can increase the likelihood of their IT investments' benefits be realized (Ahlemann et al., 2013; Ashurst et al., 2008; Hesselmann and Mohan, 2014). So

Table 3
Barriers to the adoption of IT BM.

Barriers	Research	Author(s)
- Investment appraisal is treated separately from system development, which is dealt with separately from operations. - Business cases are often incomplete, and project goals are primarily qualitative and often unrealistic. - Projects tend to dissolve into vague requirements and unclear budgeting and planning procedures. - Controlling costs and benefits consists of ad hoc activities. - Evaluation criteria are seldom used and are different for each proposal. - Subsequent evaluations/maintenance of the business cases are uncommon. - Operational risks are hardly identified. - Influences of other investments are difficult to isolate. - As goals are not measurable, often there is no evaluation.	Case study with eight financial organizations in the Netherlands.	Berghout et al. (2011)
- Reluctance of employees to adapt to change. - Lack of IT infrastructure support. - Technical uncertainty and lack of knowledge. - Minimal IT expertise. - Maintenance costs. - Uncertainty about how to measure potential benefits. - Uncertainty about how to measure the costs involved.	Survey with 130 small-to-medium-sized enterprises in Australia from different sectors.	Love et al. (2005)
- Benefits are not realized immediately. - Benefits are difficult to quantify. - Other factors may confound the benefits, rendering them indistinguishable. - Existing techniques are not appropriate for perceiving the value of the benefits. - It is difficult to plan when the benefits may be realized.	Conceptual model of a valuation methodology	Giaglis et al. (1999)
- Many organizations tend to give very little attention to intangible benefits when decisions are made.	Interviews with manufacturing companies in Australia.	Beaumont (1998)
- Many organizations have poor IT adoption practices.	Survey with 87 small-to-medium-sized enterprises in Australia from different sectors.	Fink (1998)
- The management of IT is a technical issue. - The cost should be justified by the financial bottom-line. - The functionality of IT is a benefit in itself.	Survey with 60 respondents from diverse industries in the UK	Ward et al. (1996)

Note. Source: authors.

far, there are few studies focused on the understanding of the RBV in the context of IT BM adoption.

Hesselmann and Mohan (2014) proposed a BM adoption framework of analysis with four interwoven perspectives. It was supported by 42 papers about IT BM published between 1990 and 2013 and adapted from the framework of Leavitt and Bahrami (1988), which argues that any organizational change must account for people, technology, business structure, and control mechanisms. The four perspectives are as follows:

- BM users (humanistic perspective): intended to improve understanding of actual users', i.e., employees', acceptance and proper use of BM; considers whether the needs of users must be taken into consideration to avoid barriers that could arise if management practice does not address the concerns, fears, desires, wishes, and needs of the employees affected by the practices;
- BM framework and method (technical perspective): related to the established models and techniques that are expected to enable successful benefits management;
- BM context (organizational perspective): related to the organizational context that shapes organizational culture, IT projects, and departmental collaboration, which may influence the adoption of BM;
- BM governance (control perspective): aims to verify whether activities focused on monitoring and controlling BM adoption are being carried out. This activity involves taking roles, responsibilities, and control mechanisms into account as vital and should be assessed from a control perspective by establishing clear guidelines for better steering, monitoring and prevention of resistance.

These four perspective are very close to RBV, which argues that an organization develops competitive advantage by not only acquiring but also developing, combining, and effectively deploying its human (the skills, knowledge, and behavior of employees), physical (physical, technological, plant and equipment), and organizational (control systems, routines, and learning mechanisms) resources in ways that add unique value and are difficult for competitors to imitate (Amit and Schoemaker, 1993; Barney, 1991). The RBV approach was also adopted by Feeny and Willcocks (1998) as a way to focus on competencies within the IT function (Peppard and Ward, 2004).

In this study, we used the RBV theory and the BM adoption framework of analysis as a theoretical lens to discuss theoretical implications. This model's different perspectives allow a more holistic view of the theme in practice, not only by focusing on BM's methodological aspects but by identifying other elements that influence BM adoption.

3. Research methodology

The reason for researching the FSI has been outlined above. Therefore, the empirical research conducted in this study employed the multiple case study method. Case studies provide researchers with an opportunity to understand the conditions that are present in a particular situation (Yin, 2013); they are frequently used in IT studies (Sarker et al., 2012), and they are particularly appropriate for investigating management aspects rather than technical aspects (Benbasat et al., 1987).

In case studies, it is recommended that data be collected from a variety of sources. Interviews are one of the most important sources of facts and opinions; documentation can be used to support evidence from other sources, as archival records are precise and quantitative; and surveys are used to collect opinions relevant to the analysis of facts (Yin, 2013).

To address this paper's research questions, case studies were conducted at four leading financial institutions in Brazil. In addition to the fact that the FSI invests in technology more than any other sector and is expected to display superior IT management techniques (Berghout et al., 2011; Febraban, 2015), the most relevant financial institutions (based on Net Income) in Brazil were selected, using the analogy of Siggelkow (2007): organizations that are '*talking pigs*' and can be benchmarks of the sector. Together, the cases studied here represent 51% of the industry's Net Income and are leaders in their fields. The unit of analysis was that of established IT BM practices.

There is no recommended number of interviews to conduct, but it is suggested that the number of interviews be reported (Sarker et al., 2012) and follow the concept of saturation - i.e., interview until the marginal improvement of collecting new data becomes small (Glaser and Strauss, 2009). Thus, the case study design of each company is described in the following sections and the relevant high-level interview questions are provided in Appendix 1. The criteria for selecting the interviewees were the seniority and involvement of the employee with the BM discipline. Thus, most of our interviews were conducted with managers and technical leaders of each Project Management Office (PMO) because, in the studied organizations, this is the department responsible for BM guidelines.

The case study design is the logic that links the data to the conclusions, thus ensuring coherence in defining the research question, defining the unit and period of analysis, linking the data to the research question, and defining the criteria for interpreting the findings (Yin, 2013).

The study of each company was mainly based on sets of three or four individual semi-structured interviews (all interviews were recorded), one feedback session and the documented IT BM guidelines, which were usually integrated with the project management methodology. Additionally, at company A, an electronic survey was conducted with 186 IT professionals.

Finally, in May 2016, after interviewing the teams at companies B, C and D, we returned to company A to debate the practices used at other companies and discuss an action plan that could reduce the barriers to the adoption of IT BM. The action plan is described in detail in the section on "Practical implications".

