

MANAGEMENT ACCOUNTING PRACTICES ASSOCIATED WITH ORGANIZATIONAL MATURITY IN A REGULATED ENVIRONMENT

Elias Cerqueira, FIPECAFI, Brazil
Paschoal Tadeu Russo, FIPECAFI, Brazil
Juliana Ventura Amaral, FIPECAFI, Brazil
Tiago Nascimento Borges Slavov, FECAP, Brazil

ABSTRACT

This study examined management accounting practices in a private company operating under a regulated environment in the wholesale electricity market in Brazil with respect to organizational life cycle (OLC) theory. The research strategy used was a case study in a Brazilian private company that trades Contracts for Commercialization of Energy in the Free Environment - (Contratos de Compra de Energia no Ambiente Livre - CCEAL) and is subject to the process of regulation and transaction control of electric energy conducted by the Brazilian regulatory agency. The individual case study is justified because the company that is the subject of the study—hereafter “Case” to protect its identity—is among the ten largest companies in its segment

The results show how regulatory obligation (coercive isomorphism), business development, and strategy aimed at managing operational, market, and credit risks determine the use of traditional and modern management accounting artifacts. We found that growth dynamics and management style, as well as those artifacts, influenced the characteristics of organizational maturity, combining characteristics of three of the five stages of OLC theory. This indicates that the company was in the success stage with a tendency toward the survival and rejuvenation stage, signaling a departure from the characteristics of OLC theory. The research that involves economic activity recently implemented in Brazil, the commercialization of electricity in the wholesale free market, whose business dynamics signal the partial detachment of the OLC theory stages, as well as the management accounting practices recommended in the literature.

Keywords: Organizational Life Cycle; Management Artifacts; Regulated Activity.

INTRODUCTION

Electric energy is treated as a public good in Brazil because of its social importance. Therefore, the use of services is subject to government oversight via public authorities (Damazo, 2013). Companies Commercialization Agreements of Energy Purchase in the Free Environment (Contratos de Compra de Energia no Ambiente Livre - CCEAL) have a certain degree of operational autonomy but must also comply with government regulations (Marrara, 2019), as they require authorization to operate, and their transactions are monitored.

Given the regulatory aspect of energy trade, regulatory bodies demand specific management controls. Such regulatory requirements influence the management model and

accounting practices (Correia et al., 2020). In addition to regulation, another characteristic of the segment is its youth as it is a young market. In the management model and accounting literature, the youth of the sector refer to the analysis of development stages and organizational maturity based on Organizational Life Cycle (OLC) Theory (Lester et al., 2003).

Research on the evolution of regulated companies and their organizational maturity is not extensive. There is especially a lack of studies on how and when companies use management accounting artifacts in their management processes. Much of the research on the electricity sector has been conducted using regulation theory (Marrara, 2019; Januário, 2007; Damazo, 2013), indicating a lack of research on management accounting utilizing OLC.

However, for electricity traders, there may be specific idiosyncrasies or complexities in the management accounting artifacts adopted or required in the management process by regulatory force. This is because CCEAL commercialization companies operate in a free contract environment in the wholesale market and resell the purchased energy to certain “free consumers” (free and special consumers). Although they have a higher degree of operational autonomy compared to public companies that operate in the electricity market, they are also subject to government regulation (Marrara, 2019). Specifically, they require a license to operate, and their transactions are supervised by the Chamber of Electric Energy Commercialization (Câmara de Comercialização de Energia Elétrica - CCEE), in accordance with the normative law ANEEL RN 678/15. Currently, the commercialization of electric energy in the free market accounts for 89,534 MW, which represents 32% of the total energy turnover in the country, with 85% of this volume destined for industrial consumption (ABRACEEL, 2020).

OLC associates the different stages of the evolutionary process (e.g., birth, growth, maturity, rejuvenation, and decline) with the development of the organization's maturity and, consequently, with the application of different management accounting practices at each of these stages. The effects of these practices are studied through the stages of maturity or in reverse. However, the literature has not yet addressed how the first stages of the life cycle, as defined in the Lester et al. (2003) model, behave in the context of government regulation. Studies on the impact of regulation on management accounting practices suggest that the mandatory introduction of management controls in regulated organizations, even when they are considerably young, may encourage accelerated innovation of management processes (Chiwamit et al., 2017). This issue is explored in this study.

Thus, this study aims to empirically investigate the use of management accounting artifacts in the context of organizational development of a company operating under government regulation considering Lester et al.'s (2003) OLC theory. The guiding question of the study is as follows. **How are management accounting practices (MAPs) used in a private company operating under a regulated environment in the wholesale electric energy market in Brazil, given the stages of the OLC theory?**

Therefore, this study seeks to understand aspects of business dynamics and operational characteristics that influence the growth and organizational maturity of a company operating under a regulated environment, where variations are found with respect to the theoretical model of the stages of the life cycle introduced by (Lester et al., 2003). Companies are exposed to external pressures besides regulation, which also affect management practices to an extent. However, understanding how regulation in this area specifically affects the model of management practices and, thus, the characterization in the life cycle stage is a unique contribution to both practice and theory.

