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## Decision of the firm's vertical boundaries: Considerations on complementarity

*Decisão das fronteiras verticais da firma: Considerações de complementaridade*

*Decisión de los bordes verticales de la empresa: Consideraciones de complementariedad*

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### ABSTRACT

This essay aimed to present as an approach guided by propositions of theoretical complementarity of Transaction Costs Theory (TCT); Measurement Costs (MCT) and Resource-Based View (RBV), can support the understanding of the adoption of the vertical integration governance structure. Therefore, we sought to propose a theoretical scheme, based on a qualitative approach based on the concept of complementarity. It was found that the transaction of highly specific assets (TCT) and difficult to measure (MCT) justify vertical integration, but the theory of RBV, points out that the choice of agents also depends on the availability of capacities and resources. Thus, the formulation of this theoretical proposal seeks to contribute to the empirical analysis of the production chains considering organizational and strategic aspects.

**Keywords:** vertical integration; transaction costs; measurement costs; resource-based view; complementarity.

### RESUMO

Este ensaio objetivou apresentar como uma abordagem orientada por proposições de complementaridade teórica da teoria dos Custos de Transação (TCT); Custos de Mensuração (TCM) e Visão Baseada em Recursos (VBR), pode alicerçar a compreensão da adoção da estrutura de governança de integração vertical. Buscou-se, portanto, a proposta de um esquema teórico, a partir de uma abordagem qualitativa fundamentada no conceito de complementaridade. Constatou-se que a transação de ativos de alta especificidade (TCT) e de difícil mensuração (TCM) justificam a integração vertical, mas a teoria da VBR aponta que a escolha dos agentes depende também da disponibilidade de capacidades e recursos. Assim, a formulação dessa proposição teórica busca contribuir para a análise empírica das cadeias produtivas considerando aspectos organizacionais e estratégicos.

**Palavras-chave:** integração vertical; custos de transação; custos de mensuração; visão baseada em recursos; complementaridade.

### RESUMEN

El estudio buscó presentar como un enfoque guiado por proposiciones de complementariedad teórica de la teoría de los Costos de Transacción (TCT); Costos de Medición (TCM); Vista Basada en Recursos (VBR), puede apoyar la comprensión de la adopción de la estructura de gobernanza de integración vertical. Intentamos proponer un esquema teórico, con metodología cualitativa y el concepto de complementariedad. Se descubrió que la transacción de activos altamente específicos (TCT) y la dificultad de medición (TCM) justifican la integración vertical, pero la teoría de VBR señala que la elección de agentes también depende de la disponibilidad de capacidades y recursos. Así, la formulación de esta proposición teórica busca contribuir al análisis empírico de las cadenas productivas considerando aspectos organizacionales y estratégicos.

**Palabras clave:** integración vertical; costos de transacción; costos de medición; visión basada en recursos; complementariedad.

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## 1 INTRODUCTION

An organization's performance depends on, among other aspects, decisions regarding governance and coordination among agents, especially considering the value chain and its vertical relations. Considerations about these decisions lead the New Institutional Economics (NIE) framework to focus on transactions. This perspective defends the role of institutions in economic development processes (North, 1990), and through this lens one can study the strategies which organizations (or firms) adopt to better adapt to the dynamic and changeable institutional environment where they work.

These strategies are inherent to the way in which the agents of a production chain organize their transactions. Defined by Williamson (1985), transactions happen when goods or services are transferred across a technologically separable interface, becoming subject to analysis as a contractual relation. After deciding how to organize their transactions, agents will opt for a governance structure, establishing boundaries for the firm. These boundaries can be placed within vertical integration, such as when firms opt to internalize their production or, conversely, acquire externally, signing contracts with suppliers. This process is known as the 'make-or-buy' decision (Williamson, 1985).

In this study we look at the governance structure in the instances where firms opt for internalizing activities (vertical integration) instead of contractual relations. We highlight that there are other academically validated theoretical frameworks that explain vertical integration, such as neoclassical economics working with production costs, for which efficiency can be increased with an economy of scale acting upon a company's processes. This study, however, aimed at discussing a topic which goes beyond production costs, as they are not enough to influence this decision, even if they are an alternative perspective. Along that same line, Coase (1937) and Williamson (1985), in their theories of firms, propose that it is necessary to understand contractual relations in order to understand vertical integration. Similar to in-house production, trades also create costs, and vertical integration can come to diminish these transaction costs in order to increase efficiency (Souza & Bankuti, 2012).

Within the New Institutional Economics framework, vertical integration is viewed differently by different approaches, but it is always employed towards higher efficiency. Transaction Costs Theory (TCT) discusses it as the solution to the bilateral dependence that arises from transactions between organizations, positing that the higher the specificity of the asset, the more vertical integration should be pursued in order to prevent opportunistic behavior (Zylbersztajn, 2009). On the other hand, Measurement Costs Theory (MCT) proposes vertical integration as an answer to the difficulty of measuring attributes and to the agreement between supplier and customer, eliminating the free-rider problem (Barzel, 2005).

However, one can come to question as to why

organizations which should apply integration do not do so in practice, even though the theory shows vertical integration as the most efficient model (Coase, 1937; Williamson, 1985; Barzel, 2005). In this paper, we aimed at demonstrating that one reason for the absence of integration is the lack of resources and capabilities. For Barney (1999), a firm's and its potential partner's capabilities have significant impact upon the firm's decisions regarding its boundaries. Therefore, the study of the logic based on resources behind decisions concerning governance structures are within a third theoretical framework, founded on strategy formulation, named Resource-Based View (RBV).

According to Jacobides & Winter (2005), RBV provides a framework which independently impacts strategy formulation as a field of its own. Its roots come from the economic theory discussed in Penrose (1959), especially as a firm performance theory. More recently, this resource-based logic was extended beyond explanations about a firm's performance, reaching topics related to a firm's configuration and boundaries (Jacobides & Winter, 2005). This framework suggests, then, that vertical integration is influenced by the dynamics of resource management and changing environments (Teece et al., 1994).

In that direction, a sizeable body of work has been presented, supported by empirical evidence, showing contributions brought by complementarity between TCT and RBV in decisions favoring vertical integration (Foss, 2005; Jacobides & Winter, 2005; Saes, 2009; Argyres & Zenger, 2012; Crook et al., 2013; Tebboune & Urquhart, 2016; Ghozzi et al., 2016; Gulbrandsen et al., 2017), as well as complementarity between MCT and TCT (Zylbersztajn, 2009). Still, there have been few attempts to combine TCT, RBV and MCT in order to explain vertical integration, as Augusto et al. (2018) have demonstrated. In fact, this is one of the few and most recent studies in Brazil which discuss the complementarity of all three approaches.

Thereby, despite recent developments, considerable knowledge gaps still stand, and we are inquired with the following research question: "How do the constructs of capabilities and resources (RBV) combine with the constructs of transaction costs (TCT) and measurement costs (MCT) to determine decisions about vertical integration in institutional arrangements?" In view of what has been exposed, we suppose in this study that independent analysis of the fundamental propositions of each individual approach, when possible, is not enough to warrant full comprehension of the aspects at play in the decision about governance structures of vertical integration. Argyres & Zenger (2012) maintain that the two frameworks (NIE and RBV) are so intrinsically associated that viewing them as independent and competing approaches is essentially fruitless. This justifies the importance of studying their complementarity and proposing an attempt at overcoming their limitations using their theoretical constructs as foundation. Considering these knowledge gaps, we aim to contribute to a research agenda that focuses on comprehending the decisions regarding

governance structures from the viewpoint of complementarity between the theory of the firm (TCT and MCT) and strategic management theory (RBV).