3.1. Studied organizations

To facilitate an overview and understanding of all four companies, their characteristics are described in Table 4.

Table 4
Characteristics of the studied companies.

Characteristics	Company A	Company B	Company C	Company D
Segment	Multiple bank	Credit union	Multi-brand acquirer	Multiple bank
Products/services	Loans and advances and deposit-taking, credit card issuance, purchasing consortiums, insurance, leasing, payment collection and processing, pension plans, asset management and brokerage services.	Credit, receipts, cards, consortiums, foreign exchange, checking account, insurance, investment, payments and social security.	Multi-brand acquirers of credit, debit and benefit card transactions with loan solutions for medium and small companies.	Loans and advances and deposit taking, credit card issuance, purchasing consortiums, insurance, leasing, payment collection and processing, pension plans, asset management and brokerage services.
Total assets	More than US$ 250 billion	More than US$ 20 billion	More than US$ 50 billion	More than US$ 250 billion
Employees	More than 80,000	More than 20,000	More than 2000	More than 80,000
IT department	More than 5000 internal and external collaborators	More than 500 internal and external collaborators	More than 1000 internal and external collaborators (intensive use of IT)	More than 5000 internal and external collaborators
PMO	Local IT PMO	Corporate PMO	Local IT PMO	Corporate PMO
Portfolio of IT projects	More than 2000/year	More than 200/year	More than 500/year	More than 2000/year
Business units	More than 10 countries	Only in Brazil with international partnerships with others banks	Only in Brazil	More than 10 countries
Location of interviews	Meeting room at the company's headquarters in São Paulo	By telephone	Meeting room at the company's headquarters in São Paulo	Meeting room at the company's headquarters in São Paulo
Date of interviews	January 2016	March 2016	March 2016	April 2016
Interviewers	Four members of the PMO: #1–PMO senior manager [a] #2–PMO manager [b] #3–PMO technical leader [c]	Four members of the PMO: #4 – PMO senior manager [a] #5 – PMO manager [b] #6 – PMO technical leader [c] #7 – PMO analyst [d]	Three members of the IT PMO: #8 – PMO senior manager [a] #9 – PMO manager [b] #10 – PMO technical leader [c]	One member of the IT project auditing department and two members of the PMO: #11 – Manager of IT project auditing department [e] #12 – PMO manager [b] #13 – PMO technical leader [c]

Note. Source: authors.
[a] PMO senior manager – responsible for organization-wide IT deployment and general strategic decision making.
[b] PMO manager – responsible for controlling and monitoring the portfolio of projects that are in progress.
[c] PMO technical leader – responsible for guidelines and training.
[d] PMO analyst – responsible for monitoring, in detail, specific projects and supporting their project managers.
[e] Manager of IT project auditing – responsible for auditing strategic projects that present potential risks to the organization.

3.2. Interviews — data collection and analysis

The data collection was performed by means of thirteen interviews with the PMO professionals. The interviews took place from January to April 2016, and, during this period, internal documents were also collected, such as methodology guides, policies, business cases and project presentations by the teams responsible for the PMO.

The individual interviews were recorded and took 1–2 h each. The feedback sessions with the entire team took 2 h on average. Each interview was transcribed as soon as possible after the interview, as recommended by Miles and Huberman (1994). The interview transcriptions were read several times so that the researchers could become familiar with the data in greater detail (Eisenhardt, 1989). Coding considered the existing categories established in the BM adoption framework of analysis (Weber, 1990), in addition to the method of constant comparison for data analysis, through which patterns were sought (Glaser and Strauss, 2009; Strauss and Corbin, 2014). The data analysis was performed using cross-case analysis. The interview answers and documentary evidence were compared with the practices and barriers previously identified in the literature review. The findings were classified and then discussed in a feedback session with the entire team.

Triangulation of the findings through documents and other data was performed. However, while the interviewees appeared to be very open in their discussion of events, concerns about confidentiality were significant, and in some cases, the intellectual property of documents was of concern. For these reasons, the organizations have not authorized the disclosure of their names.

3.3. Survey — data collection and analysis

The electronic survey was authorized only at company A, which is the most relevant company in our sample. The other three companies did not allow the survey due to internal policies. Based on the interviews with the PMO professionals who had good knowledge about the IT BM, it was possible to corroborate the literature and prepare question 1 of the survey questionnaire (Appendix 2) using the eight identified factors that could impact the proper adoption of IT BM in a financial institution.

Before the distribution of the electronic questionnaire, the question was discussed and validated with the PMO team, which suggested including an open question for additional comments. Considering that resistance to change is one of the barriers to the use of a set of processes and practices that is mentioned in the literature review, this type of analysis helps us to understand whether the organization's IT professionals were culturally prepared for future improvements in the process.

Using the software Survey Monkey, the electronic questionnaire was sent by the PMO on February 1, 2016, to all of the IT professionals with the "Project Manager" role in the project management information system (1,280 invitations). There was a return rate of 14% (186 responses) within two weeks. The answers to the question were analyzed using frequency distribution analysis, and the comments were individually analyzed to identify additional barriers that were not considered in the closed question.

4. Results

The research has provided valuable insights into how organizations can succeed in using IT BM, as well as insights into the barriers that prevent its adoption. In the following subsections, we describe the results from the four studied companies.

4.1. Company A

This organization employs a project management methodology for traditional and agile IT projects; the methodology is published on the intranet that is integrated with the IT BM and is widely disseminated among all of the IT professionals and business owners. The guide to the organization's IT BM states the following:

> The benefits management methodology establishes guidelines for proper planning and allocation of investment funds in IT projects, through assistance to major projects in relation to the study of its economic and financial viability, classification, assessment of intangible assets, monitoring, and controlling. Projects are classified into business, IT and support.

The methodology is mandatory only for projects requiring more than 2,000 h of development or more than U$ 100,000. The sponsor, in conjunction with the project manager, is responsible for (a) developing the business case and quantifying the costs, benefits and metrics that will be used to capture the generated benefits; (b) managing the costs of the project during its execution; (c) capturing the benefits of the project after project implementation; and (d) defining and validating the allocation of project costs for the responsible departments.