This study makes a practical contribution by postulating empirical elements on the characteristics of organizational maturity of an entity under sectoral regulation. These characteristics are presented using management accounting artifacts in their management processes in terms of their organizational structure, sectoral information requirements, management style, management planning and control, and business strategies. These are compared to the references of organizational maturity levels assigned to the stages of the OLC proposed by (Lester et al., 2003).

This is applied research that allows us to explore and expand the literature by contributing characteristics of the management process from the perspective of the OLC. The segment of electricity commercialization in the wholesale market is relatively new in Brazil, but it already represents about one-third of the total electricity consumption in the country (CCEE, 2019).

THEORETICAL FRAMEWORK

Regulation of Electric Energy Commercialization in Brazil

The regulation of economic activities by the state includes, among other things, the issuance of standards, control of their observance, awarding of qualifications, and arbitration of conflicts (Medauar, 2002). These regulated activities, according to previous research (Monteiro, 2014; Placha, 2010; Damazo, 2013), have characteristics that associate them with the use of public goods. The regulating state minimizes its direct interference and begins to order situations that require direct intervention to ensure the stability of the regulated sectors and encourage investment in new private sector ventures in these sectors.

In 2004, the New Model for the Electricity Sector was adopted in Brazil, initially established by the Brazilian Electricity Sector Restructuring Project (Re-Seb Project), based on Law 10.848, when the CCEE was created. The CCEE's functions include the implementation, dissemination, and management of rules and procedures for the commercialization of electric energy among its agents under free contracting (ambientes de contratação livre - ACL) and regulated contracting (ambientes de contratação regulada - ACR) (Marrara, 2019). Thus, the CCEE is the entity responsible for identifying the differences between what was generated and consumed and promoting the financial compensation of these differences between the agents (Januário, 2007).

According to ANEEL Decision 414/2010, electricity consumer classes include residential, industrial, commercial, rural, public power, public lighting, public service, and others. These consumers can be supplied with electricity as individual consumers or free or special consumers. Consumers with low individual consumption are usually supplied with electricity directly by the regional distribution licensor as own-use consumers. Among the own consumption customers, residential customers predominate (43.6%), followed by commercial (22.7%), industrial (10.2%), and rural (8.9%) customers. Special and free consumers (businesses that consume electricity with a voltage of at least 2.3 KV) are customers of electricity traders. These consumers are largely associated with business activities in metallurgy, food, chemical products, retail, wholesale, building services, and telecommunications, whose option for the free wholesale energy market allows them to better plan prices and energy consumption in the short and long terms (Energy Research Company - EPE, 2019).

To serve these classes of consumers, members of the CCEE must sell energy according to the market rules in force and under the conditions of RN 109/2004 by participating in the

auctions promoted by the CCEE with the formalization of long-term contracts, regulated contracting environment (ACR), or free contracting environment (ACL). When there are surpluses and deficits between contracted and consumed quantities in a month, the differences are settled in the short-term market (STM) at the market price (PLD) in the following month. Thus, the contracts generated in the energy commercialization process represent sectoral assets and liabilities for future settlement (delivery and payment), corresponding to the energy lots brokered by energy traders in a process of seeking a balance between demand and supply of surplus electricity in the long term (industrial input) at negotiated prices (Marrara, 2019).

To address the operational risks of price volatility, creditworthiness, and the provision of guarantees, which to some extent determine the size of the deal, dealers and customers seek to link deals to the ability of agents (party and counterparty) to borrow or lend. In some cases, the presence of economic conglomerates acting jointly to integrate commercialization activity with other proprietary activities such as generation, transmission, or distribution, a behavior called “*verticalization*” of business, can be observed (Marrara, 2019).

This market, in addition to operational verticalization with generation groups, also attracts financial agents, which tend to increase with the entry of a larger number of financial institutions and individual investors. The participation of these players is important for financing electricity generation in this new model, an essential aspect for the sustainability of the market (CCEE, 2019), which also influences the management model and accounting practices of companies operating in this sector.

Management Accounting Practices and Organizational Life Cycle Theory

Management accounting practices (MAPs) are the “*tools and/or artifacts that management accounting uses to facilitate the achievement of its objectives, such as the corporate budget, cost accounting systems, the balanced scorecard, and others*” (Souza et al., 2020, p. 34). This process is supported by management information systems and related to the answers that accounting information provides to organizational planning and control issues (Frezatti, 2017).

MAPs have been the subject of several studies that have evaluated them based on some form of aggregation. Examples include their design (Chenhall & Morris, 1986; Demartini & Otley, 2020) and their utility or use (Bisbe & Otley, 2004; Dobroszek et al., 2019). However, these and other forms of aggregation presented in these studies “*have little explanatory power about what motivates the use of different MAPs, which are perceived as the most used in the daily lives of different managers at different functional levels, and what factors distinguish them based on their usability*” (Russo & Guerreiro, 2017, p. 35).

