

## **Management Control Practices in the Third Sector: A Study of Supporting Foundations Drawing on Actor-Network Theory**

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### **Abstract**

The third sector has been gaining significant prominence in the global economic scenario, with broad action in education, culture, health, social assistance, and other subject, attracting the attention of the market and academia, especially about the professionalization of the sector and the quality of its management. This research aims to understand the use of management control practices in the foundations supporting federal higher education and science and technology institutions (FAP), drawing on Actor-Network Theory (ANT) and Simons's Levers of Control to explore the management control practices used in the network. In addition to participant observation, twenty-one semi-structured interviews were conducted with participants in the FAP's network, selected using the Snowball technique. The data collected was processed and subjected to content analysis. The theoretical-methodological choice of ANT allowed the actors' (both human and non-human) network mapping, identification of relationships and management control practices, and interpretations of the support foundations management dynamics. The findings revealed that the major challenges relate to the costs of services provided and the financing of foundations, the strong influence of laws, standards, and regulatory bodies, and the great difficulty concerning information systems. The study highlighted the importance of alliances between actors in dealing with the dynamic environment that imposes frequent changes in the management of foundations. Together with the information systems, the regulatory environment strongly affects the management of the foundations, influencing optimization and creation of processes. The research acknowledged the dynamic relationship between foundations and their clients, emphasizing the transformative role of these organizations in society.

**Keywords:** third sector; supporting foundations; levers of control; management control practices; actor-network theory.

## 1 Introduction

Management Control Practices (MCP) assist managers in decision-making and influence organizational capacity, transmitting reliability, relevance, and comparability (Frezatti, Rocha, Nascimento & Junqueira, 2009). These practices encompass techniques, processes, and systems (Anthony & Govindarajan, 2011). The term "artifact" is also used in the literature, referring to practices, tools, controls, instruments (Souza, Jacques, Fehr & Silva, 2020), activities, management philosophies, production philosophies, and management models (Soutes, 2006). Examples of managerial accounting artifacts include budgets, costing methods, and indicators, classified as modern or traditional (Guerreiro, Cornachione Júnior & Soutes, 2011). Oyadomari (2008) refers to "managerial control artifacts" as planning and management control techniques involving the processes of measuring, accumulating, and communicating monetary and non-monetary information about organizational performance aspects. MCPs are widely used among for-profit companies, government entities, and third-sector organizations (TS).

TS organizations operate in an extensive range of fields (Jorge, Carraro & Vendruscolo, 2023) and play an essential role in society by implementing public policies and managing third-party resources, highlighting the importance of their management quality. TS organizations have grown more complex concerning specific regulations, tax aspects, and fundraising methods, including tax incentive laws. Thus, the presence of management and accounting confers a managerial and control posture in these organizations to ensure the transparency and efficiency required (Falconer, 1999; Grazioli et al., 2015; Olak & Nascimento, 2006).

This study focuses on supporting foundations for federal higher education institutions (IFES) and science and technology institutions (ICT), referred to as supporting foundations (FAP). Established to promote scientific, technological, and economic development, they are responsible for managing teaching, research, extension, institutional, scientific, technological, and innovation projects. Through executing their projects, FAPs mobilize significant resources, comprising an extensive stakeholder network. Until 2022, they facilitated 90% of national scientific production by public universities. The foundations' gross revenue amounts to 9 billion reais, with up to 60,000 employees (Antonelli, Augustinho & Pacheco, 2015; National Council of Supporting Foundations for Higher Education and Scientific and Technological Research Institutions [CONFIES], 2018, 2024; Faria et al., 2018; IBGE, 2019; Paes, 2018; Simon et al., 2017). These factors underscore the relevance of this sector and the importance of studying these institutions.

The objective of this research is to understand the use of management control practices in supporting foundations through the lens of Actor-Network Theory. The study aims to describe the network in which FAPs are embedded, their main actors and characteristics. The intention is to identify the MCP in use within FAPs and how these practices impact fundraising, stakeholder dialogue, transparency, compliance with rules and guidelines, contributing to the formation of relationship networks.

Managerial accounting artifacts (Guerreiro et al., 2011) and the Levers of Control model (Simons, 1995), which encompasses four types of controls (belief systems, boundary systems, interactive control systems, and diagnostic control systems), served as a conceptual starting point, with adaptations to the TS and, in particular, FAPs. The model is considered applicable to the dynamic and uncertain environment in which FAPs operate and provides insights into the MCPs employed.

A semi-structured interview script was developed and applied. Initial interviewees were selected based on convenience and, using the Snowball Technique, recommended others until saturation was reached with 21 interviewees. This approach enabled the researcher to follow

the actors and understand the network relationships by observing the premises of Actor-Network Theory (Latour, 1999).

Regarding the study's contributions, from a theoretical-empirical perspective, it enhances knowledge about the TS and, specifically, supporting foundations for IFES and ICT, which play a significant role in Brazilian society by enabling national research and other institutional projects aimed at the country's development. Literature on TS MCPs is scarce (Campos, Marques, Rody & Dias, 2015), particularly for FAPs, and this study contributes to a better understanding of the sector, particularly from the actors' perspective.

This research was conducted through the theoretical lens of Actor-Network Theory (ANT), a methodological-theoretical approach that has marked social sciences in recent decades and has recently been used in Accounting research. ANT offers an alternative approach to accounting research by treating tools, managers, institutions, and other involved parties as equally important parts of the phenomenon studied, proposing symmetry between humans and non-humans (Delgado & Andrade, 2018).

The theoretical-methodological framework of ANT complements this approach by introducing a unique vocabulary that reinforces the idea of symmetry between humans and non-humans: actant as actor; Actor-Network as social relations; inscriptions as documents; spokespersons as disseminators. These terms help clarify the relationships that constitute the studied phenomena (Mattedi et al., 2009). Furthermore, ANT allows examining how individual actors, both human and non-human, acquire the authority to represent the whole (Bueger, 2013), expanding the possibilities of sociotechnical analysis and offering a pathway to understand processes and practices within organizations.