According to the interview with the personnel from the PMO, which is responsible for maintaining the IT BM in the organization, the process of selecting IT projects is centralized and conducted by the IT PMO. All project proposals are registered on the project management information system (PMIS) for prioritization and approval, but only those that exceed a pre-established investment amount must have a business case. The business case, with the expected cash flow of investments and project benefits, is assessed by the PMO and the finance department, which calculates the net present value (NPV) and analyzes the project's financial viability.

New projects are discussed every four months in an executive committee meeting attended by business and IT executives; they prioritize and select the projects with the highest NPV, minimum required investments and quickest returns. Business projects are classified and organized into three different categories: corporate IT projects (usually infrastructure projects with high investments), business projects (creation of new products and/or services or improvement of existing ones) and support (maintenance of legacy systems,

operational risk and regulatory issues). Support projects do not need to prove their financial benefits, so they do not follow the benefits management guidelines.

Project benefits are captured by the sponsor, who is an executive of a line of business (LOB), after partial deliveries or after the end of the project; they are then reported to the PMO. However, there was a failure in the process and the indicators were not being adequately established and formalized in the business case during the process of project selection, so it was not possible to distinguish whether the reported benefits were actually derived from the implementation of the project or from other initiatives, for example, a marketing campaign. This process was enhanced in October 2015, but the problem remains for all approved projects before this date.

At the time of the study, there were two recognized controls intended to ensure the proper use of the processes and practices: (1) to register a new project costing more than the pre-established amount in the PMIS, it was mandatory to upload the business case approved by the executive committee; (2) it was desirable (not mandatory) that the sponsor report to the PMO the indicators of the captured benefits after partial deliveries or the end of the project.

> "Since October (2015), when we evaluated the business case, we have assessed whether the indicators of the benefits are well discriminated and how they will be monitored… The capture of benefits was never required in our company, so, people are not prepared to be charged for it. There is necessarily a period of adaptation, acculturation in benefits management. Today the project costs are accounted in the department budget of the sponsor for the next three years, but not the benefits. We are trying to enhance this process in partnership with the financial department, but we are facing some technical issues." (PMO senior manager; #1).

The literature explains the importance of using BM and mentions some barriers to its adoption; however, there is a lack of studies identifying the barriers that may impact its adoption in IT projects in the FSI. Simply implementing an IT BM model for IT projects is not enough; its proper use is fundamental so that the benefits can be captured.

Question 1 of the survey questionnaire (Appendix 2) was based on previous literature, and it was discussed and validated with the PMO. It has eight identified factors that could impact the adoption of IT BM in financial institutions. The graph of Fig. 1 plots the results, showing that only 22 (12%) participants answered that there are no barriers to the adoption of IT BM, while 164 (88%) participants indicated that there are some barriers.

The top five barriers are benefits are difficult to quantify (74% - 122 answers); the process is bureaucratic and slow (70% - 114 answers); controlling costs and benefits are non-mandatory activities (59% - 96 answers); lack of knowledge about benefits management (54% - 88 answers); and difficulty using the tools and techniques (52% - 85 answers).

In addition to the closed questions, filling in the comments field was mandatory and the responses were analyzed individually. After the analysis, one additional factor was identified: difficulty using benefits management in agile projects (48% - 78 answers). Additionally, the comments were useful for understanding, in more detail, the problems faced by the IT professionals. Table 5 presents ten examples of additional issues reported in question 1 by the survey participants. All of the answers were provided to the PMO, and analyzing the responses helped the PMO to (1) understand the difficulties faced by project teams on a daily basis; (2) adapt the processes to the users' needs; and (3) justify to the executives the investment in process changes and training.

Notably, the organization undergoes a process of acculturation in benefits management such that the IT professionals are aware of the practices, and there are some barriers that make BM adoption difficult. Knowing about such barriers and the practices used by other financial institutions is very important for the PMO and the executives and can make it possible to implement an action plan that eliminates the barriers and allows the benefits proposed by the BM to be achieved (section Practical Implications).

4.2. Company B

Although 70% of all projects executed in this company are IT projects, the board decided on the implementation of a corporate PMO subordinated to the Chief Financial Officer.

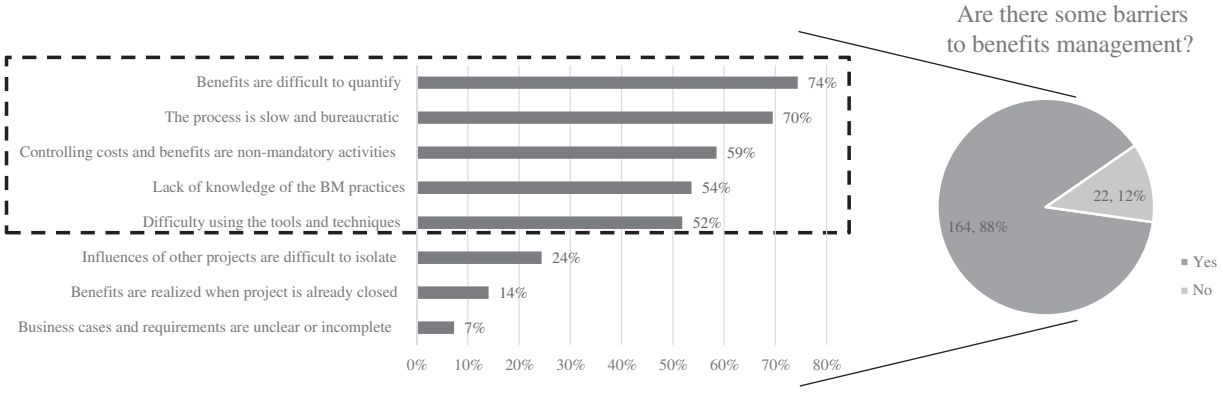

Fig. 1. Barriers to benefits management.
Source: authors.

Table 5
Additional comments reported by survey participants in question 1 (Appendix A).