Some research has been conducted to associate and understand the different uses of MAP depending on the different stages of OLC Theory, which derives from the biological life cycle in which organisms are born, grow, and die after their survival period. This definition is supported by several studies, including the models of (Greiner, 1972; Miller & Friesen, 1984; Lester et al., 2003). For example, Correia et al. (2016) and Valeriano (2012) concluded that there is a relationship between the life cycle stages of organizations and the management tools they use. In a study of Brazilian companies, Frezatti et al. (2010) found that the artifacts related to strategic planning, budgeting, and budget control were associated with companies in the growth (survival), maturity (success), and rejuvenation (renewal) stages.

The models based on OLC theory list five stages that summarize organizational trajectory: (1) existence or birth; (2) survival or growth; (3) success or maturity; (4) rejuvenation or renewal; (5) decline. Miller & Friesen (1984) and Lester et al. (2003) models assign central

and differentiating characteristics to each of these stages: age, firm size, organizational structure, strategy, decision-making, innovation, information processing, control, and environment (Valeriano, 2012).

The first stage, existence or birth, is associated with the beginning of business activity and organizational development of companies. In this context, which generally focuses on the actions of a founder, marketability and economic viability are sought (Miller & Friesen, 1984; Lester et al., 2003; Valeriano, 2012). In the second stage, survival or growth, formalization of processes and analysis begins (Daft & Macintosh, 1984). Growth is pursued by expanding sales of new products, differentiation, gaining autonomy and competitiveness, and climbing new stages in the continuity of the life cycle (Quinn & Cameron, 1983; Valeriano, 2012).

In the third stage, referred to as success or maturity, there is a higher degree of formalization and control in the organizational structure, where companies seek to protect what they have achieved by focusing on new opportunities (Lester et al., 2003). The environment is considered analyzable (Daft & Macintosh, 1984), and decisions are made at the top management level, while middle managers are responsible for daily operations and pursue defensive strategy and segment controls with an emphasis on strategic planning.

In the fourth stage, rejuvenation or renewal, the organization aims to regain its vitality by re-stimulating innovation and creativity through a leaner and cheaper (but still large and bureaucratic) structure, with coordination and collaboration among team members. Here, they focus on creativity and re-evaluating the customer, who again takes a prominent role in the business model and internal decisions, which are then decentralized (Lester et al., 2008).

Nevertheless, there is decline, which can occur at any time. It is mainly observed when the personal interests and goals of the administrators tend to overlap with those of the organization (Lester et al., 2003, 2008; Frezatti et al., 2010). The contamination by the political factor, struggle for power and influence (Mintzberg, 1984), inability to meet external demands, loss of the market, and lack of profit eventually undermine the viability of the company (Valeriano, 2012). The company is not as powerful as it used to be, but it is still reactive and tries to expand the products and services it offers at low cost (Lester et al., 2003).

Energy Traders and their Management Practices

The regulation of economic activities by the state includes, among other actions, the issuance of standards, control of their observance, awarding of qualifications, and arbitration of conflicts (Medauar, 2002). These regulated activities have characteristics that link them to the use of public goods, where the regulating state minimizes its direct interference and begins to order situations that require its specific action to ensure the stability of the regulated sectors and encourage investment in new private enterprises in these sectors (Levi-Faur & Jordana, 2006). One of the most important regulated sectors in the world is the electricity sector.

Unlike energy concessionaires and licensees, electricity traders are not subject to regulatory accounting. However, as with power generators, some registration information and contractual obligations are required for the purchase and sale of energy under free contracting by the CCEE through the CliqCCEE platform.

Typically, a commercialization company buys and sells energy at terms that vary depending on its relationship strategies with the market and can reach terms of more than twelve years. In addition to the duration of the energy commercialization contracts, the operational capacity of these traders depends in part on their credit guarantee, which is supported by sureties,

guarantees, loans, insurance, financing, letters of comfort, or operational limits. This support is provided by guarantors and regulated by RN ANEEL 622/2014 (ANEEL, 2014).

In the case of medium- and long-term energy contracts, the negotiated prices are fixed in advance and subsequently measured at fair value in accordance with CPC 48 - Financial Instruments, with adjustments recognized in profit or loss for the period. Consequently, interest rate volatility and the resulting appropriation of its effects (discounting of contract amounts at present value) directly affect the economic results of traders.

Another important aspect is the short-term volatility of energy prices, represented by the deficit between the contracted energy and the energy consumed during the month. Since January 2021, the Price for Settlement of Differences (PSD) has been published on an hourly basis for the whole of Brazil. If an agent has more power available than negotiated in its sales contracts, this surplus is valued through this price. Similarly, if a power plant has not generated sufficient electricity to fulfill all its contracts with its customers, it pays for this deficit, which is valued at the PLD.

Thus, in the long term, energy traders operate under special conditions in their management dynamics, compared to the business environment of a commercialization company in the traditional forms. This is due to its business environment (market regulated by concessions, permits, and authorizations), nature of transactions (contracts for the purchase and sale of energy in the free wholesale market), and market risks associated with activity (credit risks, sectoral competition between major market players, price fluctuations, interest rate fluctuations, seasonal variations in production and consumption, etc.). These operational peculiarities require the application of practices related to the measurement and management of the risks of the activity.