Based on these considerations, this paper intended to present how an approach grounded on views of complementarity between the frameworks of TCT, MCT and RBV can support understanding about the adoption of vertical integration structures. From this basic intention, we seek to learn how resources and capabilities can be decisive to favor verticalization when there are specific assets and difficult-to-measure entities involved. It must be highlighted that RBV only provides *ex-post* explanations, a trait we understand as a limitation of the framework, which lacks predictive (*ex-ante*) capabilities in regards to integration. Therefore, this study also aims to contribute for the understanding of the influence of RBV at the moment of adoption of this governance structure, for it being complemented by the other approaches.

Thus, in light of this paper, we expect to provide a basis for future studies on the application of this theoretical discussion in various productive chains. Considering that objective, the next section and subsections will present a theoretical review on New Institutional Economics and Resource-Based View, encompassing propositions from TCT, MCT and RBV itself, as well as their arguments in regards to the option for vertical integration. In Section 3, we clarify methodological aspects; in Section 4, we introduce and discuss our results and the proposition of a theoretical framework, widening the scope of this debate. Lastly, we present our conclusions and our references.

## 2 THEORETICAL FRAMEWORK

### 2.1 New Institutional Economics

Initially, it must be highlighted that the contemporary institutional thought is essentially divided into two main theoretical lines, the first of which is known as Old Institutional Economics (OIE). As stated in Aguilar Filho & Silva Filho (2010), this line helped disseminate the approach of economic analysis, and sought to study economic phenomena employing analytic tools from other sciences, such as psychology, grounding itself on the influence of technologic developments, social and historical facts, and practices of collective norms and values. Old Institutionalism, as it may also be known, is guided by initial thinkers, such as Commons (1959), Mitchell (1967) and Veblen (1974).

The second theoretical line, our focus in this study, is New Institutional Economics (NIE), stemming from the studies of Coase (1937), Williamson (1985) and North (1990). This framework originates from the previous theoretical line, presented earlier, but differs from it on methodology and concepts due to being based on conventional economic thinking, related to understanding of the influence of the institutional matrix on the economic environment (Aguilar Filho & Silva Filho, 2010). Joskow

(2003) posits that New Institutional Economics is clearly different from Old Institutional Economics, emphasizing that NIE seeks to better explain economic phenomena so that economic policies are able to better serve social interests (Joskow, 2003).

In this context, New Institutional Economics has been a topic of much debate in the scientific community. It emerged in the 1930s, with Ronald Coase's foundational article *The Nature of the Firm* (1937), when contributions in economic theory, which aided and directed theories of today's NIE, began. As stated by Coase (1937), the firm could be created in an uncertain configuration of manufacturing activities and, for that, the analysis is developed following two subjective coordination models: the market and the firm (Zylbersztajn, 1995).

Coase (1937) discussed the dynamism provided by competition in the market, where the costs of enacting different coordination strategies would diverge enough for one strategy to be clearly preferable to another. As a consequence, these costs, which do not originate from production processes, would depend on the how transactions happen. These costs could have two distinct natures: the costs of finding the relevant prices in the market or the costs of negotiating and making a contract (Zylbersztajn, 1995).

#### 2.1.1 Transaction Costs Theory (TCT) and vertical integration

As an approach within the framework of New Institutional Economics, Transaction Costs Theory arose from Coase's work (1937), stating that a firm's transaction costs with the market might add up to a higher amount than its internal costs. However, it was still necessary to clarify the differences between these costs in order to provide organizations with evidence that aided decision-making in regards to the choice between vertical integration or going to the market.

Considering that, Williamson (1985) detailed the need to outline these costs, pointing to the necessity of finding suitable governance structures for each type of transaction, according to their characteristics (frequency, uncertainty and asset specificity), seeking to minimize transaction costs. Beyond that, because contracts involve costs, Transaction Costs Theory (TCT) lists behavioral premises that stem from information disparities between economic agencies, be them from limited knowledge or opportunism (Williamson, 1985).

In the realm of decisions regarding governance structure, Williamson (1985) also defined the structure of vertical integration, our focus in this paper, pointing to how the combination of technologically distinct processes, such as production, manufacture, distribution and sales, within the same organization, might be under the same chain of command (an individual, company, conglomerate, institution or other entity) and involve ownership of assets (Williamson, 1985). Therefore, Williamson's (1985)

fundamental argument is that decisions in favor of vertical integration rely mainly on asset specificity, while trying to save on transaction costs. This highlights that asset specificity is the most important characteristic to consider, and Williamson (1985) explains that it relates to the degree to which a transaction requires 'specific assets', or 'specialized assets', which are defined as assets that cannot be repurposed or redirected without sacrifice of its productive value in case contracts are interrupted or prematurely terminated.

Williamson (1996) defines six asset specificity types, as listed: 1) Site specificity: refers to strategic location in relation to firms that work in the same chain of production, lowering transportation and storage costs; 2) Physical asset specificity: relates to physical characteristics of goods in transactions, in case products demand specialized tools or machinery to be made; 3) Human asset specificity: refers to the learning or specific skills a determined process requires, which come to be through a 'learn-by-doing' process; 4) Dedicated assets: arises when one of the involved agencies invests in production, considering certainty of a significant volume of product sales to a different agent, transforming it into a specific asset; 5) Temporal specificity: refers to the transaction value being subject to when it happens, so that the time becomes essential, either to the attribution of value to goods or to the efficiency of the productive process; 6) Brand-name capital: relates to the reputation for which the organization or good is known (Williamson, 1996).

Milgrom & Roberts (1992) emphasize that specific assets are connected to the degree to which a transaction requires specialized assets and thus, related to the existence of specific assets, 'quasi-rents' emerge. Consequently, decisions regarding governance structure have to consider this phenomenon in order to solve the bilateral dependence caused by it. Therefore, the higher the asset specificity, the more vertical integration must be pursued, as a way to prevent opportunistic capture (Williamson, 1985; Zylbersztajn, 2009).

### **2.1.2 Measurement Costs Theory (MCT) and vertical integration**

Another theoretical line within the framework of NIE, coming from a microanalytic perspective, is the Measurement Costs Theory (MCT), devised by Yoram Barzel (1997, 2005) as a complement of literature about incomplete contracts. Assuming that goods have multiple attributes within Measurement Costs Theory, Barzel relates institutional arrangements to controlling efficiency loss in transactions, given the difficulty of measuring determined exchanged attributes (Barzel, 2002; Zylbersztajn, 2009). As a result, this theory starts out from the concept of efficiency, but has a distinct rationale when compared to TCT. For Barzel, even seemingly simple transactions can be decomposed in different dimensions (attributes); each individual dimension of a transaction reflects an exchange of property rights, and it may carry a measurement cost and

a value for the agents of the transaction (Zylbersztajn, 2009).

Barzel (1997) elucidates that, in regards to property rights, there is a distinction between economic and legal rights. Legal rights over an asset is guaranteed by the State, defining its ownership by a particular individual (Barzel, 2005). As for economic rights, Barzel (2003, 2005) defines it as the ability to explore an asset, directly or indirectly through exchanges, in a forward-looking way. The author also emphasizes that the main aspect of economic rights refers to individuals' capabilities, not regarding what individuals are legally allowed to do, but what they believe might be feasible with the asset attributes. This affects the choice of a governance structure, aiming to maximize the value of an asset when there are high measuring costs (Barzel, 2003; 2005).

North (1998) states that measurement costs consist in quantifying the values of goods and services, or agents' performances, derived from the various attributes from countless isolated activities which make up a transaction. Objectively measurable and verifiable information, which involve low measurement costs, are the ones with highest likelihood to be part of transactions under formal contractual regulations (Barzel, 1997). However, in transactions involving difficult-to-verify information, such as product or service quality, private ordering mechanisms are necessary (Furubotn & Richter, 2005). Hence, decisions regarding governance structure occur as a result of the information available to suppliers and buyers, and this information is related to effective identification of asset attributes and their measurement difficulty. According to Barzel, "individuals, however, will choose to organize activities in the least [information-]dissipating modes available to them." (Barzel, 2005, p. 359).