#	Answer
1	"*It is a long and messy process. Simpler and smaller committees could streamline the process. Mainly thinking of agile projects that have several value deliveries over the sprints*."
2	"*In general, I believe that the current process and the used tools meet the business needs. I just have difficulty with projects that allow partial deliveries, especially those that use the Scrum methodology. The investment calculator allows us to register only one deployment date and capture the benefits only after this date. I think that the investment calculator could be adapted for this type of project, which is increasingly common here at the bank*."
3	"*The process is very bureaucratic and the employees were not properly trained and qualified to perform this activity. The process needs to be more dynamic because the approval of projects takes place only every four months, it's too difficult keep up with competitors*."
4	"*I'd like to suggest the creation of smaller and more frequent committees to deal with agile projects that generally have lower costs. For example, this committee could be formed only by senior managers without the presence of the directors to handle projects up to* 10,000 h."
5	"*The PMO attend us very well, but the process is very slow and bureaucratic*."
6	"*The project budget is not restricted to the amount approved in the business case. When the project is over-budget, the technology team continues launching hours in the project without the need to revalidate the project in the investment committee. Moreover, I don't see an assessment from the PMO after the end of the project. I think it would be important to assess the real benefits obtained and compare them with the information declared in the business case*."
7	"*I understand that we have to approve and prioritize the projects with greater benefits. However, I have never witnessed a discussion that really assessed whether the costs and benefits presented in the business case are real. I also note that the sponsor and project manager are not accountable, after the project's completion, to present the benefits indicators declared in the business case. That is, are we really approving the best projects? Do the numbers declared in the business cases make sense?*"
8	"*The concepts used to calculate the project costs and benefits are too complicated. It is very difficult to identify only financial benefits! For example, I'm trying to approve a project that will convert the technology used in our mobile app from WebView to the native language of iOS and Android. How is it possible to quantify the financial benefits of a project like that? With sure we don't have a financial benefit with this project, because we will have benefits only in the following projects!*"
9	"*In my opinion, we don't accurately estimate all indirect benefits of a project with our methodology. For example, it is easy to calculate the reduction of people in a department when we automate a process, but the quality gains with the new information system are more difficult to measure*."
10	"*The process should be optimized and the executive's committees should be more frequent. As the committee takes a long time to happen, if the project has any inconsistency and is not approved at that committee, it has to wait for the next. That means, when the project is formally approved, we are already late!*"

Note. Source: survey.

Consequently, the PMO is an empowered independent department that can support the executives at a strategic level.

The process of selecting IT projects is centralized and conducted by the corporate PMO. All project proposals are registered in the PMIS for prioritization and approval and are accompanied by a business case with the expected cash flow of investments and project benefits. An interesting practice found in this organization is that the business case must be assessed and approved by the PMO before it reaches the executive committee.

> "We assess the business case BEFORE the project approval. The business case MUST contain all indicators that support the project, because it is considered a contract between the business owner (sponsor), PMO, strategic planning department, and finance department…everything is recorded in Clarity, this is very important, we have to register the documents in the project management information system because it will be used throughout the project life cycle, especially after the software deployment… All these rules had already been established with the departments and are formalized in internal policies… The assessment MUST be carried out before the project approval and this was an important evolution that we made here in the company. It was different 4–5 years ago, and we learned a lot from our mistakes. You can't define the indicators when the project is delivered, it doesn't work! You have to establish goals to the indicators." (PMO manager, #5).

New projects are discussed every three months in an executive committee meeting attended by business and IT executives who prioritize and select the projects with the highest NPV. Projects are classified and organized into two different categories: IT/infrastructure and businesses projects (cards, insurance, investments, payments, etc.). Additionally, there is a pre-approved budget line for supporting the legacy systems, including regulatory issues.

The project performance indicators are evaluated by the corporate PMO in two ways: (1) project efficiency – the PMO evaluates whether the cost, time and scope were realized as planned; and (2) products/services effectiveness – the PMO calculates whether the benefits generated through the products/services deployed by the project achieved the estimated benefits, thus remunerating the investment as planned.

For the post-project, the company has a process through which it evaluates the project's performance; in this process, project managers have a bonus system linked to the achievement of the cost, time and quality goals of the project, including the quality of the technical project documentation. The PMO also conducts a survey with the sponsor (business department) to capture their feedback and validate whether the deliverables met their expectations. If deliveries do not meet expectations, the PMO develops an action plan to promote process improvement.

In addition, the process of capturing the product/service performance generated by the project is well established. The project continues with the status "open" in the PMIS for up to three years, and the financial return indicators are periodically assessed and compared with the indicators declared in the business case. Indicators are monitored by the department of strategic planning in partnership with the finance and business departments using the balanced scorecard system. The indicators

are part of the executive's goals and, in the case of deviations, the PMO supports and monitors the action plan implemented by each business area to achieve its goals.

> "These changes that we implemented in the last four years were fundamental to improving the process. I am from Holland and worked for three large Dutch banks: ABN, ING and Rabobank. I don't have in Brazil the difficulties that I had in those banks. In Holland, we closed the project and forgot it, we did not monitor the benefits. Here our methodology is very clear, the project can't be closed when the software is delivered. We have projects that continue open for up to three years. We only close the project after the accountability because we have to wait for the return on investment. The first year was tough! The departments didn't like when we implemented this methodology, but now it has become part of the organization's project management culture. We also noted that, in recent years, the quality of the business case is much better. This happens because the business owners, together with the project managers, know that they will be charged by the results and strive to estimate it the best they can. When the capture of the benefits begins, we present the project performance every month to the board." (PMO senior manager, #4).

Furthermore, to ensure the team's commitment and accountability for the IT investments, an important mechanism of control was recently implemented. The bonus payment of the managers and executives involved with the project is linked to the accomplishment of the estimated project benefits. Thus, an efficient project positively influences the manager's bonus and an effective product/service positively influences the executive's bonus, and vice versa.

4.3. Company C

At this company, the process of selecting IT projects is centralized and conducted by the IT PMO. All project proposals are registered in the PMIS for prioritization and approval and include a business case with the expected cash flow of investments and project benefits. The finance department calculates the NPV, analyzes the project's financial viability and evaluates whether the declared project performance indicators are measurable. If the declared indicators do not exist, their creation must be incorporated into the project's scope.

New projects are discussed every two months in an executive committee meeting attended by business and IT executives who prioritize and select the projects with the highest NPV. Unlike at the other companies, the executive committee also deliberates about the performance of projects currently in process. All projects are classified as business projects, but there is a pre-approved budget line for supporting legacy systems, including regulatory issues.

The process of capturing project benefits is not working as expected. There is a clearly established process where the IT PMO, before the project begins, evaluates the estimated project performance indicators identified in the business case. However, after the project ends, the IT PMO does not have the authority to access the LOB budget to evaluate whether the project's benefits are being derived as estimated.