RESEARCH DESIGN

The research design used was a case study in a Brazilian private company that trades CCEAL and is subject to the process of regulation and transaction control of electric energy conducted by the regulatory agency ANEEL through CCEE. The individual case study is justified because the company that is the subject of the study—hereafter “*Case*” to protect its identity—is among the ten largest companies in its segment. It was an independent company at the time of the study, not affiliated with economic groups that generate, consume, or finance electricity—not “*integrated or verticalized*.” It was also granted broad access by one of the researchers, which made it possible to evaluate aspects of OLC in a company that has emerged and developed without relying on synergies with other organizations (Yin, 2015).

Case began operations in 2014 with 14 employees. In August 2020, its team increased to 50 employees, and revenues increased 6.13 times relative to 2014 from R\$481 to R\$2,949 million. It is the main electricity trader of a group of companies controlled by the same private company (SA) whose corporate purpose is to participate in companies under common control, now called Case Holding. Notably, the companies controlled by Case Holding are not related to any power producer or financial institutions.

Further, as a means of building part of the investigation instruments, it was necessary to conduct documentary research on the financial statements published by companies in this segment to identify the existence of specific MAPs (different from traditional MAPs and those commonly mentioned in the literature). The five most relevant companies in the segment were selected and provided detailed reports. The reports were evaluated through content analysis

(Bardin, 2011) using the NVIVO12 software, which made it possible to identify and segregate information that refers to the use of practices associated with them.

Measurements

To determine the life cycle stage, Frezatti et al. (2010) and Valeriano's (2012) construct was used, comprising 20 objective items in a structured questionnaire that considers dimensions such as size, governance structure, degree of centralization, organizational structure, specialization of employees, and information structuring.

For the association of the OLC stage to the MAPs, Correia et al. (2016) and Valeriano's (2012) construct was used. Among the 12 selected management accounting artifacts, the construct comprises 12 items aimed at identifying those used by managers and other Case employees of the company.

To identify the moderating role of the regulator and management of specific operational risks, a seven-item construct was developed based on the elements identified in the documentary research. The aim was to identify the importance managers attach to measures indicated by regulators in relation to identified metrics or procedures—VaR (Value at Risk), Counterparty Risk Report, Control of Collateral Taken and Assigned, CliqCCEE System, Price Volatility Stress Test, Control Report on MCP-PLD Prices, and the Energy Exposure Book.

Research Instruments

The three survey procedures used in this study were interviews, questionnaires, and document analysis. As they were conducted in this order, there was a constant attempt to compare information between sources. Therefore, after the answers to the questionnaires were analyzed, interviewees were contacted again to confirm certain practices as some answers were inconsistent when comparing interviews with questionnaires. Additionally, the document analysis was influenced by the interview and questionnaire responses while trying to cross-reference the other survey sources.

A script was written for the semi-structured interviews that included ten topics aimed at capturing the process of Case's development, sequence of strategies, perceived changes in management maturity through changes in the management model, fundraising, process structuring, as well as management practices that support each of these elements. They were conducted with four C-level executives (Founder, CEO, CFO, and CRO) from eight directorates. A total of 2 hours and 28 minutes were recorded and later transcribed and analyzed using content analysis (Bardin, 2011) with NVIVO12 software.

The questionnaire was pre-tested and sent to 23 Case employees. Twenty responses were received from directors, managers, supervisors, and technical staff. The objective was to verify whether the perceptions of professionals at this level were the same as those of managers at the C-level. The questionnaire was divided into five blocks that included demographic data of the respondent and the organization, life cycle questions, the MAP, and practices identified by regulatory action.

Corporate records, legal and regulatory documents, accounting statements, manuals, internal regulations, certificates, permits, and accounting artifacts were selected for document analysis. These documents were stored by Case in an electronic document repository. A total of 60 documents were provided. They were analyzed using content analysis (Bardin, 2011) with NVIVO software.

RESULTS

Perceptions about OLC

In interviews about the OLC, the CFO regarded Case as a “*mix of pioneering spirit, success, and reinvention*” resulting from the “*agile management style and renewal of strategies*” led by an executive committee whose meetings are in many cases “*informal and standing.*” The CRO, however, reported that it is a “*large company that has already experienced success in the short-term market and reinvention and is now returning to growth, with a business profile in the long-term market.*”

As for the Founder, Case was in the “*fullness stage,*” indicating successes in development, operational maturity, and organizational structure, with a “*professional structure*” as of 2018. This maturity stage was also recognized by the CEO but in a context “*between growth and maturity,*” focusing on the creativity of more comprehensive (long-term) solutions, with “*customer loyalty in a context of business shareholders (aggregator) rather than operating only in energy commercialization (trader), the result of a change in business strategy that took place in 2018.*”

In the questionnaires, the result of the 20 responses to the 20 items related to the 5 stages of the life cycle (with 4 questions for each stage for a total of 80 possible responses) indicates a slight preponderance in the recognition of the renewal/rejuvenation stage, with 52 affirmative responses (66%), followed by the success/maturity stage (64%) and the growth/survival stage (56%).