Barzel (2003; 2005) discussed the inherent reasons of a decision in favor of vertical integration, listing work relations, work-share, degrees of specialization, with special attention to information transmission between transactors and quasi-rent capture. The author presents a discussion about guarantees in transactions, stating that advantages are diminished when there are intermediate operations separating guarantor and guaranteed, making vertically integrated firms better suited for information transmission. Barzel (2003; 2005) notes that it is only advantageous to vertically integrate intermediate operators in a firm when these in fact gain from 'taking a ride' on guarantees, also as a means to avoid capture of guarantees.

Also, according to Barzel (1997), opportunities of quasi-rent capture imply that property rights are not well delineated, leading to maximization behavior, creating disputes. The reason lies in the existence of difficult-to-measure attributes, measurements of which are costly and prone to errors, and if transactors are uncertain of how their exchanges will progress, their economic rights are not clearly defined (Barzel, 2005). The author then posits vertical integration as a potential solution for such situations.

In regards to capture reduction, Barzel (2005) defends that firms benefit from improved reputations for avoiding quasi-rent capture.

In this sense, according to Barzel (2003; 2005), the level of difficulty for measuring transactional dimensions is the indicative factor for governance structure choices, in the form of transaction attributes. Thus, for Barzel (2005), vertical integration derives mainly from difficult-to-measure attributes, and guarantee and quasi-rent capture among transactors, in an attempt to eliminate the free-rider problem.

## 2.2 Resource-Based View (RBV)

As we have demonstrated so far, the matter of structures of governance has been debated by theoretical lines within New Institutional Economics (NIE), specifically the frameworks of Transaction Costs Theory (TCT) and Measurement Costs Theory (MCT). However, governance structures have also recently been a topic of analysis for further comprehension under the approach of Resource-Based View (RBV) (Argyres & Zenger, 2010).

RBV originated from the will to study firms internally as a way to understand why some firms have a better performance than others. From this perspective, Penrose (1959) showed that firms are heterogeneous and have different performances, and competition arises from that in imperfect markets. The author then defined the firm as a collection of resources, under internal direction, for production of goods and services which are sold in markets for a profit.

Durand et al. (2017) highlight that interest on the competitive heterogeneity between firms motivated studies on their origins. Consequently, there is a research continuum at different degrees of analysis, in which classic predictors of performance variation, be them micro or macroeconomic in nature, become the relevant focal phenomena. Due to the diversity of origins for competitive heterogeneity and to the width of interrelations among such origins, the focus on phenomena grows and leads to development and increase of new paths of research.

Therefore, since Penrose, there have been other author who follow similar thinking, such as Porter (1980; 1985), who sees strategic advantage as stemming from differentiation, cost leadership and focus. Nelson & Winter (1982), in turn, devised the evolutionary economic theory, connected to the emergence of the contingency theory. During the same period, Wernerfelt (1984) analysed firms as a collection of resources in the form of tangible and intangible assets. Assets were only seen in a concrete manner under RBV perspective after the work of Wernerfelt (1984), when the author created an analogy between the traditional view, based in products, related to Porter's (1985) competitive model, and a resource-based view (Augusto et al., 2013).

Wernerfelt (1984) notes that firms must be analysed in terms of their resources, and not in terms of their product,

as indicated in Porter's (1985) model. Thus, the term 'resource-based view' was initially presented in his paper 'A Resource-Based View of the Firm' (1984), as an attempt to formulate a theory regarding the competitive advantage based on the resources an organization controls and employs to compete in the market (Barney & Clark, 2007).

Due to this initial development, Wernerfelt (1984) is seen as the first author in specialized literature to employ an RBV approach, inspired by the work of Penrose (Saes, 2009). With Penrose (1959), Wernerfelt (1984), Barney (1991) and Peteraf (1993) as precursors, this strategy-focused approach presents a new theoretical perspective looking at the firm, and not the industry (Foss, 2005; Saes, 2009). This developed the theoretical foundation for RBV and, at the same time, the theory has increasingly been used as grounds to show the relevance of strategic resources in clarifying the boundaries of the firm.

### 2.2.1 Resource-Based View (RBV) and vertical integration

In this section, we aim to highlight the main concepts and premises of RBV, and aspects which may aid in comprehension of what determines the vertical boundaries of the firm.

Initially, it is necessary to delineate the meaning of the term 'competitive advantage' for the theoretical frameworks with which we work in this paper. Porter's definition, for whom economic advantage is connected to the economic foundations of competition, is notorious. According to Magretta (2012, p. 73), Porter states that an organization will have competitive advantage if it has 'superior performance resulting from sustainably higher prices, lower costs, or both', explaining that 'ultimately, all cost or price differences between rivals arise from the hundreds of activities that companies perform as they compete.' Saes (2009) ponders that this viewpoint relates to an approach within Organizational Economics known as Strategic Positioning Analysis (SPA). Under SPA, according to Porter's perspective, a competitive strategy aims for an advantageous, profitable and sustainable positioning in relation to factors which create competition in the market.

However, Saes (2009) points out that RBV lies within a different approach of Organizational Economics. For the author, RBV concentrates on the factor market rather than the goods and services market (on which SPA focuses) and, inspired by Penrose (1959), posits that a firm's competitive advantage derives from the possession of strategic resources. Considering this, we use the term 'competitive advantage' within the viewpoint of RBV, interpreting that the distinct resources and capabilities which the firm has available can warrant sustainable competitive advantages (Penrose, 1959; Wernerfelt 1984; Rumelt, 1991; Barney, 1991; Peteraf, 1993; Conner & Prahalad, 1996). This means that advantages are a by-product of an assembly of resources which are either developed or captured by the firm, and which are superior to those of the competitors (Wernerfelt, 1984).

Discussing resource-based views of a company, Barney (1991) suggests it replaces two alternative propositions for the analysis of the sources of competitive advantage. The first proposition states that firms within the same industry (or group) may be heterogeneous in regards to the strategic resources they control. The second proposition states these resources might be imperfectly mobile (resource immobility) in all businesses and, consequently, heterogeneity may be long-lasting. This results into the fact that, when applied to a firm, RBV examines the implications of these two propositions in the analysis of sustainable competitive advantage sources (Barney, 1991).

From the discussion about the two propositions indicated by Barney (1991), namely heterogeneity and immobility, four further conditions for sustainable competitive advantage are indicated (Foss, 2005). As long as resources possess these characteristics, they may grant competitive advantage to the firm: 1) be valuable, in a way that it allows the firm to exploit opportunities and avoid environmental threats; 2) be rare among current and potential competition, so that not many firms possess the same value-creating resource simultaneously; 3) be imperfectly imitable; 4) be non-substitutable, in a way that there are no strategically equivalent resources which are valuable, rare or imperfectly imitable available (Barney, 1991).

In turn, Foss (2005) indicates that it is not necessary for a resource to have all four attributes in order to sustainable competitive advantage to be reached, while, on the other hand, heterogeneity and immobility are required. Conversely, having valuable, rare, imperfectly imitable and non-substitutable resources does not warrant competitive advantage, but when the conditions of immobility and heterogeneity are met, sustainable competitive advantage is attained (Saes, 2009).

Peteraf (1993) argues that the conditions resources must have for sustainable competitive advantages are: 1) superiority, or heterogeneity of resources (within an industry), in such a way that it allows the firm to efficiently generate profit; 2) *ex-post* limits to competition, in the sense that rents are not dissipated by competition by means of an efficient resource bundle, which implies imperfect imitation; 3) resource immobility, allowing for the creation of bound, specialized rents; 4) *ex-ante* limits to competition, suggesting that the resource market may consume all potential profits (Peteraf, 1993).