> "There isn't a department responsible for the benefits capture. Last year, we had some projects in which the business department captured the project's benefits and the finance department assessed them, by comparing the planned cash flow registered in the business case against the realized cashed flow; however, this process was discontinued and we (IT PMO) don't have access permission to see the cash flow of the business departments. So, to do this job, unfortunately, we need the assistance of the finance department, which does not have this responsibility stated in their activities. We are adjusting our processes, and will submit a new proposal to the CEO; we need to empower our team and obtain access to financial information; otherwise, we can't guarantee the capture of benefits and validate the project's success." (PMO senior manager, #8).

It is important to mention that the PMO team is responsible for assessing the quality and correct formalization of some output documents recommended by the project management methodology (Table 6). The results of this assessment generate a report that is used to evaluate the project manager's performance.

4.4. Company D

At this company, the process of selecting IT projects is centralized and conducted by the corporate PMO. As there is no standard document that formalizes the business case, sometimes the benefits indicators are not explicitly declared. The project's cash flow is registered in the PMIS, which calculates the NPV for the evaluation of the finance department.

New projects are discussed every three months in an executive committee meeting attended by business and IT executives who prioritize and select the projects with the

Table 6
Recommended output documents from the IT Project Management Methodology.

Area	Document and Description
Integration	Business case – documents the cash flow (costs and benefits) and specifies the new product/service.
Stakeholders	Stakeholder list – a document that identifies the project's stakeholders and their responsibilities.
Scope	Requirements Specification – the details of the requirements and business rules that the IT project will meet.
Time	Schedule baseline or Roadmap – the approved version of the project schedule considering the resource requirements, and the constraints.
Risk	Risk register – a document in which the results of the risk analysis and risk response plan are recorded.

Note. Source: adapted from the IT Project Management Methodology guide available on the organization's intranet.

highest NPV. Projects are classified and organized into three different categories: corporate IT projects, business projects and support (includes regulatory issues). After approval, the project receives a unique code and is registered in the budget system, where project outflows are monitored and payments to suppliers are approved. It is important to highlight that the various existing LOBs have pre-defined annual budgets for IT projects that cannot be changed without the approval of the vice-president, and this procedure encourages the appropriate management of project costs.

> "The finance department evaluates the business case to ensure the project's economic viability. When a project is approved, its formalization follows the budgeting process, where: (1) the project's cash flow is registered in the corporate tool budget; (2) hours of internal development are released and the project manager allocates the team members; and (3) hours of external development, purchase of software licenses and hardware procurement follow the bidding process established by the purchasing department." (PMO manager, #12).

The project's benefits are directly linked to the LOB budget. This means that each project has a specific cost center for both investments and benefits. This cost center is used to debit the project costs and also to credit the project benefits that were identified in the business case.

> "We are very strict during the audit process. We demand that the costs and benefits of the project are very well described and formalized. We have a commitment to shareholders, customers, employees and society, and it is our responsibility to manage the company's resources well. When we find a nonconformity, we report the finding to the senior manager and the administrative council, so that the problem is solved. Our project auditing team has only 4 people and we are able to evaluate only a small sample of the bank's projects, that's why we are rigorous in pointing out the problems. More than solving the problem, we want to prevent this situation from occurring again in other projects. In 2014, after a lot of discussion and resistance of the executives, and with the support of the administrative council, we determined that both the costs and the benefits of the projects should be allocated in the LOB budget. The LOB budget is linked to the executive's goals; thus, this was the easiest way that we found to ensure the fulfillment of the benefits of each department's project portfolio." (Manager of IT project auditing department, #11).

5. Discussion

In this section, we perform a cross-case analysis and discuss the findings based on relevant concepts identified in the literature. In addition, propositions are offered.

Table 7 summarizes the main characteristics of all four studied organizations according to the four perspectives of analysis by Hesselmann and Mohan (2014).

Table 7
Cross-case analysis.

Perspective		Company A	Company B	Company C	Company D
BM governance (control perspective)	Responsible for conducting the process	IT PMO	Corporate PMO	IT PMO	Corporate PMO
	Responsible for prioritization and approval	Executive committee	Executive committee	Executive committee	Executive committee
	Frequency	Every 4 months	Every 3 months	Every 2 months	Every 3 months
BM framework and method (technical perspective)	Project management information system	Changepoint from Compuware	Clarity from Computer Associates	Project and portfolio management software from Legato Solutions	Project and portfolio management software from Hewlett-Packard
	Categorization of projects	Business, IT, support, operational risk and regulatory risk	IT/infrastructure, business, support	Business and support	IT, business and support
	Prioritization criteria	NPV, minimum investment, and quick return	NPV	NPV	NPV
BM context (organizational perspective)	Formalized benefits indicators	Partial (recently initiated)	Yes	Yes	No
	Capture of benefits	Monitored by the line of business and reported to the PMO	PMO measures the project's benefits that impact the bonus payments of managers and executives	Temporarily discontinued	Benefits directly affect the LOB budget
BM user (humanistic perspective)	Issues for adoption	People are not 100%. In phase of adaptation and acculturation.	Initial resistance to BM implementation. Today is part of its culture	PMO requests for more empowerment and access to financial information	Initial resistance to including the project's benefits in the LOB budget

Note. Source: authors.

The PMO is responsible for developing an organisational BM process while the project owner is the one responsible to implement this process in any individual project. The PMO plays a critical role in BM, verifying business cases, tracking the financial benefits of projects in progress and verifying financial results as part of benefit realization. By understanding the types of resources and their availability, the PMO works with the IT investment council to determine when projects can be implemented. In companies A and C, the PMO is exclusive to the IT department and is subordinated to the Chief Information Officer, but in companies B and D, the PMO is subordinated to the Chief Financial Officer, guaranteeing its independence from other departments, including the IT department.

Although the processes are not standardized across the companies, we found a clear set of processes in all studied companies. The projects are prioritized and approved by an executive committee composed of business executives and IT executives, ensuring alignment with businesses strategies, and the committees' meetings occur every two to four months.

Considering the large number of IT projects concurrently executed in the studied organizations, it is not shocking that all of them reported the use of a project management information system (PMIS) to manage their portfolios of IT projects and the costs and benefits of these projects. Three of the four implemented PMIS are considered leaders or visionaries in the integrated IT portfolio applications software market, according to Gartner (Stang and Zijden, 2016).