The slight variation in the predominance of the renewal stage identified in the questionnaire responses compared to the success stage reported in the interviews may be attributed to the fact that the interviews were with those at the C-level (4), while the questionnaires were sent to a broader sample of HR professionals (16). This finding suggests that Case does not “*fit*” into a single stage of the OLC consistent with operational dynamics and business strategies that have been realigned since 2018.

Lester et al. (2003 p. 350) assume that the life cycle influences strategy selection, and current performance can be considered a key component of the life cycle interpretation process. According to interviewees, Case was already conditioned at its “*birth*” in 2014 to meet previous technical eligibility requirements by ANEEL/CCEE to obtain market authorization. This included providing proof of previous professional experience of shareholders in the sector and a minimum capital contribution of R\$1 million (RN 678/2015). These conditions represent an “*entry barrier*” that prescribes a “*maturity level*” and financial capacity from the “*start,*” unusual requirements of the first stage of the OLC (existence) advocated by (Lester et al., 2003).

Document analysis reinforces this “*barrier to entry.*” However, certain features of organizational and corporate formality were observed in the initial company files, such as the presence of eight minority managing shareholders, formal election of a statutory board of five members, four in specific roles (CEO, CFO, CRO, CCO), and existence of a joint-stock company controlling Case (Case Holding). This gave Case a degree of formalism and organizational maturity from its first steps. This is a departure from the characteristics of OLC theory attributed to the stage of existence (birth).

Perceptions about the use of Traditional/Modern MAPs

Regarding the use of traditional and/or modern MAPs, the CEO, CFO, and CRO reported using some of these artifacts, such as strategic planning, business budget, cash flow, and monthly reports, to monitor changes in spending in the early years (2014–2017). This coincided with the time when the business model was focused on short-term operations and the decision-making process was “*centered on the founding partner.*”

In the questionnaire, which contained 12 items on the use of 7 traditional and 5 modern artifacts, it was found that the traditional artifacts used were Net Present Value (85%), Cash Flow Statement (70%), ROE / ROI (65%), and Business Budget (60%). The modern artifacts were Benchmarking (80%), Strategic Planning (70%), and BSC (80%). Given the responses to the questionnaires and the fact that more practices were uncovered in this procedure than in the interviews, a new contact was made with the CEO and CFO to understand how they thought the practices mentioned in the questionnaire were used. During this interaction, the following were found. First, NPV is used in the calculation of sectoral assets and liabilities and is reported in the audited financial statements based on an energy book discounted to NPV. Second, ROE/ROI is informally used in Executive Committee and Board of Directors meetings to discuss revenue results, but no formal reports on these indicators are issued. Third, benchmarking is practiced informally by analyzing the balance sheets of competitors without creating reports. Fourth, strategic planning is a practical concept of “*strategic thinking*” to identify opportunities and new niches without creating formal documentation due to the dynamics of management and operations of the company. Finally, balanced scorecard (BSC) is used only partially to monitor key performance indicators (KPI) without formalization in reports.

Thus, it was found that there are even related practices but with a discrete degree of formalization. Thus, it can be said that, at Case, there is a “*formal development of some structure*” in the use of management accounting artifacts, which, according to Lester et al. (2003), is only compatible with the stage of survival and growth.

Perceptions about the use of specific MAPs

To investigate the presence of MAPs other than the traditional ones and their use at Case, a previous investigation of MAPs in the energy commercialization market was conducted based on the financial reports of the 5 main traders (“*Comerc*”; “*Eletron*”; “*Matrix*”; “*Prime*”; “*Engie BR*”). Once the specific MAPs repeatedly mentioned in the statements of these companies were identified, questions about their use were asked in the interviews and questionnaire, and documents were sought that signaled their use.

As reported by the CEO, “*in the first months of the company, in 2014, the energy book was introduced. In 2015, the first risk policy was approved with the calculation of short-term VaR (Value at Risk). In 2017, the Credit Risk area was created in the Risk Policy and started to control the credit risk of counterparties, outstanding contracts, and guarantees. In 2018, the Pricing area was created for the simulation and creation of PLD scenarios, and the stress test for long-term operations was implemented.*”

Referring to these same artifacts, the CRO stated that “*without a doubt, the Energy Exposure Book is the most important artifact, followed by medium- and long-term planning, stress scenarios, risk analysis in general, and the whole financial part... we are talking about a highly financial business, so these skills are transferable... I learned in financial markets, so*

several of the practices of credit risk and financial market risk... like VaR (value at risk) ... we use them here.”

In the context of the initial authorization process for the commercialization of energy, and in accordance with the sector’s regulatory procedures, according to the CEO, CCEE is “*trying to understand from a more operational perspective whether people are willing to fulfill their obligations before the Chamber, which is to register all the contracts for the purchase and sale of energy through the available system called CliqCCEE.*”

The result of the questionnaire confirmed a 100% recognition of the use and dissemination of Value at Risk, counterparty credit risk, guarantee control and price volatility stress test, MCP/PLD price control, and energy risk book. Only CliqCCEE was not homogeneous (75% recognition).