ANT is considered part of a movement that seeks to move away from the functional emphasis of organizations and focuses on studying organizational processes and practices from a sociotechnical perspective (Camillis & Antonello, 2016). This study aims to address the research gap identified by Costa and Morgan (2017), calling for more national studies employing new methodologies in management accounting and the development of new lines of inquiry and analysis in accounting studies (Lopes & Beuren, 2017), focusing on understanding how relationships function and describing how ideas and links between actors are constructed (Costa, 2015).

## **2 Theoretical Framework**

### **2.1 Supporting Foundations for Higher Education Institutions and Science and Technology Institutions**

Supporting foundations were created to promote scientific, technological, and economic development in Brazil. They are independent of the government and represent an important link between universities, other science and technology institutions, and the community. FAPs support IFES and ICTs by facilitating the administrative management of projects, offering the agility and flexibility that government bureaucracy often lacks. Their support includes administrative-financial management, national and international procurement, human resources, finance, accounting, legal advisory, archiving services, and accountability (Faria et al., 2018).

Governed by the Brazilian Civil Code, FAPs must be registered and accredited with the Ministry of Education and Culture (MEC) and the Ministry of Science, Technology, and Innovation (MCTI). They are private non-profit legal entities established for specific social purposes, as determined by the founder's intent (Faria et al., 2018). With their independent legal personality, FAPs manage their assets under the oversight of the Public Prosecutor's Office, which monitors and supervises their activities. Their fundamental characteristic is management,

which ties assets to a purpose, with administrators setting goals and guidelines to achieve the foundation's objectives (Grazzioli et al., 2015).

Several laws are key to these institutions, such as Law No. 8,958 (1994), which regulates relations between IFES/ICTs and FAPs, framing them as private entities operating for public purposes. This law outlines management forms and processes, ensuring transparency and legitimacy in their actions. Other significant legal frameworks include Law No. 12,863 (2013), allowing FAPs to collaborate with various funding agencies and companies; Law No. 13,204 (2015), considered a milestone in regulating partnerships between the public administration and civil society organizations; and Law No. 13,243 (2016), which promotes innovation and scientific and technological research cooperation between public and private institutions, enabling FAPs to manage patents, endowment funds, licenses, and intellectual property.

With this legal framework, the operational opportunities for FAPs have expanded, enabling their involvement in technology parks, business incubators, and more, broadening their fundraising possibilities. FAPs were granted authorization to establish their own rules for managing non-public funds, manage assets acquired through projects, and define regulations for scholarships provided by their establishing IFES and federations. Additionally, they received increased tax exemptions for importing research equipment (Faria et al., 2018). However, given limited resources, management processes gain prominence, encompassing planning, execution, and control phases (Paes, 2018).

Independent from their establishing institutions, FAPs are not funded by the Union, and their revenues come from their own activities, notably funds from contracts and services rendered through projects (Richartz, Borgert & Silva, 2011). With such specific activities in project management, FAPs are developing pricing plans with mapping of direct and indirect costs to support revenue needs that cover operational expenses inherent to management processes. One question, in this context in which FAPs operate, is whether they have efficient structures, systems, and processes to underpin their costs effectively (Faria et al., 2018).

FAPs have been seeking improvements throughout their trajectories, with notable enhancements in corporate governance, digitization, technological updates, process standardization, such as ISO 9001 certification for the Quality Management System, budgetary management and control implementation, strategic planning, performance indicator monitoring, operational risk management, code of ethics development, and other compliance initiatives (Faria et al., 2018). Additionally, they founded an association, the National Council of Supporting Foundations for Higher Education and Scientific and Technological Research Institutions (CONFIES, 2018).

According to Mário, Alves, Carmo, Silva, and Jupetipe (2013), in these circumstances, managers must embody the same behavioral essence employed in a corporate society, as their actions are based on ensuring the institution's objectives are met while adhering to its statutes without harming it, favoring third parties, or benefiting themselves at its expense. The authors warn that TS organizations, when created by individuals without management experience, face difficulties in their administration and the use of management accounting tools. However, due to the sector's hybrid nature (market/public), processes cannot be directly appropriated without verifying potential adjustments, and the evaluation of social impact results must be emphasized (Cabral, 2015).

Falconer (1999) emphasizes that, before transferring accumulated knowledge from private and public company management to non-profit entities, it is necessary to understand the sector's specificities. Administration, as a discipline, must examine the set of techniques to achieve defined goals and objectives, as well as planning, organization, direction, and control, which translate the ability to fulfill its mission. In this sense, it is essential for modern management to use instruments such as account plans, financial statements, management

accounting, accountability, internal control, and auditing, which aim to optimize resource utilization (Grazzioli et al., 2015).

### **2.1.1 Management Control Practices in the Third Sector and Supporting Foundations**

In general terms, a management control system, or management control framework, is a collection or set of controls and control systems (Simons, 1995). Management control is essential for organizations, defined as a set of activities forming a systematic process in which managers influence other members of the organization, fostering interaction among people. It is one of the management tools used to implement organizational strategies, consisting of various artifacts (Anthony & Govindarajan, 2011).

Artifacts are cultural expressions aimed at producing or maintaining values and norms and are socially constructed, influenced by different situations (Frezatti et al., 2009). In management accounting, artifacts contribute to the process of identifying, measuring, accumulating, analyzing, preparing, interpreting, and communicating information that helps managers achieve organizational objectives (Horngren, Sundem & Stratton, 2004).

Many definitions of management control adapt to contemporary realities filled with uncertainties, competitiveness, and the need for flexibility in decision-making processes. The Levers of Control model (Simons, 1995) presents an intuitive approach that goes beyond traditional focuses on standardization, efficiency, and top-down strategy formulation (Cintra, 2011). This model was chosen for this research because its control dimensions present sufficient breadth and scope to address the study object and ANT usage, observing both financial and non-financial aspects (Degenhart & Beuren, 2019).

Table 1 presents an adaptation of Simons' Levers of Control (1995) assigning artifacts to the levers (Cintra, 2011), adapted for FAPs, though not exhaustive.