Foss (2005) compared Barney's and Peteraf's models. The researcher analyzed if RBV, as a framework, deals with sustainable competitive advantages in balance with unique product-market strategies, as per Barney (1991), in terms of rent differentials (profits), as per Peteraf (1993), or a mixture of both approaches. For Foss, Barney's approach, a distinguished strategy, does not necessarily translate to sustainable profit (Peteraf's approach) (Foss, 2005; Saes, 2009). Therefore, Peteraf's

comprehensiveness in regards to sustainable competitive advantage associated with differential profits in excess of opportunity costs, in general, is more thorough when it comes to revenue streams adequacy (Foss, 2005).

About this discussion on RBV, Poppo & Zenger (1998) claim that boundary decisions are of primary strategic importance. In consonance with pure RBV discussions (Barney, 1991; Peteraf, 1993), if competitive advantage originates ultimately from valuable and difficult-to-imitate resources (Wernerfelt, 1984), then the definition of boundaries determines resource ownership and composition. According to Argyres (1996), differently from the framework of transaction costs, the capabilities approach is incapable of offering predictions, providing only *ex-post* explanation. Beyond that, there is no consensus regarding its point of analysis: in Barney (1991), it is the strategies of the firm; in Peteraf (1993), it is the individual resources and their conditions (Foss, 2005; Saes, 2009). Similarly, Foss (2005) indicates a difficulty in RBV methodology to explain boundaries. Here, we will consider capabilities and strategic resources as our point of analysis, combining both perspectives.

Furthermore, when resources meet the conditions of immobility and heterogeneity, there is guaranteed sustainable competitive advantage (Barney, 1991; Foss, 2005). According to Foss & Stieglitz (2010), another key point of RBV is what factors make resources difficult-to-imitate. For them, competitive advantages derive from asset stocks which are specific to the firm and are internally accumulated, such as brand-name reputation, production capability and technological know-how, seeking the best way to make decisions about strategic investments (Foss & Stieglitz, 2010). Similarly to how Teece et al. (1997) worked with path dependency, Foss & Stieglitz (2010) also indicate asset development as 'path-dependent', in the sense that it depends and derives from learning, investment, asset stocks, activity development and asset history.

Saes (2009) indicates that sustainable competitive advantages have their value not only created through the use of scarce and difficult to imitate resources, but also through the costs of controlling the property rights of these resources. In this sense, even in a situation of economic equilibrium, within an RBV framework, vertical integration is seen as a means of strategic resource protection and control (Argyres & Zenger, 2012; Tebboune & Urquhart, 2016). In accordance to Augusto et al. (2014), the guarantee of protection over the property of resources and capabilities involved in transactions can be achieved by organization through the configuration of governance structures, such as vertical integration.

### 2.3 Literature on the complementarity between TCT, MCT and RBV

Similar to the works of Saes (2009) and Foss (2005), the search for integration between different strategy approaches is a movement which originated in the 1990s.

Durand et al. (2017) points out that in that decade and in the current century there has been an extension of conceptual and theoretical diversification driving the open, flexible and pluralist nature of the field, in such a way that a theoretical framework with several tentative contributions is already presented, including Langlois (1992) and Zylbersztajn (2009) (who discusses integration between TCT and MCT). There are also studies which propose arguments on the grounds of resource capability and logic as a path to complementarity (between TCT and RBV), such as Jacobides & Winter (2005), Argyres & Zenger (2010), Crook et al. (2013), Foss & Foss (2004) Tebboune & Urquhart (2016), Ghozzi et al. (2016), and others such as Argyres (1996), Poppo & Zenger (1998), Leiblein & Miller (2003) and Gulbrandsen et al. (2017). Following the same perspective, this study seeks to discuss this theoretical direction, looking at the interaction of the three theories and discussing the propositions that concern the decision to integrate.

Even though the premises of Transaction Costs Theory (TCT) are widely known, Resource-Based View researchers defend that, surely, RBV is not feasible without empirical data. Nonetheless, as it is presented today, this approach is more explanatory than predictive. In other words, it allows an analyst to tell the *ex-post* story of a firm's success, or why its boundaries are set where they are, but it is considerably weaker in regards to predicting future success or future patterns of economic organization (Foss, 2005; Argyres, 1996). To such end, this section will discuss papers that studied the Resource-Based View in relation to determining the boundaries of the firm, seeking to propose the integration between this strategic theory and other theories within New Institutional Economics (TCT and MCT).

Firstly, one must consider institutional aspects which relate Resource-Based View (RBV) and New Institutional Economics (NIE). According do Oliver (1997), considering the meaning of 'institution', the accumulation and choice of resources are conditioned to decisions either in the endogenous or in the exogenous sphere of the organisation (Foss, 2005). Similarly, North (1990) states that in this environment, actors must regularly make decisions based on incomplete information and process in using inadequate mental models which result in inefficient paths. That said, choices in the endogenous sphere are guided by the intention of rationality and aimed towards efficiency, effectiveness and profit (Oliver, 1997).

In turn, exogenous factors are strategic aspects of the market, involving the power of buyers and bidders, magnitude of competition and market structure of the product. Such factors, as per Oliver (1997, p. 698), "influence what resources are selected, as well as how they are selected and deployed." In this manner, decision-making regarding possible alternatives is conditioned, apart from other factors, by the expansion strategy, the availability and the allocation of the resources required for decisions of

this scope, as well as by the institutional environment that permeates the organization.

Concerning institutions, Dorobantu et al. (2017) brought once again non-market strategy studies to the foreground, providing a typology based on New Institutional Economics, which summarizes and aims to supersede previous research. The authors' expectation is to offer a more robust and associated set of decisive factors in governance decision-making for companies facing weak institutions, whether locally or internationally. Their governance-based model focuses on three major non-market strategy divisions: organizational, collective and political.

In turn, Argyres (1996), in his empirical study that analyzes some companies' 'make-or-buy' decisions, sets out from the proposition that firms vertically integrate those activities in which they believe they have more production experience (capabilities) than potential suppliers, outsourcing those activities in which they have lower capabilities, except in cases where there is an explicit intention, in the long term, to develop such capabilities internally (Argyres, 1996).

According to Argyres (1996), differently from transaction costs logic, a capabilities-focused approach is unable to make predictions, offering only *ex-post* explanations. The author found in his research some cases where transaction cost aspects would foresee vertical integration, but the firm opted for outsourcing, presenting a reasoning consistent with the argument of relative capabilities. Also, there were situations in which, at different stages of production, it was possible to find activities carried out internally and outsourced activities, decisions that always had as motivation both transaction costs and determinants related to capabilities (Argyres, 1996).

In posterior research, Argyres & Zenger (2010) argue that their proposal is clear: firms internally govern activities and assets when they possess comparative capability, outsourcing activities when they possess comparative incompetence. Barney (1999, p. 138) affirms that some firms are simply better at doing some things, and, as a result, "the capabilities possessed by a firm and by its potential partners often should have a significant impact on boundary decisions." In a similar manner, Jacobides & Winter (2005) assert that, when seeking to understand whether or not firms are integrated, it is fundamental to analyze the allocation of their productive capability.

In this context, empirical research on RBV seems to support the logic of comparative capabilities, much like the study by Argyres (1996), described before, which presented several examples of a manufacturing firm where the relative capabilities of the firm seem to be decisive factors of the boundaries. Concerning the connection between RBV and vertical integration, Ghozzi et al. (2016) recently presented a perspective which emphasized the relevance of RBV rationale, establishing a two-step logic explanation. The first consists in knowing 'why' a determined governance

structure (market, hybrid, hierarchy) was chosen, using a series of analytic items. The second refers to 'how' it was chosen, providing more subsidies in relation to the strategic development model, which is based on a combination of both competitive advantage and comparative resources (capabilities). Such a combination of factors indicates the vertical integration model, be it internal development or acquisition, depending on the relevance of the firm's need for superior knowledge.

Following the same thinking, other authors sought to empirically relate skills and specialized experience with vertical integration decisions. Poppo & Zenger (1998) looked into decisions about boundaries using a TCT approach combined with RBV and MCT explanations. The authors' results indicated that a theory of the firm and a theory of boundary choice would be complex, demanding integration of transaction costs (TCT and MCT) and resource-based views (RBV).