Projects are categorized into (1) business – evolutionary maintenance or development of new systems; (2) IT/infrastructure – IT projects to support business growth; (3) operational risk – mitigation of operational risk events and regularization of audit findings; (4) regulatory risk – federal laws or regulatory enforcement, defining rules for care, services or products; and (5) support – maintenance of legacy systems.

Support, regulatory and operational risk projects are mandatory projects; consequently, these types of projects do not need to prove their financial benefits and do not follow the benefits management processes. Business and IT/infrastructure projects need to prove their financial benefits. For this type of project, the studied companies consider only the financial benefits that can increase revenue and/or reduce cost. The business case presents the planned cash flow, and the NPV is used to compare and prioritize projects. Specifically, at company A, there are two additional criteria that are used to support and rank the projects: minimum investment and quick return on the project.

Companies B and C, which are the smallest in the sample, declared that when evaluating business cases, the PMO assesses the quality of the declared project benefits indicators to guarantee that the benefits can be constantly monitored after each deployment of the project. Company A declared that this process was initiated only in 2015. The process at company D is simplified because the declared benefits are directly planned in the LOB budget.

With respect to the process of capturing the project benefits, it was found that, despite the lack of standard processes among organizations, three companies have some type of procedure that assesses whether the benefits produced as a result of the project remunerate the investments. The monitoring of benefits at companies A and B is realized by the PMO; at company C, monitoring was temporarily discontinued because of internal restructuring in the IT PMO; and at company D, the benefits automatically affect the LOB budget, so the responsibility for realizing the project's benefits is automatically incorporated into the personal goals of the executives responsible for the LOBs.

All companies reported that the process of adopting new controls to ensure the successful benefits realization of IT projects was not an easy task because managers and executives were initially resistant to the implementation of new controls. While companies B and D had already concluded the full implementation of their processes, companies A and C are still in the phase of adaptation and acculturation.

One interesting aspect related to project management is that all companies have a recognized methodology for managing IT projects aligned with the PMBOK – Project Management Body of Knowledge and/or Scrum – and an established methodology for software development (waterfall and/or agile), showing their concern with the formal and organized management of IT projects. Based on the RBV, these abilities to develop and manage projects can be one aspect of competitive advantage to an organization (Wade and Hulland, 2004).

Concerning the practices observed in the studied organizations related to the adoption of IT BM, we found one new practice and corroborated five others previously identified in the literature:

(1) The payment of bonuses is linked to the achievement of the project's benefits. An efficient mechanism of control is to link the variable bonuses of the managers and executives who are involved with the project to the achievement of the project's benefits. In this way, it is possible to guarantee the team's commitment and accountability (this is a new practice);
(2) The PMO is responsible for developing an organisational benefit management process, but a project owner is the one responsible to implement this process in any individual project. The definition and communication of the IT BM guidelines, including policies, processes, tools, techniques and practices, is the responsibility of the PMO. Furthermore, the PMO guarantees a portfolio view (dashboard) of IT investments and their costs and benefits. This finding corroborates previous studies (Colella and Nunno, 2015; Martinsuo and Killen, 2014; Zeynalzadeh and Ghajari, 2011);
(3) The main criterion for selecting an IT project is the NPV. When prioritizing a portfolio of IT projects, the studied companies mainly consider the financial benefits (cost reduction and/or revenue increase). Despite the fact that an IT project can deploy other benefits such as quality, flexibility, and innovation, the FSI is not familiar with these types of indicators. This finding corroborates previous studies (Buccoliero et al., 2008; Espinoza, 2014);

(4) A clear goal must be set before the project is approved. In other words, a business case, including the performance benefits indicators of the products/services deployed by the project, should be formalized and approved by the executive committee. This finding corroborates previous studies (Aron and Smith, 2011; Lederer and Mirani, 1995; Martinsuo and Killen, 2014);
(5) Large IT and business projects are periodically approved by an executive committee, ensuring alignment with businesses strategies. This finding corroborates previous studies (Albertin and Albertin, 2008; Colella and Nunno, 2015).
(6) The achievement of the project's goals must be measured after each project deployment. Therefore, the performance benefits indicators declared in the business case must be measured during production and compared with the estimated benefits. The results can be presented to the executive committee to justify the investments and measure the added value to the organization. This finding corroborates previous studies (Albertin and Sanchez, 2008; Marnewick, 2016; PMI, 2013);

Regarding the barriers that can prevent the proper adoption of IT BM, we found one new factor and corroborated six other factors previously identified in the literature:

(1) Difficulty adopting IT BM in agile projects. Usually, agile software development projects deliver value every 4 weeks because this is the time cycle of implementing a new software version in production. Thus, it is not feasible to develop a business case and present it to the committee within this short period of time (this is a new finding);
(2) Benefits are difficult to quantify. Planning the cash flow of a project is not an easy task, as it is often difficult to isolate the benefits generated by other investments. Moreover, qualitative benefits such as quality, flexibility and innovation are not considered as valid benefits when making a business case in the studied organizations. This corroborates previous studies (Berghout et al., 2011; Giaglis et al., 1999);
(3) The process is slow and bureaucratic. IT is a long and complex process, with many steps to be followed; it requires technical knowledge about finances that is not trivial for those involved. This corroborates a previous study (Turner and Ledwith, 2016);
(4) Controlling costs and benefits are non-mandatory activities. The project management information system allows the project to be finished prior to investment accounting, and managers are not formally responsible for these tasks. This corroborates previous studies (Berghout et al., 2011; Paivarinta et al., 2007);
(5) Lack of knowledge of the BM practices. Lack of training, staff turnover and the huge number of professionals involved in the process makes it difficult to keep the team up to date. This corroborates previous studies (Love et al., 2005; Mohan et al., 2012);
(6) Difficulty using the tools and techniques. Completing the business case for a project, calculating net present value, and monitoring the costs and benefits of a project in a large enterprise are complex tasks that require expertise in the disciplines of finance and project management. This corroborates previous studies (Love et al., 2005; Mohan et al., 2012);
(7) Initial resistance from managers and executives to the implementation of new controls. Controls necessary to ensure that the project's benefits are declared and assessed generates initial resistance because it makes the process less flexible and reduces the autonomy of those involved. This corroborates previous studies (Love et al., 2005; Mohan et al., 2012; Paivarinta et al., 2007).

Finally, based on the above analyses, we suggest the following propositions related to the proper adoption of an IT BM.