**Table 1**  
*Levers of Control and Artifacts – Supporting Foundations*

Levers of Control	Characteristics	Control Artifacts
Belief Systems	Aim at a set of organizational definitions used to formally communicate and systematically highlight the organization's values, purposes, and direction.	Mission
		Vision
Boundary Systems	Used to define the operational and behavioral boundaries within the organization to ensure that strategies are executed.	Values
		Annual activity report
		Bylaws
		Code of ethics
		Internal regulations
		Legislation
		Procedures guide
		Fiscal council
Trustee council		
Accreditation		
GDPR		
Law		

Diagnostic Control Systems	Formal information systems used by managers to monitor organizational results and correct deviations from predefined standards.	Budget, Accounts receivable, Accounts payable, Bank reconciliation, Integrated information system, Costing system, Strategic planning Performance indicators Accountability Financial reports
Interactive Control Systems	Aim to stimulate learning and the pursuit of opportunities, fostering the emergence of new strategies while keeping the organization alert.	Follow-up meetings Communication: debates and dialogues Working groups Action plans Project management system Profit planning system

Source: Adapted from Cintra (2011)

In Brazil, some studies have explored the application of management control systems in TS organizations. One of the first studies dedicated to accounting in FAPs, Barbosa (2003), provided a general overview focused on the accounting practices of supporting foundations linked to federal higher education institutions in the Northeast region, ranging from reports and financial statements to information systems for decision-making.

Campos et al. (2015) conducted an analysis of scientific production on TS in Brazil, describing the research profile of articles published between 1998 and 2013 and mapping trends for new research in the field. The study highlighted a diversified focus, emphasizing management accounting, maximizing management efficiency, conceptual aspects of TS, and decision-making factors. Practical aspects, such as the application of management tools, the role of volunteers as a success factor for institutions, governance, and accountability, stood out as research motivators.

Resende (2007) reports on the case of two non-profit institutions in Portugal that used control systems to reduce conflicts of interest issues, promoting transparency to stakeholders. The research identified that using Simons' levers reduced the entity's difficulty in controlling certain activities and found that the institutions adapted control systems to their specificities.

Baiz and Emmendoerfer (2015) found that innovations in the human resource management field relate to the implementation of existing processes within the area. Key human resource management practices included job description, performance evaluation, staff development, and workplace safety. Cintra, Braga, and Barbosa (2022) studied employee perceptions in an FAP through a case study, aiming to understand innovation in organizations, its impact on management, and work. They identified difficulties in reconciling work routines with innovation initiatives, variations in employee engagement, leadership support, and evidence of cultural transformation toward more innovations.

Pereira, Novaski, Silva, and Rabelo Neto (2022) studied project management practices in FAPs to identify success factors with support from ISO 21500 standards. They found the importance of budget development activities, project plans, and application levels as keys to project success. Managers showed a high level of control over project management and execution activities. The study concluded that management activities and technical aspects significantly influence project success in FAPs in Brazil.

With the objective of analyzing the legislation regulating partnerships between FAPs and IFES, focusing on the transparency of these relationships, Castro (2020) found that information disclosure is insufficient and untimely, failing to achieve an adequate level of

transparency. Divergences were highlighted in the number of agreements reported in different databases, a lack of security in data on amounts of funds paid, and irregularities in financial accountability to the Federal Court of Accounts (TCU). These findings align with research by Gonçalves, Gonçalves, Marques, and Gordo (2019), which emphasized the importance of the internal control system of FAPs in the Federal District in the accountability of research projects funded by the institution. They pointed out that the absence of guiding principles in internal controls could result in budget execution failures in projects, underscoring the significance of integrated controls and clear internal procedures.

Cintra, Vidigal, and Braga (2019) described the cost allocation method of an FAP in Minas Gerais, involving, among other aspects, the survey of activities performed by each sector. The study identified that personnel management, purchasing, importation, and financial accountability are the main final products of the FAP, with different calculations of unit costs per product. The authors emphasized the importance of a management information system in managing information and pricing processes. Previously, Caetano (2006) investigated the application of ABC costing in an FAP through a case study at the Aroeira Foundation in Goiânia. Richartz et al. (2011) sought to establish a costing model using ABC and UEP techniques to manage research project management expenses. They conducted activity mapping, measurement, and control—allowing inefficiency points to be addressed.

To understand the influence of governance practices in an FAP on its economic-financial performance and operation volume, Ávila and Bertero (2016) identified a close relationship between results and the management format adopted during each period. This relationship can be explained by changes in the organizations' financing practices, evolving from an initial lack of resource concerns to continuous indebtedness coupled with resource-seeking through outsourced programs, eventually reaching a phase of altering legal relationships and obtaining resources through new service contracts. The authors suggested alternative performance measures beyond the constructed index, such as the Balanced Scorecard. Farias (2023) proposed a set of indicators to evaluate FAPs for IES, arguing that the use of indicators is relevant for most Brazilian FAPs.

Silva Junior (2018) provided an external perspective, suggesting that donors' perception of management quality could be based on how effectively non-profit institutions use control systems that translate into successful financial and administrative management. The study concluded that donor networks, whether private or governmental, need to perceive the quality of institutions' management models to invest time, resources, or materials. Therefore, the financial sustainability of TS organizations is linked to the appropriate use of management tools and understanding donor preferences.

Focusing on the application of Simons' Levers of Control in TS management and organizations, Pletsch and Lavarda (2016) concluded that the use of management control systems in a cooperative differs from private and governmental institutions due to the social purpose of these organizations. This highlights the need for more studies on the relationship between the use of Levers of Control in TS institutions' management. Frare, Horz, Quintana, and Cruz (2021) analyzed the relationship between risks, strategic uncertainties, and the use of MCS in credit cooperatives. The results emphasized the importance of Simons' Levers of Control (1995) in the cooperative context, particularly concerning promoting strategic renewal in the face of uncertainties.

Brito (2017) analyzed the relationship between MCS usage intensity and performance in FAPs, concluding that using management control systems is fundamental for TS organizations, as their goals and motivations differ from profit-driven entities. A structured MCS enables the generation of information that supports decision-making.