It is noted that, as a result of the boundary choices made via RBV, Poppo & Zenger (1998) found that governance influences the development and transfer of capabilities and knowledge, seeking to understand how capabilities determine boundaries and limits influence capabilities. They also note that when valuable knowledge can be generated by company-specific language and routine development, hierarchy is preferred, but when company-specific routines and language generate impediments to the creation of valuable knowledge, markets are favored, Poppo & Zenger (1998) conclude.

Leiblein & Miller (2003) and Hoetker (2005), focusing on specialized experience, or specialization, examined these aspects in regards to boundary definition. Jacobides & Hitt (2005), on the other hand, analyzed the firm's boundary setting within the mortgage banking industry, finding that firms with higher productive capabilities in a determined production phase carried out these activities internally. Thus, it can be understood that the basic idea that emerges from the application of resource-based logic in this context is the simple concept that firms determine whether to make or buy through a benchmarking process. As the comparative capabilities move, the limits of the firm are determined (Argyres & Zenger, 2010).

Meanwhile, other knowledge-based researchers, coming from a different perspective, have studied empirical findings previously seen in Transaction Costs Theory, stating that specialized activities are internalized for reasons of greater governance efficiency combined with greater asset specificity within the firm (Monteverde, 1995). They establish that the more specific an activity, the greater the use of firm-specific language and routines, and, therefore, the more efficient its internal governance will be. Poppo & Zenger (1998) claim that these researchers observed that this explanation entirely circumvents the possibility of opportunism, considering vertical integration a 'creator of positives' instead of an 'avoider of negatives.'

Furthering the discussion, Augusto et al. (2013), in seeking complementarity between RBV and TCT, posit that opting for vertical integration from the perspective of learning is in line with the results of Ghoshal and Moran (1996), Poppo and Zenger (1998) and Argyres and Zenger (2010). Augusto et al. (2013) then suggest that these researchers argued that the choice of vertical integration can be based on the company's commitment to the development of skills, aiming at proactivity, learning and collaboration. Opportunism resulting from specific assets does not seem to be, therefore, the exclusive motivation for integration.

Furthermore, Augusto et al. (2013) confirmed Langlois's (1992) proposition that the capabilities of the market and of organizations, accompanied by governance costs, determine the boundaries of the firm in the short term (Augusto et al., 2013). Still from the perspective of dynamic capabilities (DCs), as discussed in Langlois (1992), Gulbrandsen et al. (2017) dealt with DCs focusing on elements of knowledge, routines and resources of the company. The researchers presented in their results that DCs and TCT are simultaneously indispensable concerns when debating the decision between outsourcing and internalizing activities, pointing out the complementarity of these theories for the comprehension of vertical integration.

Other theorists have sought the complementarity of RBV and TCT, such as Jacobides & Winter (2005), who point out that after a disintegration, integration may occur again when there are more radical changes in new technologies, integrated resources become valuable, with prevalence of transactional practices that are often obsolete, thus leading to a phase of vertical reintegration. These authors thus suggest a complementarity between TCT and RBV, arguing that in order to understand capabilities, it is necessary to look at the roles of transaction costs and scope development. They also find that the distribution of resources (production capabilities) influences the vertical scope and competitive dynamics, and that the change in integration affects competition (Jacobides & Winter, 2005).

Tebboune and Urquhart (2016) used the TCT and RBV theories in order to predict the sourcing strategies employed by Netsourcing suppliers. They found that, for TCT, asset specificity and uncertainty motivated the internalization. In particular, the researchers noted that the uncertainty attribute has a stark influence in the boundaries, especially applying RBV to the analysis, since they found complementary resources in Netsourcing supply strategies as a motivation for internalization. In this situation, if the level of uncertainty linked to these resources is high, there is a tendency for complete vertical integration, aiming for complete control of the service.

Tebboune & Urquhart (2016) found that each theory would not be able to independently explain the full extent of the decisions made by the evaluated companies. However, when these theories are analyzed in a complementary way,



their explanatory power can be considerably improved. The authors showed that TCT and RBV were not presented as competing theories to understand the same phenomenon from the same perspective, but acted in a complementary way to explain the same phenomenon from different perspectives (Tebboune & Urquhart, 2016).

Along the same lines, Ghozzi et al. (2016) addressed the complementarity between TCT and RBV in order to understand the influences of the adoption of non-GMO standards in poultry supply chain governance structures in France and Italy. The research presented an important conceptual contribution. Within the TCT framework, the concept of opportunistic behavior was discussed with the insertion of an intermediate degree of opportunistic behavior, whereas the RBV framework indicated a stepwise approach, associating the strategic relevance of activities to potential superior knowledge (Ghozzi et al., 2016).

The authors indicate the complementarity between TCT and RBV to support the analysis of the decision of governance structure, besides verifying that the theoretical relevance is subject to transaction presented as well as to the mode of governance that is being analyzed. This is based on the findings that TCT clarifies the choice of governance in the relationship between producer and processor, while the RBV presents more consistent explanations in the relationships between processors and distributors. Considering this, Ghozzi et al. (2016) suggested that an independent theoretical perspective may not be sufficient for a complete understanding of the firm's boundaries, thus expanding the points of investigation on determining factors which must be complementarily analyzed for this decision.

Going further in the context of integration between TCT and RBV, Gulbrandsen et al. (2017) studied the complementarity between Transaction Costs and Dynamic Capabilities (resources used to extend, modify, alter and/or create common resources), using these approaches to explain decisions regarding vertical integration in the hydroelectric power sector, in relation to the provision of maintenance services and technical upgrades. Employing the TCT approach, the researchers considered transaction costs, specific investments and supplier reliability; regarding the capabilities view, they used the concept of Dynamic Capability (DC), but with a focus on similarity of capabilities, meaning the level at which the company can develop the same resources as the supplier, which are internally necessary (Gulbrandsen et al., 2017).

Presenting their results, Gulbrandsen et al. (2017), when applying the integrated model of transaction costs, capabilities and resources, found an explanation for vertical integration in 63% of the analyzed cases, pointing to a broad explanatory power within the model. In view of this, the authors consider that in addition to its assumptions, TCT should also consider at which level the organization has means to internally develop the necessary capabilities, which is shown to be the impetus for boundary decisions,

given that by using existing capabilities, purchasing organizations can save on transaction costs in contractual relations and on their production costs, thus directly impacting on internalization.

Thus, Gulbrandsen et al. (2017) suggest integration between the paradigms of transaction costs and capabilities and resources, because, to the extent that they address each other's gaps, the theories are complementary. The authors posit that their findings provide an empirical basis for the value of using these two approaches with the firm in focus, pondering that each perspective is relevant but insufficient to independently explain decision of boundaries. From their results, Gulbrandsen et al. (2017) point out that more empirical research is needed, which can combine the perspectives of TCT and capabilities and resources, with respect to predictive investigations of the vertical structure (Gulbrandsen et al., 2017).

For Argyres and Zenger (2010), TCT and RBV present quite similar views, in conceptual terms, regarding the definition of the firm's boundaries. Concerning RBV, the authors propose that it is necessary to reflect on how to handle the matter of which resources are complementary in order to create a competitive advantage. Meanwhile, TCT inquires which of these complementary resources will be directed to remain in common ownership of the firm and which will be independently owned. Argyres and Zenger (2010) state that they, along with several other theorists, share the idea that if capability differences between a firm and its potential suppliers play a key role in the firm's governance definitions, it is largely possible that transaction costs are somewhat influential in the origins of such differences.