Finally, the analysis confirmed the presence of management artifacts associated with being a CCEE agent, such as CliqCCEE for the control and management of energy purchase and sale contracts, as well as the book of energy exhibitions. However, these traces of formality in the characteristics of corporate and organizational structuring are associated with the presence of traces of informality in their dynamics of use, as indicated in the interviews.

Although Case has been active for only six years, it has characteristics of organizational maturity consistent with the success stage, with a professionalized and organized management model in the form of an economic group controlled by a company, Case Holding, composed of the main investors (foreign energy commercialization) with 65% of the capital, the remaining founding partner with 10%, and the managing minority shareholders with 25% of the stake. Decisions are made in a decentralized manner among the directors through formal delegation of powers but in a dynamic of agile collegial decision-making by an Executive Committee that reports to the Board of Directors, which, in turn, reports to the Shareholders’ Meeting.

Triangulation of findings considering research constructs

The interviews with C-level executives signaled the perception of a large company in terms of revenue and average headcount, which is in the stage of success (maturity), with tendencies toward the stages of growth (survival) and renewal (rejuvenation). This is possibly due to operational dynamics and changes in business strategy, with the transition from short-term business (trader) to long-term structured business (aggregator). The result of the questionnaire administered to the managers/employees indicates a slight majority in the recognition of the renewal/rejuvenation stage. Thus, it can be stated that there is no consensus on the life cycle framework in the perception of managers from different levels of the company. However, it is clear to both managers and employees that the company is not in the birth stage despite its short existence.

The documentary analysis confirms that Case, with only six years of operations, has organizational maturity characteristics incompatible with the birth stage and compatible with the success stage, with a professionalized management model organized in the form of an economic group. It can be deduced that the evolution of Case’s growth and organizational development is reflected by the maturity and use of management accounting artifacts, depending on the evolution of the business model, size of the company, organizational structure, and management style. This is consistent with the OLC theory proposed by Lester et al. (2003) and the studies of (Zanievich et al., 2020; Rasid & Rahman, 2009; Bessis, 2002).

Thus, it is possible to state that this “*maturity rule*” imposed on energy traders is not foreseen in the OLC theory of Lester et al. (2003), which deals with the initial stage of the

organization's emergence/existence and attributes to it the characteristics of a "*small company with an informal structure in an entrepreneurial stage, where the focus is on the viability of the company, and the decision-making is in the hands of the organization of owners,*" with theoretically free access to any type of entrepreneur.

The second statement is that, at the "*start,*" the trader must use a regulatory sectoral management tool, CliqCCEE, in which it must "*record*" all energy purchase and sale contracts as a CCEE agent. This condition of mandatory use of regulatory management artifacts by traders since birth (existence) is also not foreseen in the OLC theory, suggesting informal character in the processing of information at this initial stage.

Based on the assumption that OLC stages consider evolutionary characteristics of the firm, organizational structure, management style, and procedures for analyzing and processing information to support management and decision-making processes, we sought to confirm that management accounting artifacts commonly treated in the literature as traditional and modern (Soutes, 2006; Santos et al., 2014; Zanievicz et al., 2020), resulting from mimetic isomorphism mechanisms (imitation) and normative isomorphism (professional standardization) (DiMaggio and Powell, 1983; Oyadomari et al., 2008), have been found to be widespread and consolidated at Case. This because they are associated with the growth process and organizational maturity of the firm.

However, the formal use of these MAPs was limited only to the traditional cash flow and budget artifacts as of 2014 and the modern NPV (net present value) artifact as of 2015. Further, notably, the use of the strategic planning artifact, which was mentioned in the interviews with the CEO and CFO and emerged from the responses to the questionnaire, was not confirmed in the analysis of the documents, as no document formalizing this artifact was found. This indicates that despite the "*thinking*" and strategic decisions reported by Case, the adoption of a formal artifact in this sense did not find a place in management dynamics, contrary to the research of Russo & Guerreiro (2017), who conclude that strategic planning is one of the most used artifacts.

At this point, a third statement can be made—in the energy commercialization business model, the adoption of traditional and modern MAPs to support a more analytical and bureaucratic environment focused on processing internal information, as recommended in theory, was not confirmed as a rule at Case.

Nevertheless, the adoption of the CliqCCEE artifact was observed due to regulatory requirements (coercive isomorphism) and the book of energy exhibitions, which is categorized by the author as a specific artifact (related to corporate control and strategy) and therefore theoretically not related to the mechanisms of isomorphism.

Finally, it is worth noting the reverse situation. The non-formal application of many management accounting practices that have been cited as important to the decision-making process, such as strategic planning, is subject to regulation with a life cycle stage higher than birth even in a company such as Case. This shows that there is a disconnect between what is prescribed (regulation), what is required (internal characteristics), and what is done. The CFO's speech mentions strategic planning and communicates that it has been approved by the Board with goals revised periodically, pointing out what is needed for Case to address the internal characteristics and meet the requirements of the regulation. However, in practice, it does not formally exist, indicating the gap between what was found. Now, Russo & Guerreiro (2017) had already highlighted that there are differences in what motivates the use of different MAPs, which are perceived as the most used in the daily life of different managers at different functional levels, and what factors distinguish them based on their ease of use.