Proposition 1. To ensure the capture of the declared IT project benefits, the BM process must guarantee the independency of the project owner and support him with mechanisms of control that guarantee the team's commitment.

Proposition 2. To be successful and ensure benefit realization, organizations should establish an IT BM specific for agile IT projects with simple business cases, quick approval and small committees formed by lower executive levels.

Proposition 3. To preserve the funder's interests, the majority of IT projects must be prioritized based on the highest NPV; however, to avoid missing out strategic opportunities, a supplementary executive committee should be established to evaluate IT projects that are based on non-financial indicators (quality, flexibility, innovation, etc.).

6. Conclusions

Based on the literature review and the discussion of the results of the case studies, it is possible to answer the research question presented in this study: "How is IT Benefits Management adopted in Brazilian financial institutions?"

IT governance, through the work of executives with strategic knowledge and sufficient authority, is responsible for establishing mechanisms of governance and control to guarantee that important projects are selected. IT governance must also make it possible to assess whether such projects are being properly managed and deployed by the IT department so that the projects' benefits are captured. The adoption of IT BM as a mechanism of control is required by the external regulatory agency for Brazilian financial organizations because it is an end-to-end process that monitors the costs and benefits of the IT project throughout its life cycle; however, there are some barriers that can prevent its proper adoption.

Using the BM adoption framework of analysis by Hesselmann and Mohan (2014), it was possible to categorize the findings of this study (practices and barriers). This is

important in order to expand the research field and consolidate its existing theories.

Fig. 2 presents an adapted version of the BM adoption framework, complemented by the categorized findings of this study: (1) the BM context includes the policies and practices of HR and describes the necessity of adapting benefits methods to IT projects' characteristics; (2) the BM framework and method consider the stages of the process from a technical viewpoint, including its methods and techniques; (3) BM governance considers the departmental structures and the definition of roles and responsibilities; and (4) the BM user includes the BM methods and tools that employees find easy to use and learn.

Our study complemented the BM framework of analysis by Hesselmann and Mohan (2014). This evolved framework provides the understanding of the actual practices and barriers of a company with regard to the adoption of an IT BM. It shows the strengths and weakness of the process, according to its four perspectives: humanistic, organizational, technical, and control. From this initial viewpoint it is possible to elaborate an action plan to engage employees or implement the missing policies, tools, and mechanisms of controls. In this study, we had the opportunity to propose an action plan for the removal of the barriers identified in company A (section Practical Implications).

No matter how effective and efficient an IT benefit management process is, it will be of no use if there are no mechanisms of governance and control that guarantee its proper use and evolution over time. More than that, the employees, who are expected to use and apply such practices, must understand, embrace and adopt them. This idea is supported by the RBV theory which argues that organizational and human resources are of critical strategic importance for an organization (Colbert, 2004).

With the results of this study and the support of executives, the PMOs can act together with the IT professionals and improve their practices. In a financial sector company, technological advances in computer systems are critical to ensure the safety of current operations and to support future growth. Thus, ensuring the selection of the most important IT projects becomes a strategic issue that can be achieved through the proper adoption of an IT BM.

6.1. Theoretical implications

This study contributes to the academic literature by confirming and extending the main aspects of adopting Benefits Management. More than that, it also contributes to the RBV theory, ratifying that the development of BM practices in the FSI can be a competitive advantage in a way to fulfill the benefits offered by projects.

Furthermore, project management theoreticians recognize that different versions of project management are required in different circumstances according to the country, sector and size of the organization. To expand this research field, it is important to accumulate studies from different industries around the world (Love et al., 2005; Turner and Ledwith, 2016). Some of the tools of benefits management, such as NPV and business cases, though very powerful, are presented in ways that make them very difficult for non-specialist professionals to use (Berghout et al., 2011; Espinoza, 2014; Giaglis et al., 1999; Ward et al., 1996). Simplified versions of these tools and processes that can be readily applied and easily understood by the stakeholders need to be made available to remove the barriers to their adoption and guarantee that the benefits of IT projects are monitored during the entire project life cycle.

Project management theory has developed in the context of controlling and monitoring the time, cost and scope of projects, but theory also needs to be expanded beyond this frontier and consider that the project's value needs to be proven, especially in financial organizations that make intensive use of IT in their operations and where the success of IT projects is a strategic issue.

6.2. Practical implications

It is the researchers' expectation that the findings of this study will complement existing research in the area of internationally recognized benefits management and will be of interest to practitioners.

This study has shown the existence of many IT BM models in the literature, but simply adopting a model is not sufficient to ensure its proper adoption by a company and its employees. It

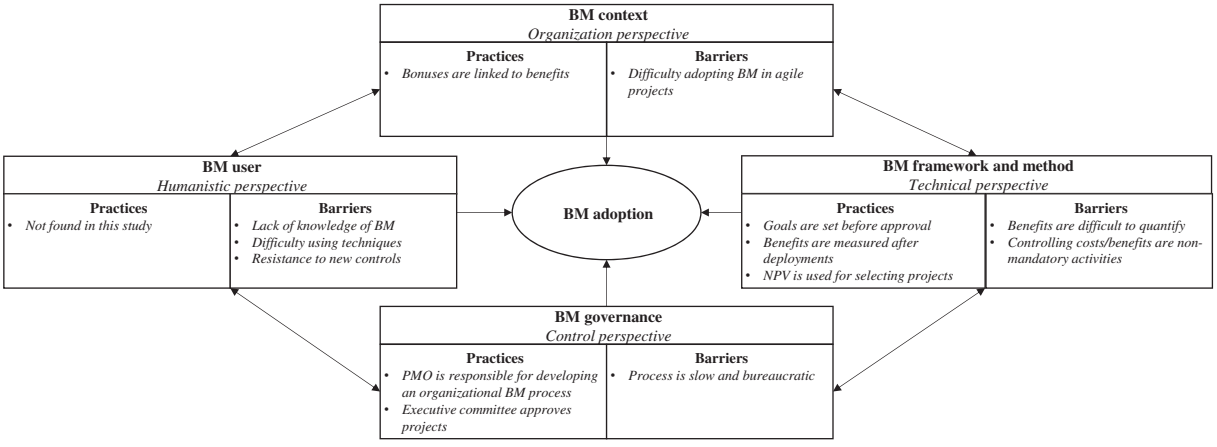

Fig. 2. BM framework of analysis.
Source: adapted from (Hesselmann and Mohan, 2014; Leavitt and Bahrami, 1988).

is crucial to ensure efficient and effective mechanisms of control that guarantee adherence to the established processes. If the level of adherence is low, it becomes necessary to identify and remove the barriers that prevent the model's adoption.