As a result, Argyres and Zenger (2012), as in their previous papers, argue that the resources are very relevant due to the transaction costs that arise from their generation, purchase, sale and governance. In this perspective, Argyres and Zenger (2010; 2012) show that RBV supports management in clarifying what resources are necessary for the firm's strategy, and TCT has the role of providing information regarding direction in the supply and organization of these resources. Additionally, TCT has as its central concern the matter of which governance options promote the development of which types of capabilities. The authors then advise researchers to look for these associations between capabilities and transaction costs, in addition to which forms of contractual safeguards allow the transfer of tacit knowledge and encourage the development of the desired routines, making it possible to understand the insertion of property rights, which are inherent in the Measurement Costs Theory (MCT) (Argyres & Zenger, 2010; 2012).

Foss (2005) sought more specifically, within this discussion, a path through which the integration supported in his study could be formulated, emphasizing that in the context of economy of property rights (MCT), a theoretical insertion for organizational economics is presented, in a way

it would be able to complement and deepen RBV by improving the understanding of resources and adding new theoretical perspectives to the value of resources.

In addition, in regards to strategic choice (RBV), flaws which are clearly related to the transaction can be found. Market failures arise as transaction costs are introduced into the perfect world of Coase theorem (1960). As a result, choices such as organizational arrangements become important, as with positive transaction costs, different arrangements lead to different results in terms of value created (Foss, 2005). Saes (2009) and Foss & Foss (2004) argue that, independently, none of the theories (TCT, MCT or RBV) is capable of bringing together the essential elements of sustainable competitive advantages (SCA), adding that TCT and MCT cannot properly introduce limited rationality, which would make it possible to understand the heterogeneity of firms, while RBV presents difficulty, in regards to methodology, to elucidate the existence of economic organizations.

In the same direction, Foss (2005) clarifies that in this complementarity proposal there is the point that resources are not given, but rather result from saving in operations with transaction costs. For that, resources which are considered equal, in different companies, may be economically distinct, resulting in that businesses do not have the same conditions to protect important attributes. Foss (2005) highlights resources that may warrant advantages for businesses, increasing the creation of value, and that may be appropriated through minimization of transaction costs (Williamson, 1996; Barzel, 1997). The author thus proposes that such resources are relevant origins of heterogeneity and competitive advantages in several industries. However, as per Foss (2005), this point was largely neglected in RBV, considering that this occurs because such resources are only perceived in a scenario with positive transaction costs, while RBV has not yet explicitly adopted the point of view of transaction costs (Foss, 2005).

With regard to identifying and promoting theoretical and empirical developments that integrate multiple theoretical currents, Gans & Ryall (2017) demonstrate progress with value capture theory. This theory allows access to 'blind spots' in the main themes to analyze the heterogeneity of performance among organizations, encompassing works such as Porter's 'five forces' (1979), Resource-Based View (RBV), and Transaction Costs Theory (TCT). Simultaneously, the value capture model provides a theoretical framework in which key points and empirical tests of these prevailing theories can be evaluated and integrated. By addressing a broad – and potentially measurable – concept of value, the model provides support for integrating and comparing shareholder and stakeholder approaches interested in the organization's objectives.

Saes (2009) indicates this as a relevant and favorable topic for the integration of these theories, which had already been presented by Foss & Foss (2004), but somewhat neglected by RBV in relation to value creation and its

capture. These theorists assume the existence of a large differential between the value of the quasi-rents to be generated and the way they will be distributed. In a situation of transaction between different resource owners, there may be loss of rents, leading to dissipation of value and few stimuli for its subsequent creation. In Nickerson (2003), RBV does not account for the costs of internal hierarchies in the organization, allowing a disparity for high-cost strategies of value capture. In addition, with RBV, managers may fail to capture value if their unique resources are not valuable enough for clients (Nickerson, 2003; Saes, 2009; Ghozzi et al., 2016).

This means that the value which a resource-owner can create is subject to the property rights (defined or otherwise) that they own (Foss, 2005). For Saes (2009), including transaction costs gives the strategies suggested by RBV new perspectives, since the choice of the governance structure will lead to a situation of greater (or lesser) appropriation of rents. It is also understood that, in case of difficulty of protection, the structure may tend towards vertical integration.

Following this line, Saes (2009) understands that, in order to integrate these theories (TCT, MCT and RBV), there is the realization that, when considering transaction costs, a strategy that formulates barriers to entry is sustained. Regarding the firm's internal resources (RBV), these can be understood as specific assets and thus studied from the NIE approach (TCT and MCT). Besides that, TCT and MCT consider resources as a set of attributes that define property rights. Therefore, the way attributes are collected to constitute a resource depends on transaction costs (Saes, 2009; Foss, 2005).

Therefore, as suggested by Argyres & Zenger (2010; 2012), research focused on this type of issue certainly leads to discoveries about the relationships between governance choice and capability development. In the same way, this goal will be pursued in section four, for an analytical proposal of complementarity between TCT, MCT and RBV, aiming for the consistent association of these theories in the decision of vertical integration.

### 3 METHODOLOGY

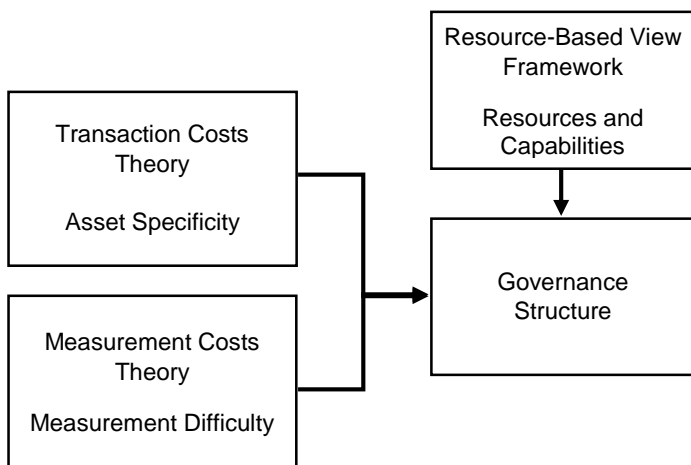
In methodological terms, this research is bibliographic and qualitative in nature, with literature review employed to elaborate a theoretical framework. For this purpose, categories of analysis were elaborated (Figure 1), establishing a basis for the analysis of the information that was collected in the theoretical research.

Data collection was carried out during the period from March to December 2019, by means of database search, having as inclusion criteria discussing themes pertaining to the Vertical Integration of the Firm; Proposals for complementarity between TCT and MCT, between TCT and RBV, between MCT and RBV, and between TCT, MCT and RBV. The selected publishing period included from seminal

papers of the Theories to contemporary research, spanning from 1930 (such as Coase, from 1937) to 2019. The main search engines were SPELL (Scientific Periodicals Electronic Library), CAPES (Portal de Periódicos), SciELO (Scientific Electronic Library Online) and SciVerse Scopus databases.

It should be noted that we tried to follow the guidelines proposed by Reay (2014); with regard to the design of the qualitative research, the quality of the collected data was paramount, and we were based mainly on solid and well-regarded references, including the founding texts of each approach. The discussion was then complemented with relevant contemporary references of the lines discussed, providing a rich description of methodological paths.

The categories (Figure 1) result from the theoretical approach for the proposal of complementarity. As for the specific methodological paths for the elaboration of this proposal, we identified as fundamental constructs of each theory for the analysis scheme developed: transaction costs (TCT), measurement costs (MCT), capabilities and strategic resources (RBV). Resulting from these constructs, the basic categories of each theory are presented, guiding the theoretical and analytical aspects to explain the formation of the governance structure of vertical integration, namely: assets of high specificity (TCT), difficulty of measurement (MCT) and presence of strategic resources and capabilities (RBV). Regarding the elaboration of the theoretical scheme, it was based on the concept of complementarity by authors Ennen & Richter (2010), Bacharach (1989) and Suddaby (2010), who discuss the concept of theoretical models and how they are elaborated. Also, the model of application of this methodology for complementarity was based on the works of Augusto et al. (2017) and Augusto et al. (2018), as shown in Figure 1.



**Figure 1.** Categories of research analysis.

Source: Developed by the authors.