CONCLUSIONS

The trajectory of growth and organizational development of the studied company resulted in the sophistication and use of management accounting artifacts according to the development of the business model, company size, organizational structure, management style, and sophistication of information processing, which is consistent with the OLC theory proposed by (Lester et al., 2003). However, the dynamics of organizational development of energy traders differs in some ways from the theory used, both in “*start-up*” as it is a business for already “*experienced*” entrepreneurs and in the dynamics of management and funding. Moreover, even if these companies have reached maturity and the greater stage, they need more agility in their decision-making process, given the volatility associated with market, operational, and credit risks.

Regarding the perception of the studied company in one of the OLC stages, it was found that, although it is a mature company, its dynamism and business model only partially correspond to the successful stage, given its success and notoriety in its market.

These findings can show regulatory bodies the impact of regulations on management accounting practices. This study addressed the reality of the electricity market, but other regulated sectors face the same situation. In this study, managers of companies in regulated segments can see the reason for professional management at the beginning of the companies and understand why regulated companies, even when they emerge, do not even fit into the birth stage in practice.

As this is a case study, the findings do not support generalizations about organizational development and the use of management accounting practices in the electric energy commercialization sector. Therefore, the results and conclusions are limited to the objectives of a case study and provide a “*building block*” for empirical and exploratory knowledge on this topic.

Other research opportunities can be proposed in this segment, preferably with a more representative sample of companies in the sector both in Brazil and abroad. These include, among others, the following: (a) evolution of the stages of the OLC recommended in the literature and “*alternative*” stages of OLC in energy commercialization companies; (b) adoption of differentiated MAPs in the management process of energy traders; (c) impact of operational and financial verticalization on the adoption of MAPs by traders; (d) impact of commoditization of the electricity market; (e) relevance of the business strategies of energy traders acting as traders in the short-term market and as aggregators in the long-term market; (f) trends and implications of the separation of ballast and energy, with the possibility of the market becoming a financial derivatives market; (g) implications for the management of energy traders resulting from the opening of the energy market to consumers and retailers; (h) synergies of the management accounting artifacts of financial and credit institutions with electricity traders.

REFERENCES

- Agência Nacional de Energia Elétrica [ANEEL] (2014). Resolução Normativa n. 622 de 19/08/2014. Dispõe sobre as garantias financeiras e a efetivação de registros de contratos de compra e venda de energia elétrica, associados à comercialização no âmbito da Câmara de Comercialização de Energia Elétrica.
- ANEEL (2015). Resolução Normativa n. 678 de 01/09/2015. Estabelece os requisitos e os procedimentos atinentes à obtenção e à manutenção de autorização para comercializar energia elétrica no Sistema Interligado Nacional – SIN.
- Associação Brasileira dos Comercializadores de Energia [ABRACEEL] (2020). Boletim Abraceel da Energia Livre, from <https://abraceel.com.br/wp-content/uploads/post/2020/04/Boletim04-Abril.pdf>