Exploring the causes of a problem can enrich the understanding of a given theory and allow readers to make more sense of complex organizational phenomena (Whetten, 1989). Therefore, the authors recognize that any discussion of the practical implications of this study would be incomplete if it only identified barriers and did not propose solutions to the causes of problems. Thus, the survey results and the understanding of the practices applied by companies B, C and D were presented and discussed with the PMO team of company A, who were previously interviewed. In this way, it was possible to validate the interpretation of the results with the support of the organization's specialists and to suggest an action plan to enhance the processes in the organization.

Table 8 presents the proposed action plan for the removal of the seven main barriers that prevent the proper adoption of IT BM. By the end of this study, new processes for managing the benefits of agile projects had been developed and were being tested and calibrated within two agile projects.

6.3. Strengths and limitations

FSI is heavily dependent on IT, is regulated by external agents, and is heavily dependent on IT. This set of facts brings more complexity to its IT processes and requires the use of superior techniques of IT management. Thus, other sectors may be able to learn from FSI practices, making this industry an ideal domain for research.

The strengths of this study included access to some of the most relevant FSI companies in Brazil, which ensured data quality and enabled an in-depth analysis. In addition, the support and engagement of the organizations' professionals who were interested in the study's results was very important because the study was used to understand each organization's shortcomings and to prepare an action plan to company A improves its processes.

The study was limited by the fact that it employed a case study approach. As a result, the findings are only representative of four companies in the FSI at a particular point in time in Brazil, making it difficult to generalize the results. Practices may vary across organizations or across countries. The electronic survey was authorized only at company A and considered IT professionals; if additional companies or professionals in the organization had been surveyed, they might have had differing opinions. In addition, the organizations have not authorized the disclosure of their names.

6.4. Further research

Future research, either quantitative or qualitative, should further examine a broader range of organization sizes and industry sectors by evaluating the following questions:

- How are the benefits of agile projects declared and measured?

Table 8
Action plan.

Barriers	Action plan
Controlling costs and benefits are non-mandatory activities	- Finish the project in the project management information system only after complete benefits realization. Currently, the projects are closed in the PMIS soon after the project's post-implementation phase, but the benefits can be captured up to 5 years after the implementation. In this way, the projects will be in post-implementation status and will be presented in the executive committees by the PMO to monitor the benefits. - Link project's performance with the managers' and executive's goals. The goals of the executives and managers are annual and are linked to the delivery of the project within the planned scope, time and cost; however, in this way, it is possible to evaluate only the success of the project management and not the success of the project benefits.
Difficulty adopting IT BM in agile projects	- Adopt the BM practices for agile projects. The practices used in the benefits management process are very time-consuming and bureaucratic. Whereas agile software development projects deliver value every 4 weeks, it is not feasible to develop a complete business case for these projects in order to participate in an approval committee. The process of approving, monitoring and capturing benefits should be quick and simple.
Process is slow and bureaucratic	- Propose the creation of smaller and more frequent committees formed by senior managers to handle smaller projects. As the process is currently implemented, the executive committee that approves projects in the organization meets every 4 months, so it is necessary to create more frequent committees with lower executive levels and limited scope of approval.
Lack of knowledge of the BM practices	- Develop and implement training and workshops presenting the processes. With each new process update, it is important that a round of workshops be held to update the professionals involved.
Benefits are difficult to quantify	- Create the role of methodology focal point to stimulate the culture of benefits management. Such a function already exists for the software development methodology, where each IT department has one or two employees responsible for multiplying the acquired knowledge in these disciplines. The benefits management processes should also be multiplied by these professionals.
Resistance to new controls	- Offer new training classes. Considering the staff turnover and the huge size of the IT department (more than 4000 employees), it is not surprising that knowledge is lost over time. Constant training is a necessity to ensure adherence to the practices proposed in the methodology.
Difficulty using the tools and techniques	- Provide examples with all known benefits. The business case template has no examples of possible benefits. It is important to add examples, or even a check list, to the business case so that those responsible do not forget about possible benefits that can be monitored. - Provide mandatory online training. Use the existing online training system to spread knowledge among teams. - Set training goals for project teams. Make the training mandatory to ensure the participation of those involved in the process.

Note. Source: authors.

- What factors facilitate the proper adoption of an IT BM model?
- What are the consequences if an IT project doesn't realize its planned benefits?
- Considering that IT BM must evolve within an organization, what are the main practices and deliverables that influence project success?

Finally, it is important to push the frontiers of BM, researching what happens after the capture of benefits. How the lessons learned should feedback and evolve the IT BM process?

Conflict of interest

This manuscript has not been published and is not under consideration for publication elsewhere; we have no conflicts of interest to disclose.

Acknowledgments

The authors would like to thank Ofer Zwikael, Associate Editor on the International Journal of Project Management, and the three anonymous reviewers who provided many valuable comments that helped to improve the paper.

Appendix 1. Relevant high level interview questions

Interview guide used in the semi-structured interviews:

(1) What are the processes of prioritization, selection and approval of IT projects?
(2) Who is responsible for conducting the processes?
(3) Are there any prioritization committees? If so, how often do they meet and who participates?
(4) What are the criteria used for prioritizing and approving IT projects?
(5) What are the performance indicators of IT projects and how are they formalized?
(6) Is there an established project management methodology? If so, how is it organized? What are the difficulties?
(7) Is there an established software development methodology? If so, how is it organized? What are the difficulties?
(8) Is there an established process for capturing the benefits of IT projects? If so, how is it organized?

Appendix 2. Questionnaire

1) In your opinion, are there any barriers to the proper use of the IT Benefits Management Methodology?

☐ No
☐ Yes
<if the answer was Yes>
choose as many answers as necessary.

☐ It's difficult to estimate the benefits.
☐ I don't know the benefits management methodology very well.
☐ I don't control the costs and benefits.
☐ I don't monitor the project after its implementation.
☐ There are many simultaneous projects generating the same benefits.
☐ The tools and techniques are difficult to use.
☐ The process changes too much.
☐ The business case and requirements are unclear or incomplete.

Comments (mandatory):

The other questions on the questionnaire are omitted because they do not have value for this study.

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