Ennen & Richter (2010) define the concept of complementarity as the favorable interaction of factors in a system, where the presence of one factor increases the value of others. Accordingly, the proposal of this study considers, in addition to the individual theories, its

approaches in complementarity, already presented only between the theories of TCT and MCT, and TCT and RBV. Thus, it is considered that complementarity results in a different sum than when factors are considered individually, contributing to a more complete theoretical framework in understanding the decision for vertical integration, from the perspective of these heterogeneous views for the analysis system in the model of complementarity. In this context, Bacharach (1989, p. 498) conceptualizes a theory as a "system of constructs [...] in which the constructs are related to each other by propositions".

From Suddaby's (2010) perspective, at the heart of the clarity of a theoretical construction there must be four main elements. The first element is that definitions are important. Accordingly, the basic categories of analysis for each approach were elaborated (Figure 1): asset specificity (TCT); measurement (MCT); strategic capabilities and resources (RBV) and governance structure. The second is that the theoretician delineate the scope conditions or in which contexts the construct will or not apply. We sought to determine, in regards to the constructs, the approaches of NIE (TCT and MCT) and of Economic theory (RBV), by applying these approaches to the choice for vertical integration. The third one states that besides clear distinctions between the concepts, it is necessary to show the semantic connections between concepts and other constructs. In the relationship between constructs, we elaborated sub-propositions (section 4.2), establishing their link between the categories to which they belong.

Finally, it is necessary to present a logical level of cohesion in the construction of the general theoretical justification that is sought to be established. In this study, the central proposition, as well as the sub-propositions related to it, meet the general objective of the research, be it the complementarity in the decision of vertical integration between the three theories, TCT, MCT and RBV.

Nevertheless, Foss & Hallberg (2017) defend methods such as propositions. According to the authors, although discussions in the field are mostly disconnected from implications of empirical validations, modifications in propositions are deeply intertwined with theoretical progress. In particular, the authors suggest this in relation to Resource-Based View, for which developments in strategic organization theories may occur in response to academic discussions in relation to what has been constituted as adequate propositions, even when there is no empirical evidence to validate or falsify them. They have thus pointed out how changes in propositions can motivate future progress in strategic theory (Foss & Hallberg, 2017).

## 4 ANALYSIS AND DISCUSSION OF RESULTS

### 4.1 Complementarity between TCT, MCT and RBV: an analytical proposition

In view of the theoretical argument presented, the aim was to establish a discussion of the theories belonging to

the New Institutional Economics (TCT and MCT) along with the Resource-Based View Theory (RBV), belonging to Strategic Theory. As both seek to study the performance of the firm, on the one hand the theories on the microanalytical side of the NIE focus on efficiency, on the other hand, the Strategic Theory of RBV focuses on strategies for sustainable competitive advantages. Although they come from different perspectives and work independently, each theory has its own rationale to justify the decision of vertical integration, and so one can seek complementarity, since both have congruent objectives. In the same sense, Foss & Hallberg (2017) emphasized the importance of focusing on the origins of approaches and the potential benefits of combining assumptions from adjacent disciplines, in a highly aware and rigorous manner, as we sought in this essay.

Faced with this, the proposition of complementarity comes from the observation of the proposed literatures of the three theories until now, noting that, according to Foss (2005), none of them independently gives enough support to fully explain the option of integration. Tebboune & Urquhart (2016) consider that the managers responsible for boundary decision making may consider that a greater number of analysis units will help them to make better decisions. This section, as a result, seeks to bring about a discussion which posits that, from the complementarity of their different aspects, the theoretical limitations of each approach to explain vertical integration can be expanded through the union of the three theories (Foss, 2005; Foss & Hallberg, 2017).

The analysis was based on the Transaction Costs Theory (TCT) and was represented by Williamson (1985); the Measurement Costs Theory (MCT), with its creator Barzel (2005); coupled with the Resource-Based View (RBV) approach, introduced by Penrose (1959). By analyzing the proposition of complementarity, in order to understand its different assumptions, we tried to contrast them in what concerns their theoretical and empirical aspects, showing how their different perspectives can seek vertical integration, justifying it and being determinant for it to occur.

It should be noted that the proposition for complementarity of the TCT and MCT approaches, based on the study by Zylbersztajn (2009), is considered for this study. It was also based on the studies by Foss (2005), Saes (2009), Augusto et al. (2017) and Augusto et al. (2018), all of which proposed the complementarity between TCT, MCT and VBR. These propositions were widely elucidated and disseminated by academic research, bringing relevant points to the theoretical formulation of this work. Moreover, as has been discussed, the papers that dealt separately only with the integration of TCT and RBV are considered here, in addition to the theoretical review widely discussed on their complementary aspects.

#### **4.1.1 Proposition of complementarity 1 – theoretical aspects of TCT, TCM and VBR**

For the sake of objectivity and clarity, together with the search for a distinct contribution, complementarity between the three approaches was proposed in this subsection. First of all, it presents an overview of its theoretical proposals. In a second moment, based on these general assumptions of integration, a second specific analysis was made in relation to the proposition of complementarity for the decision of vertical integration.

For this purpose, the basic analysis structure of the three approaches was based on the work of Zylbersztajn (2009), Saes (2009) and Augusto et al. (2017; 2018). Thus, the following aspects of analysis were considered: (1) origin, (2) unit of analysis, (3) assumptions, (4) testable hypotheses, (5) processes and (6) rationale.

As for the Origin: In regards to Transaction Costs Theory (Williamson, 1985; 1996) and Measurement Costs Theory (Barzel, 1997; 2002), they are aspects of the New Institutional Economy (NIE), and are at the analytical level of micro-institutions. These are derived from the ideas of Coase, the theories of the firm with a perception of transaction costs with an aim for efficiency. Considering that the NIE is a theory that defends the role of institutions in the process of economic development (North, 1990), it can be seen that, in their origins, both theories (TCT and MCT) consider that institutions are important and these are taken for granted, thus linking the set of efficient and viable solutions (Zylbersztajn, 2009).

As for the Resource-Based View, it has its origin in Economic Theory, from the consideration that economic theories of balance, since Adam Smith and the "invisible hand of market", did not clarify the distinct performance between organizations, since they had as an assumption that the firms are homogeneous and the market was the one that determined the transactions (Rumelt, 1991). Thus, in its inception, RBV considers that the firms are heterogeneous and have different performance, which brings about competition in imperfect markets (Penrose, 1959). This heterogeneity is also reflected by the fact that there are a number of different stakeholders in the company, and these stakeholders have an important influence on the strategy and performance of the organization. The related stakeholders do not involve solely the usual parts of the industry, as per Durand et al. (2017, p.7), "but also other actors such as [...] standard-setting institutions, [...] government institutions, NGOs, and so on."

The complementarity between the three theories is understood in relation to the Origin, because if NIE defends the role of institutions, therefore, it also defends the process of economic development, which includes, in addition to the approaches of TCT and MCT, also the RBV, because it seeks the strategic advantage in this economic sphere in which different actors meet. Therefore, the institutions are crucial because they establish the structures and governance (TCT), and they enforce the property rights

(MCT) of the attributes of strategic resources (RBV) in this economic and competitiveness sphere.

Regarding the Unit of Analysis, in TCT it is the transaction of assets (Williamson, 1985). Similarly, in MCT, the unit of analysis refers to the transaction, however, the transaction is seen in asset dimensions. For Barzel (2003; 2005) there are several attributes in the same asset, each of them must be measured so that property rights can be defined.

As Caleman et al. (2006) and Zylbersztajn (2009) analyze, it is understood that the two are not conflicting at all; on the contrary, MCT presents itself as an extension, complementing the transaction views of TCT. Given that the transaction continues to be the unit of analysis, the behavioral assumptions and transaction dimensions are therefore considered within TCT; while MCT considers the transaction as the unit of analysis.