- Bardin, L. (2011). Content analysis (5th ed.). Lisbon, PT: Edições 70.
- Bessis, J. (2002). Risk Management in Banking (2nd ed.). Chichester, UK: John Wiley & Sons.
- Bisbe, J., & Othley, D. (2004). The effects of the interactive use of management control systems on product innovation. *Accounting, Organizations and Society*, 29(8), 709-737.
- Câmara de Comercialização de Energia Elétrica [CCEE] (2019). Relatório Anual da Administração, from <https://www.ccee.org.br/relatoriodeadministracao/relatorio-anual-administracao-ccee-2019.pdf>
- Chenhall, R. H., & Morris, D. (1986). The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems. *The Accounting Review*, 61(1), 16-35.
- Chiwamit, P., Modell, S., & Scapens, R.W. (2017). Regulation and adaptation of management accounting innovations: the case of Economic Value Added in Thai state-owned enterprises. *Management Accounting Research*, 37, 30-48.
- Correia, E.E., Lima, A., & Ching, H.Y. (2020). Management Accounting Practices, Quality, and Performance in the Context of a Natural Monopoly. *Journal of Education and Research in Accounting (REPeC)*, 14(2), 237-256.
- Correia, R.B., Gomes, S.M., Bruni, A.L., & Albuquerque, K.S.L.S. (2016). An empirical study on life cycle and organizational internships. *ReAC-Revista de Administração e Contabilidade da FAT*, 8(2), 14-30.
- Daft, R.L., & Macintosh, N.B. (1984). The nature and use of formal control systems for management control and strategy implementation. *Journal of Management*, 10(1), 43-66.
- Damazo, E.J. (2013). Use of public good by electric utility and limits to its charge. *Jurisprudência Mineira*, 64(207), 19-36.
- Demartini, M.C., & Otley, D. (2020). Beyond the system vs. Package dualismo in performance system design: A loose coupling approach. *Accounting, Organizations and Society*, 86.
- DiMaggio, P., & Powell, W. (1983). The iron cage revisited – Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Dobroszek, J., Zarzycka, E., Almasan, A., & Circa, C. (2019). Manager's perception of the management accounting information system in transition countries. *Economic Research*, 32(1).
- Empresa de Pesquisa Energética [EPE] (2019). Balanço energético nacional 2019 – Relatório síntese ano-base 2018, from <https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/>
- Frezatti, F. (2017). Orçamento empresarial: Planejamento e controle gerencial (6a ed.). São Paulo: Atlas.
- Frezatti, F., Relvas, T.R.S., Nascimento, A.R., Junqueira, E.R., & Bido, D.S. (2010). The planning profile and the organizational lifecycle of Brazilian companies. *RAUSP Management Journal*, 45(4), 383-399.
- Greiner, L.E. (1972). Evolution and revolution as organizations grow. *Harvard Business Review*, 50(4), 37-46.
- Januário, A.C.V. (2007). The renewable energy sources market: proposal for its development and implications in the wholesale market administrator. Unpublished doctoral dissertation, Universidade de São Paulo, São Paulo.
- Lester, D.L., Parnell, J.A., & Carraher, S. (2003). Organizational life cycle: A five-stage empirical scale. *The International Journal of Organizational Analysis*, 11(4), 339-354.
- Lester, D.L., Parnell, J.A., Crandall, R.W., & Menefee, M.L. (2008). Organizational life cycle and performance among SMEs. *International Journal of Commerce and Management*, 18(4), 313-330.
- Levi-Faur, D., & Jordana, J. (2006). Toward a Latin American regulatory state? The diffusion of autonomous regulatory agencies across countries and sectors. *International Journal of Public Administration*, 29(4-6), 335-366.
- Marrara, C.P.O. (2019). Relevant aspects of electricity marketing contracts concluded in the free-to-sell environment, Unpublished doctoral dissertation, Escola de Direito de São Paulo, Fundação Getúlio Vargas, São Paulo.
- Medauar, O. (2002). Regulation and self-regulation. *Revista de Direito Administrativo*, 228, 123-128.
- Miller, D., & Friesen, P.H. (1984). A longitudinal study of the corporate life cycle. *Management Science*, 30(10), 1161-1183.
- Mintzberg, H. (1984). Power and organization life cycles. *Academy of Management Review*, 9(2), 207-224.
- Monteiro, J.A.M. (2014). The influence of the implementation of international standards and regulatory accounting on the management accounting system of Brazilian electricity companies, Unpublished doctoral dissertation, Universidade Federal de Pernambuco, Recife.
- Oyadomari, J.C., Cardoso, R.L., Mendonça, O.R., & Lima, M.P. (2008). Factors that influence the adoption of management control artifacts in Brazilian companies: an exploratory study from the perspective of institutional theory. *Revista de Contabilidade e Organizações*, 2(2), 55-70.
- Placha, G. (2010). The impacts and perspectives of state regulation on economic activities. *Revista de Direito Econômico Socioambiental*, 1(2), 251-270.

- Quinn, R.E., & Cameron, K. (1983). Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence. *Management Science*, 29(1), 33-51.
- Rasid, S.Z.A., & Rahman, A.R.A. (2009). Management accounting and risk management practices in financial institutions. *Journal Teknologi*, 51, 89-110.
- Russo, P.T., & Guerreiro, R. (2017). Perceptions about the sociomateriality of management accounting practices. *Revista de Administração de Empresas*, 57(6), 567-584.
- Santos, V., Bennert, P., Figueiredo, H., & Beuren, I.M. (2014). Management accounting instruments used by micro, small and medium-sized companies: Study in an accounting services company and its clients. Anais do 26º Congresso Brasileiro de Custos. Natal, RN.
- Soutes, D.O. (2006). An investigation of the use of management accounting artifacts by Brazilian companies, Unpublished doctoral dissertation, Universidade de São Paulo, São Paulo.
- Souza, R.P., Russo, P.T., & Guerreiro, R. (2020). Study on the usability of management accounting practices most intensely used by companies operating in Brazil. *Revista Contemporânea de Contabilidade*, 17(45), 33-49.
- Valeriano, C.E.B. (2012). Ciclo de vida organizacional e artefatos de Contabilidade Gerencial: Uma investigação nas 250 PME que mais cresceram no Brasil entre 2008 e 2010 (Dissertação de mestrado). Universidade de São Paulo, São Paulo.
- Yin, R.K. (2015). Case Study Research. Design and Methods Sage Publications, Thousand Oaks, 7th ed.
- Zanievicz da Silva, M., Marques, L., & Cecon, B. (2020). Relationship between management accounting artifacts and the organizational life cycle of companies within the consumer cyclical sector. *Innovar*, 30(76), 105-118.

Received: 06-Jan-2023, Manuscript No. AAFSJ-23-13092; **Editor assigned:** 09-Jan-2023, PreQC No. AAFSJ-23-13092(PQ); **Reviewed:** 23-Jan-2023, QC No. AAFSJ-23-13092; **Revised:** 02-Mar-2023, Manuscript No. AAFSJ-23-13092(R); **Published:** 09-Mar-2023