## **2.2 Actor-Network Theory**

The Actor-Network Theory (ANT) emerged from studies conducted by Michel Callon, Bruno Latour, and John Law in the 1980s in France (Delgado & Andrade, 2018). It consists of a theoretical-methodological approach, representing a conglomeration of loose and heterogeneous knowledge, both highly empirical and applicable in any sector. On the other hand, these studies are highly conceptual, as they develop alternative vocabularies. ANT scholars propose and use several concepts, often vaguely defined (Bueger, 2013). ANT can also be seen as a methodological approach, with a unique perspective relative to the researcher's stance in the field, as well as offering a series of analytical tools for producing knowledge about organizations and other phenomena (Alcadipani & Hassard, 2010).

ANT posits that there are no social or cognitive sciences without the interaction of humans and non-humans, where one acts on the other, forming a network as a result of associations among these heterogeneous elements. The movement within social sciences, cognitive anthropology, and cognitive sciences contributes to the activity of thinking in situational practices, places, and a world of objects (Latour, 1994).

The theory has been shaping social sciences over recent decades and, more recently, has been used in research in the fields of Management and Accounting. The use of ANT expands the possibilities of research beyond functional emphasis and is part of a movement that presents the processual approach of organizations as an alternative, broadening the analytical focus to processes or organizational practices that observe how organizations unfold as verbs and results. Existence is understood in terms of "process" rather than "things", changes rather than fixed positions. Changes characterize reality, which is created, sustained, and defined by processes (Camillis & Antonello, 2016).

Matthewman (2017) suggests four principles as the basis of ANT: i) actors: everything that exists is an actor, and all actors must be treated equally; ii) irreduction: nothing can be reduced or substituted for something else; iii) translation: since there can be no substitutes or substitutions, real work is required to influence other entities; and iv) association: strength or weakness is a function of alliances and associations.

ANT carries with it specific terminology: actant, as an actor; actor-network, as social relations; translation, meaning interaction and negotiation; among others. These key expressions are fundamental to understanding the theory, which aims to propose symmetry between humans and non-humans, the latter characterized as objects, animals, natural phenomena, materials, and others (Delgado & Andrade, 2018).

Matthewman (2017) emphasizes the role of non-human actors in the existence of the phenomenon to be studied and the work done to make associations possible, free from "pre-conceptions" or pre-constructed foundations, rejecting dualisms such as nature/society, society/technology, and the agent/structure dilemma. In ANT, non-human elements cease to be merely artifacts whose importance is assigned by humans and acquire agency, that is, they participate in actions in everyday situations and provoke transformations. ANT is based on the idea that entities (human and non-human) are constituted and acquire their attributes through the relationships they establish with other entities (Camillis & Antonello, 2016).

The ANT approach emphasizes the stability and durability of the actor network, explaining what holds society together. ANT creates space for a way of looking at phenomena that breaks away from the pragmatic use of traditional theories usually applied by researchers. The theory encourages closely observing how issues unfold, how entities are made, paying attention to the surroundings and the relationships inherent in the network composing the phenomenon (Bueger, 2013).

ANT invests in the method of following actors and actions to account for reality. Its objective diverges from conventional social science activities, which normally investigate social elements (such as norms, culture, and values) to understand micro-interactions. However, norms, culture, and values seem excessively broad concepts to provide appropriate meaning to



the micro level. ANT, therefore, emphasizes elucidating interactions and associations that arise through a diverse range of heterogeneous elements within a more circumscribed context (Tonelli, 2016).

Costa and Morgan (2017, p. 135) summarize Latour's (2000) central idea as "discussing actors as effects of the network to which they belong," describing how facts occur, seeking to understand the origins of power and the structure of a network through collaborative, cooperative, competitive, and negotiation processes in which the actors are involved. The authors add that translating interests involves offering new interpretations of those interests and guiding people in different directions.

### **2.2.1 Management Control Practices and Actor-Network Theory**

Lopes and Beuren (2017) analyzed international publications on management accounting through the lens of ANT. According to the authors, ANT contributes to management accounting research by emphasizing technological systems and processes. Justesen and Mouritsen (2011) affirm that studies employing ANT, either as a methodology or a theoretical lens, have brought significant contributions to accounting, reaffirming the connection between accounting and the social context, providing a perspective that goes beyond the economic aspect. Concerning management accounting, ANT has yielded fruitful results through new perspectives. Research in accounting has used ANT and MCP to explore various objectives, investigating topics from diverse perspectives.

Beyond being a theory, ANT is applied as a methodology in accounting research. For instance, Jones and Dugdale (2000) studied Activity-Based Costing (ABC) and the Theory of Constraints, examining their influence on network construction while simultaneously being disseminated through the network. They identified the leading role of consultants and software in spreading these tools, with academia playing a secondary role.

Agents in a network construction process exert influence, acting as either actors or intermediaries of events that contribute to building relationships. For accounting, intermediaries move between actors, helping define relationships among them. These intermediaries include texts represented by reports, books, patents, and notes; technical artifacts, such as scientific instruments, machines, and robots; consumer goods; groups of non-human entities performing certain tasks together; human beings with skills, knowledge, and know-how; and money in its various forms (Costa, 2015).

Jones and Dugdale (2002) explored the rise of Activity-Based Costing (ABC) through ANT, tracing key actors and their intermediaries as they built ABC within a network of human and non-human allies. Drawing on Giddens' discussion of the dynamics of modernity, ABC is portrayed as a socio-technical specialist system formed in tandem with the construction of actor networks, which both experiences and contributes to modern-world risks.

Alcouffe, Berland, and Levant (2008) used translation to demonstrate that accounting change is not predetermined but can make various advances or retreats and rhetorical reformulations, influenced by a set of actants. They evaluated two tools, the Georges Perrin method and ABC, which are influenced to varying degrees by networks of consultants, software editors, and academics in the validation and dissemination process.

Dechow and Mouritsen (2005) analyzed the integration of ERP systems into management control through ANT, emphasizing the importance of symmetry between human and non-human actors within the network. ERP systems influence how control is performed by defining financial and non-financial representations. Management control in an ERP environment is a collective matter involving local issues in different parts of the organization to create notions of global management. The article argues that although ERP systems strengthen financial accounting, they do not guarantee the strengthening of management

accounting. The data are precise and shareable but do not provide the total visibility and control desired.

Aiming to investigate the configuration of networks of human and non-human actors formed in the judicial accounting expertise process, the study by Murro and Beuren (2016) highlights hybrid alliances formed between human and non-human actors, built from numerous translation processes. Meanwhile, Godoy and Raupp (2017) focused on the use of management accounting artifacts by non-profit organizations. The existence of a stakeholder with unilateral normative social power led to the use of formalized controls and the standardization of activities. The article acknowledges that contingency aspects can influence the adoption of artifacts by organizations.

### **3 Research Methodology**

This descriptive, qualitative study investigates MCP in FAPs using ANT as a methodological basis, as the approach focuses on describing the relationships between actors and phenomena. Identifying the relationships within a network occurs through the process of translation, which involves tracing the network through the actors involved in the phenomenon who play roles in managing FAPs. The translation process allows for identifying the set of relationships that construct the phenomenon (rationality), the process of continuous interaction (performativity), and, finally, understanding the different types of resources (heterogeneity) that construct the network of relationships (Callon, 1986; Costa, 2015).

Considering the various methods possible for research using ANT, this study adopts a field study combined with interviews (Costa, 2015). Field investigation fulfills the call for *in loco* research, accompanying day-to-day observations of phenomena that can be studied where they occur, whether in an organization, forest, laboratory, or another setting where the researcher can experience them firsthand (Latour, 1999).

The research design was conceived based on participant observation, including preliminary assessments of the foundational environment, defining what, when, and where events happen, how, and why they occur from within the studied phenomenon (Jorgensen, 1989). These preliminary observations covered the tools used daily and the actors interacting with the foundations. Empirical observation allows for tracing associations, interests, controversies, centers of calculation, and identifying human and non-human actors—a starting point for understanding and describing the network and the dynamics linking institutions (Valadão, 2014).

Following Latour's (1999) parameters and the perspective of management control, the interview technique was used to trace relationships and actors (actants), both human and non-human, to understand and construct the relationship network. This technique aids in comprehending the FAP network through the actors' perspectives, based on their experience in the sector, providing detailed and contextual insights into the phenomenon (Gaskell, 2002).

A semi-structured interview guide was developed, based on Simons' Levers of Control model (1995) and respective management accounting artifacts (Guerreiro et al., 2011), with adaptations for the TS, particularly for FAPs. The model is considered suitable for the changing and uncertain environment in which FAPs operate and provides knowledge about the MCP in use. Comprising eight question blocks, the interview guide varied according to the role of the interviewed actor. Both the interview guide and the informed consent form (ICF) were reviewed and approved by the Research Ethics Committee of the researchers' educational institution through the Plataforma Brasil system.

The study universe consisted of registered and accredited FAPs and supported institutions, as listed by MEC, which includes 266 supported institutions with active accreditation. This registry is nationally scoped, encompassing 103 supporting foundations in

2023, the time of the research, located across various states. There is a significant concentration of foundations and supported institutions in the Southeast (Table 2), highlighting the importance of managing teaching, research, and extension projects in the region.

**Table 2**

*Supporting Foundations and Supported Institutions by Region*

Region	FAP	Frequency	Supported Institutions	Frequency
Southeast	45	44%	139	52%
South	18	17%	35	13%
Central-West	10	10%	22	8%
Northeast	23	22%	49	18%
North	7	7%	21	8%
<b>Total</b>	<b>103</b>	<b>100%</b>	<b>266</b>	<b>100%</b>

Source: Adapted from the Ministry of Education and Culture (MEC, 2020)

The sample composition relied on the Snowball Technique (Biernacki & Waldorf, 1981), based on relationships established within the supporting foundations. Initially, interviews were conducted with actors within the foundation (managers), who then referred others related to the institution and impacting its management. This process continued until saturation was reached with 21 interviews. The interviews were done from May to June 2023 and were conducted either in person or remotely in cases involving entities outside Rio de Janeiro, with an average duration of 50 minutes.

Outside the foundation's functional framework, clients, class associations, and as the study progressed, other human and non-human actors from various regions were identified. This approach provided a plural perspective on the network, enabling a deep understanding of the actors' perceptions and a depiction of the intricate web of connections, as well as identifying the effects of MCP on network construction. The network mapping involved participant collaboration, following the actors, and observing the relationships within the network through ANT principles.

In the subsequent phase, transcriptions were carried out using the Transkriptor application for automatic transcription. The texts were transferred to Word and reviewed by third parties for greater reliability. After the review, the material was imported into NVivo software for data analysis and result writing, facilitating the definition of analytical categories through the mixed model (Gaskell, 2002).

ANT serves as a language for mapping traces, describing how relationships are established or not. Its concepts are best utilized as a lens, offering a set of tools to tell deeper and more analytical stories about relationships (Law, 2007). Thus, coding considered prior network knowledge to map human and non-human actors and describe the role of actors in the network, associated with the conceptual framework provided by Simons (1995) through the Levers of Control.

## 4 Presentation and Discussion of Results

### 4.1 Study Characterization

Out of a total of 103 foundations accredited by MEC at the time of the research, seven directly participated in the study. In total, 21 interviews were conducted, with an average duration of 50 minutes, including 9 in-person interviews and 12 conducted remotely using platforms convenient for the interviewees, such as Meet, Zoom, and Teams.

The interviewees were classified into two categories: internal actants, who operate within the foundations, and external actants, who interact with the foundations and the management artifacts they employ, as shown in Table 3. Information about the participating institutions to which they belong is also provided. The surveyed institutions vary in size, location, and time of establishment.

**Table 3**  
*Profile of Interviewees – Internal and External Actants*

Foundation-UF	Role	Experience
<b>Internal Actants</b>		
F01-RJ: 25 years supporting teaching, research, and extension projects at IFES and ICT, with an organizational structure composed of four departments.	Executive Director	8 years as a director of the supported institution, background in biological sciences.
	International Project Lawyer	25 years of experience, started as an intern.
	Accountant	10 years of experience at the foundation, started as an intern.
	Clients (Supported A and B)	17 years of experience at the foundation, background in the financial market.
		20 to 30 years of experience in projects linked to supporting foundations.
F02-RJ: Founded 57 years ago by a military organization, underwent restructuring to optimize management by reducing superintendencies.	Vice President	Long military career, experience in financial management.
	Lawyer	Worked as a contractor in a public company before joining the foundation.
	Accountant	Over 10 years at the foundation, previous experience in public sector.
	Clients (Supported A and B)	Military experience, involvement in software development and teaching projects.
F03-RJ: Previously a department of a federal institution, became a private foundation 30 years ago, known for participatory management and direct communication.	Public Defender Analyst	8 years of experience in IT projects at the foundation.
F04-PE: Established 40 years ago, expanded support to other institutions and redesigned organizational structure in 2012 for greater agility.	Planning Advisor	17 years of experience at the foundation, previous role as a political scientist.
F05-PR: Created 43 years ago, restructured to create departments focused on compliance and resource mobilization.	Manager	Background in applied social sciences, previous experience in finance and academic management.
F06-MT: Founded in 2002, organizational structure allows for efficient operations and meeting specific project demands.	Manager	Over 10 years at the foundation, started in procurement and later worked in legal advisory.
F07-TO: Established in 2004, supports projects in teaching, research, extension, and innovation, with a structure that includes project and support areas.	Manager	Background in administration and law, 17 years of experience in procurement and finance.
<b>External Actants</b>		
Funding Agency	Analyst	2,5 years working directly with supporting foundations, experience in various sectors of the funding agency.

Public Prosecutor's Office	Auditor	6 years auditing supporting foundations, experience in financial accountability reviews.
Professional Association	President	Extensive academic and management experience, promoted reforms in foundation and association leadership.
Information Systems	Development Team Leader	17 years in a software development company for supporting foundations, deep understanding of sector needs.

Source: Prepared by the authors (2024)

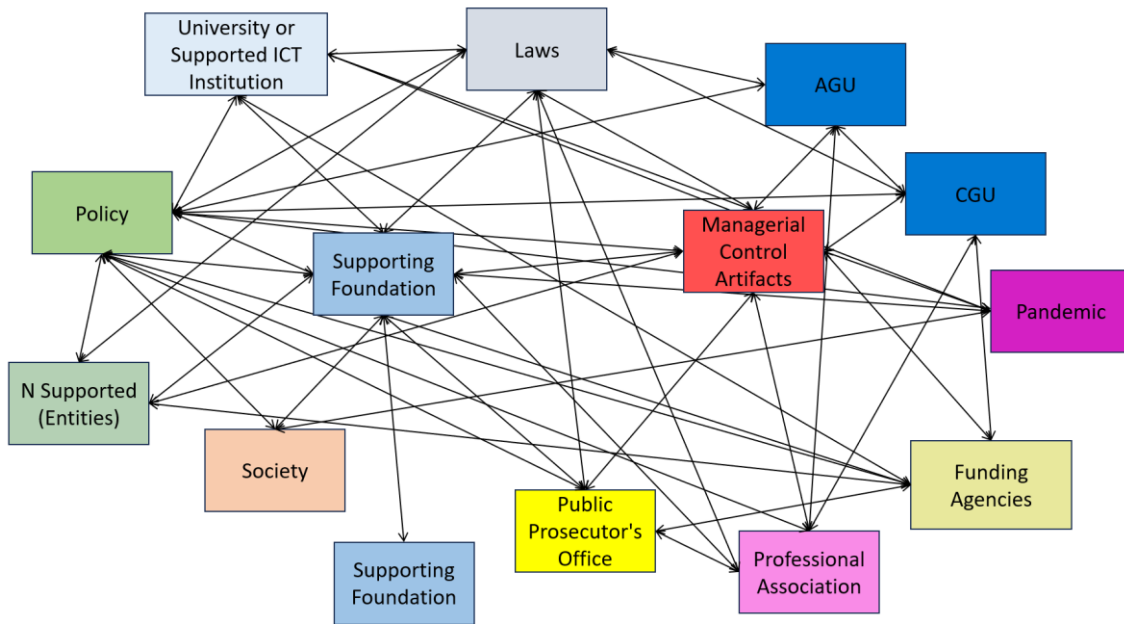
The *Public Prosecutor's Office* oversees the foundations, requiring detailed accountability. It is an actant capable of producing norms and driving changes in supporting foundations through its actions. In addition to safeguarding the institution's assets, it demands accountability through the Accountability Registration System (SICAF). Foundation managers are responsible for the fidelity, integrity, and accuracy of all reported data. The prosecutor forwards the accounts to the auditor who, after receipt, analyzes them and may issue reports recommending approval, rejection, or inability to issue an opinion due to a lack of data. In some cases, inquiries are conducted with the foundation to request clarifications. These reports act as inscriptions capable of mediating actions, prompting the foundations to act on the results and recommendations provided. They highlight the regularity of activities and the ability to manage resources. These outcomes are also reflections of the actions of supporting foundation professionals.

The *Professional Association*, represented by the National Council of Supporting Foundations for Higher Education and Scientific and Technological Research Institutions (CONFIES), acts as a transformative agent within the network, representing and defending the interests of FAPs, promoting information exchange, joint learning, and the search for solutions to common problems among foundations and their associates. Thus, membership in the professional association is perceived as an investment for the FAP. It is also seen as a facilitator of interaction among foundations, helping standardize norms, tackle legal and operational challenges, and strengthen the position of foundations with oversight bodies such as the Federal Court of Accounts (TCU) and the Office of the Comptroller General (CGU).

Resources for project execution are often granted by *Funding Agencies* to achieve or construct a supported institution's objective through a foundation. There are rules for requesting and using these resources, as well as for demonstrating through accountability how they were spent. Funders are actors within the social network of foundations, capable of transforming the environment in which projects are executed. A well-executed project adhering to funder norms can expand the foundation's operations, motivating it to reformulate its organizational structure and increase its capacity. Dealing with these norms generates a specific learning cycle for those working in the field.

Once the contextualization and presentation of the interviewees and the studied environment were completed, the mapping of relationships and associations within the network began, resulting in the mapping shown in Figure 1.

**Figure 1**  
*Mapping network actors and connections*



FAPs are integral components of a broader network of relationships and serve as key elements for analysis within this framework (Bueger, 2013). These institutions engage dynamically with diverse actants, including the management control artifacts embedded in the system. Through these interactions, they foster relationships that catalyze new phenomena and actors, ultimately driving outcomes such as enhanced transparency, improved resource mobilization, and a deeper integration of their operational processes within the broader network.

#### 4.1 Management Practices and Actants

An excerpt from the main inputs provided by interviewees is presented below, with a special focus on management control practices.

*Financial Management* of the foundations was identified as a critical point since the foundations rely heavily on operational and administrative expenses (OAE) derived from projects to sustain their operations. However, they face challenges in establishing a homogeneous methodology to calculate OAE, leading to diverse practices across institutions. Additionally, the financial sustainability of the foundations is threatened by their dependence on resources from supported projects, making them vulnerable to political and economic changes. To mitigate these risks, some foundations are investing in revenue diversification strategies, including creating their own projects, partnerships with companies, endowment funds, and other support activities.

*Participatory Management*, centered on human capital, was widely highlighted as an effective practice. F01-RJ reported adopting participatory management by involving employees in strategic planning and process creation for continuous improvement. This approach, based on respect and valuing employees, is seen as crucial for talent retention, particularly in a work environment with a high volume of projects and financial uncertainties. Human resource management was identified as one of the main challenges, with special attention to retaining talent and adapting to changes necessary to face new market and legislative realities.

Regarding *Technology and Information Systems*, management systems are recognized as central artifacts in the administration of foundations. The automation of processes, accelerated by the Covid-19 pandemic, was identified as an opportunity to increase operational efficiency. However, the lack of process adherence and integration among different systems, such as ERP (SAP and others), the foundations' own management system—the Coordinator Portal (PCF)—and the procurement system (LCC), remain recurring issues. Foundations that chose to develop their own systems report improvements in adherence to internal processes but still face challenges in adapting functionalities to the specific needs of their users. Additionally, meeting new regulatory demands, such as Law 13.709 (2018), known as the General Data Protection Law (GDPL), has been highlighted as a priority for many foundations.

In the *Legal Sphere*, challenges related to the interpretation and application of laws were highlighted. Foundations frequently face difficulties due to a lack of normative standardization and constant changes in regulations, directly affecting legal security and institutional autonomy. The application of specific rules for contract management and the need for compliance with legal deadlines are examples of how legal issues influence management. The lack of flexibility in administrative processes and legal uncertainty were pointed out as factors limiting the effectiveness of the foundations.

*Project Management* stands out in foundations due to the need to balance increasing demand with available human and technological resources. The lack of clear indicators to measure workload and efficiently allocate resources is a significant challenge. Foundations adopting advanced project management methodologies, such as PMI Methodologies, and investing in dedicated Project Management Offices (PMO) have achieved greater success. However, difficulties in integrating systems and management tools, as well as the constant need to adapt to funders' requirements, were highlighted as obstacles. From the perspective of the development leader implementing systems for foundations, management difficulties stem from the lack of structured processes and the maturity level of FAPs. He also emphasized that developing information systems is essential for standardizing processes and improving operational efficiency, but resistance to change and adopting new technologies can be a significant obstacle.

## **4.2 Legal and Regulatory Environment**

The application of ANT enabled understanding of how the legal framework acts as a central actor within the network of supporting foundations. According to the findings, laws not only regulate the activities of the foundations but also trigger debates, negotiations, and adaptations within the network of involved actors. Laws, by stabilizing and destabilizing the network, play a crucial role in redefining the practices and boundaries of foundation operations, requiring constant realignment of organizational strategies and management control practices.

The difficulty in interpreting and applying laws creates challenges that need to be negotiated and resolved within the network, often leading to the adaptation of management strategies and repositioning of actors. An analysis of the regulatory environment of FAPs using Simons' Levers of Control (1995) revealed:

- *Belief Systems*: Legislation impacts the identity and organizational culture of foundations, requiring change management strategies and training. Internal communication becomes crucial to clarify the foundations' objectives, ensuring that all actors understand and effectively adapt to regulatory changes.

- *Boundary Systems*: Laws establish clear operational restrictions for foundations, requiring compliance with national and international regulations. Such boundaries necessitate risk analysis, compliance measures, and periodic reviews of procedure manuals. The

complexity and ambiguities in laws generate controversies that demand specialized legal consultancy and ongoing efforts to find practical solutions within legal frameworks.

- *Diagnostic Control Systems*: Compliance with accounting standards and accountability are critical areas affected by laws. Foundations need to develop and update manuals and accounting systems to ensure their operations comply with legal requirements.

- *Interactive Control Systems*: Continuous debate and interaction among the various actors in the network, including regulatory bodies, are essential to interpreting laws and finding viable solutions. Proactive communication and the formation of alliances are indispensable tools in this process. Observing the actions of regulatory bodies and promoting advocacy to influence legislative changes are important practices to adjust foundations to new legal requirements.

It is worth highlighting the role of oversight and regulatory bodies within the FAP network. The relationship between supporting foundations and the Public Prosecutor's Office varies significantly across states. In some locations, the relationship has been historically contentious, while in others, reports indicate more harmonious cooperation, reflecting regional differences in interpretations and application of norms by prosecutors and auditors.

Interactions with oversight and regulatory bodies have significant implications for the management control practices adopted by supporting foundations. Regulatory bodies, as spokespersons for these laws, discipline the operations of foundations, imposing their interpretations and generating new controversies. Table 4 summarizes the key impact factors identified and the affected practices.

**Table 4**  
*Impact Factors and Management Control Practices*

<b>Impact Factors on Management</b>	<b>Description</b>	<b>Related Management Control Practices</b>
Complex Dynamics of Operations	The network of interactions among foundations is dynamic, requiring diversification and adaptation of management control artifacts.	Accounting systems, financial reports for decision-making, strategic planning, statute.
Interference of Regulatory Bodies	Regulatory bodies directly influence controls, leading to changes and increased rigor in control practices.	Compliance policies, internal auditing, accountability, procurement processes, personnel hiring, procedure manuals.
Regional Variations	Relationships between actors vary regionally, requiring adaptations of management control artifacts according to local dynamics.	Adaptation of metrics, regional indicators, accountability practices.
Role of Foundations	Foundations act as intermediaries for IFES and ICT, affecting the implementation of control policies.	Implementation of control guidelines, strategic planning.
Dialogue and Negotiation	The pursuit of consensus among various actors necessitates adjustments to management control artifacts to accommodate different perspectives.	Communication and collaboration platforms, internal regulations, project management systems.

Source: Prepared by the authors (2024)

Participant observation served as the initial guide for identifying potential network components and estimating which management control practices (MCPs) are embedded within the studied phenomenon and how they are utilized. As noted by Lopes and Beuren (2017), the theoretical lens of ANT offers a distinct perspective for accounting by enabling an understanding of network interactions, tracing relationships, and influences within the network



and in the use of MCPs. ANT allows for detailed examination of the processes and dynamics involved in the use of MCPs, as demonstrated in studies by Dechow and Mouritsen (2005) and Jones and Dugdale (2000). Each foundation has its own specificities, prompting the search for different solutions for daily management challenges. These solutions also involve efforts to diversify resource mobilization and ensure transparency in the utilization of third-party resources.

In the use of MCPs by foundations, external actors to third-sector organizations, such as donors, are observed, along with internal actors (human and non-human), including employees, board members, control artifacts (Frezatti et al., 2009), and the diverse ways of employing management control systems (non-human actors) in non-profit institutions (Pletsch & Lavarda, 2016).

The process of translation employed by Alcouffe et al. (2008) illustrated the impactful influences among actors, similarly, observed in this study. It highlighted the strong impact of laws, rules, regulations, and oversight bodies on foundations, influencing the selection of artifacts and, more broadly, the MCPs adopted by foundation managers. More mature and experienced foundations were found to employ management tools in a more structured manner, with the selection and use of these tools influenced by factors such as policies, laws, funders, and regulatory bodies.

The research also identified the need for an information system capable of meeting the complex demands of foundations—a topic that remains contentious. Drawing on ANT principles, as demonstrated in studies by Dechow and Mouritsen (2005) and Lopes and Beuren (2017), the pivotal role of technological artifacts within the network is underscored. In this research, information systems were identified as the institution's biggest challenge and as a potential solution for achieving better management outcomes.

ANT enabled an exploration of how other tools are utilized or transformed under the influence of other human or non-human actors. Indicators, ISO standards, human resource management practices, projects, and institutional financial health were examined in detail, highlighting their importance in foundation management. These findings align with studies by Brito (2017), Godoy and Raupp (2017), Souza, Russo, and Guerreiro (2020), and Farias (2023), which predominantly used statistical approaches and other theories.

Following the actors within the network allows for a broader perspective on the studied phenomenon (Murro & Beuren, 2016), revealing additional actors and relationships capable of influencing MCPs. The professional association and development leader emphasized, respectively, the importance of social networks in organizing and stabilizing foundations and the value of defined, aligned processes for successful system implementation.

## **5 Conclusions**

The objective of this research was to understand the use of management control practices through the lens of Actor-Network Theory in supporting foundations for IFES and ICT. A total of 21 semi-structured interviews were conducted based on Simons' Levers of Control. The ANT methodology was used to map the network, enabling the tracking of actors and understanding their relationships, in addition to in situ observation and recognizing the symmetry between humans and non-humans.

The research revealed that the adoption of MCPs is influenced by various contingencies, such as the need for transparency in the use of third-party funds and resource diversification. The main challenges include foundation funding, the competitiveness of service costs, and compliance with laws, regulations, and oversight bodies. The translation processes highlighted

the decisive role of the regulatory environment in the selection and application of management tools.

The results demonstrated the demand for technology and information systems capable of handling the complexities of foundations. ANT underscored the importance of these technological artifacts within the actor network, which were seen as both a challenge and a solution to improving management outcomes. This requires a proactive managerial approach, capable of adapting and customizing MCPs in response to changes and interactions within the network.

Alongside difficulties in integrating management systems and tools and the constant need to adapt to funder requirements, the lack of structured processes and low maturity level of FAPs are factors that hinder management. It is emphasized that the development of information systems is essential to standardize processes and improve operational efficiency, but resistance to change and the adoption of new technologies can pose considerable obstacles.

Participatory management proved to be critical in human resource management and talent retention in FAPs, marked by a high volume of projects and financial uncertainties. The lack of clear indicators to measure workload and allocate resources efficiently was reported. PMI project management methodologies were identified as relevant for balancing demand with limited human and technological resources. Foundations adopting advanced project management techniques and investing in dedicated project offices have achieved better performance.

Interactions among various actors, both human and non-human, proved fundamental to the dynamics of MCPs. Alliances were highlighted as essential for coping with the dynamic environment that imposes frequent changes on foundation management. The study also identified the dynamic relationship between FAPs and their clients, emphasizing the transformative role of these organizations in society.

The study broadened the understanding of factors affecting management control systems by addressing the significant role of the network in organizational stability and the need for well-defined processes for effective MCP implementation. This demonstrates that an approach considering the interrelationship between actors is essential for improving management practices in FAPs and addressing challenges posed by the regulatory environment, operational complexities, and demands for innovation.

One of the study's limitations was the difficulty in obtaining detailed information from interviewees about the specific tools they use, reducing the ability to identify patterns and variations in management practices. Future research could delve deeper into the tools used through additional data collection methods and broader samples.

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