As clarified by authors such as Saes (2009) and Foss (2005) the Unit of Analysis within the RBV perspective is not consensual, as other definitions are considered, such as: activities, strategies, processes, routines, capabilities, competence, among others. Thus, while in Barney (1991) the unit of analysis is perceived as strategies, which rely on resources and capabilities, Peteraf (1993) formulates a different approach, considering the individual resources in the context of the firm as the unit of analysis, which refers to the conditions of the resources instead of the strategies (Foss, 2005; Saes, 2009). Faced with this discussion, the unit of analysis is considered in this essay as strategic capabilities and resources, which includes both perspectives, based on the standpoints of Foss (2005) and Saes (2009).

When considering the proposed scenario, the complementarity as related to the Unit of Analysis is presented among the three theories in the form of decisions on firm structure. Choosing the specific governance structure for the protection and enhancement of resource attributes involves the introduction of transaction and measurement costs analysis (Saes, 2009). It is understood that this protection for increasing the value of resources involves transaction and measurement costs, leading to the definition of ideal organizational forms.

As for Theoretical Assumptions, in TCT these are behavioural assumptions that lead to contractual incompleteness. Williamson (1985) introduced behavioural assumptions of limited rationality and opportunism. According to Azevedo (2000), the limited rationality has to do with the incompleteness of contracts, since certain terms of the transaction are not contracted *ex-ante*; however, the opportunistic behavior of agents leads to renegotiation and sometimes to *ex-post* disputes and ruptures. This opportunistic behavior may be more or less detrimental to the contractual relationship, which implies transaction costs (Caleman et al., 2006).

As far as MCT's assumptions are concerned, contractual incompleteness is also shown. For Barzel

(1997), it is assumed that contracts will always be incomplete. However, contrary to Williamson's (1985) assumption, their incompleteness does not stem from any hypothesis on the rationality of the parties. For Barzel (1997), contractual incompleteness is a combination of the high cost of obtaining an exact measurement and the vast set of specific and non-uniform attributes, coupled with the maximizing behavior of agents, who exploit opportunities to capture value (Monteiro & Zylbersztajn, 2011).

Barzel (2005) calls them 'maximizing transactors', not opportunists, when it comes to quasi-rents, and states that capture opportunities exist everywhere, which is why transactors have spent resources to capture what they can. In order to maximize, individuals seek to reduce the resource expenditures associated with capture. It can thus be said that contractual incompleteness is distinct in both approaches (TCT and MCT), but they are both concerned with avoiding it and treating it.

As Theoretical Assumptions of RBV, there are strategic resources available to the company combined with its use to build sustainable competitive advantages, which determine the firm's long-term performance (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993). This performance will depend on the control and protection of resource attributes, as seen in Foss (2005). As per Saes (2009), Barzel (2005) sees a sustainable competitive advantage in the ability of agents to identify unexploited attributes of assets (resources); they would establish appropriate governance structures to protect and capture the value of those attributes. In line with Augusto et al. (2018), Tebboune & Urquhart (2016), and Ghozzi et al. (2016), this demands vertical integration by seeking control to protect these resources.

In this context, regarding the point of complementarity of the Theoretical Assumptions of the three theories, in the face of contractual incompleteness, there is a search for vertical integration to the extent that there are specific resources, by TCT, of difficult measurement and with higher cost by MCT, besides being strategic by RBV. Such points are capable of dissipating the value of resource attributes, as well as creating opportunism and contractual incompleteness. Thus, the integrated structure, in accordance with Barzel (1997), would be seen as ideal to avoid these aspects of relationship between agents, protecting and maintaining factors of competitive advantage in regards to the resource, besides being specific (TCT), being strategic (RBV).

Regarding the Testable Hypotheses, the transaction attributes can be found in Williamson's TCT (1985), indicating three main ones: asset specificity, uncertainty and frequency. The specific assets are highlighted because they are linked to the degree to which the transaction requires specialized assets. Related to the existence of a specific asset, a quasi-rent is created, which can become the object of dispute (Milgrom & Roberts, 1992). To solve this bilateral dependence that is created, a decision for the most

adequate governance structure must be made, which states that the greater the specificity of assets, the more vertical integration will be sought, to prevent opportunistic capture behavior (Zylbersztajn, 2009). Regarding the Testable Hypotheses within MCT, Barzel (2003; 2005) states that the capture of quasi-rents by specialized assets is simply a manifestation of difficult-to-measure attributes. At this moment, he makes his contribution to TCM, arguing that the notion of measurement costs is more general and more operational than that of specific assets, concluding that the existence of capture opportunities implies that (economic) property rights are not well delineated, leading to maximization behaviors and generating disputes.

In this case, measurement is costly and prone to error. If the transactors are not sure of how they will perform in their exchanges, their economic rights are not well defined. The author thus indicates methods of resolution, such as vertical integration, standardization and the use of long-term relationships. With the feasibility of adopting methods such as standardization and long-term relationships, it will be easier to define property rights and the tendency is to reduce measurement and verification costs, making the parties of the transaction opt more often for the contractual form instead of vertical integration (Barzel, 2003; 2005).

The Testable Hypothesis for RBV refers to the logic that the high degree of non-imitable resources (Barney, 1991) demands vertical integration. Under the viewpoint of Foss (2005), given the costs of protecting property rights over resource attributes, owners generally choose to control the property rights of the relevant attributes at different levels, and the value that may be appropriate for a resource will reflect this scenario. In a case of difficulty to delineate rights, vertical integration is sought.

One can thus seek an interdependence of these theoretical lines, within the framework of Testable Hypotheses, regarding the firm's internal resources (RBV). These can be understood as specific assets and thus studied from the approach of both TCT and MCT (Saes, 2009). Thus, strategic, specific and difficult-to-measure resources can motivate a structure of vertical integration. In addition, there are examples of coordination that, when not explained by the difficult measurement of assets, can be explained by the specificity of assets and/or strategic resources (Caleman et al., 2006).

Next, we sought to discuss the complementarity of the Main Process in the same rationale as the testable hypotheses, since the attributes in the transaction in the TCT define the governance structure. In this sense, Williamson (1985) presented a graphic in which the choice for the governance structure will be mainly made by the level of asset specificity. For the author, the markets coordinate the agents' activities by means of a mechanism that combines pressure coming from the competition that the agents are submitted to, from occasional and recurring non-specific transactions.

The Main Process of MCT for Barzel (2005) consists of the basis for transactions and governance decisions, which involves obtaining information related to the identification of asset attributes. Therefore, the decision of the governance structure in MCT, according to Barzel (2003; 2005), is given by the level of difficulty of measuring the attributes, as discussed in the capture of quasi-rent, and also seeking to prevent free-rider effect on the guarantees between supplier and final client. Regarding the Main Process by RBV, it refers to the choice of the organizational form by the distinct capabilities and resources of the companies for the protection of these strategic resources, seeking sustainable competitive advantage (Saes, 2009; Ghozzi et al., 2016).

In the complementarity of the Main Process, according to Saes (2009) and Gulbrandsen et al. (2017), with the addition of transaction costs (TCT and MCT), the strategies suggested by RBV gain new perspectives. Since the choice of governance structure will lead to a situation of greater (or lesser) ownership of income, in the case of difficult protection it may tend towards vertical integration. It is understood that the attributes of the transaction (TCT), the conditions of the resource (RBV) and the level of measurability (MCT) justify and determine the ideal governance structure for the sustainability of the relationship, whether in protecting or sustaining competitive advantage.

Regarding Rationale, one can conclude that the two theories of the NIE (TCT and MCT) seek to analyze transactions and their costs from different perspectives, but both are necessary for the understanding of the firm's relationships in economic theory. To the extent that their focus is on minimizing transaction costs to achieve efficiency. Williamson sees the firm's existence as the minimization of transaction costs, by focusing on *ex-post* adaptations and decisions, in addition to the *ex-ante*. This alignment is that of the governance structure with transaction attributes and behavioral assumptions. MCT, expanded by Barzel, on the other hand, has the Rationale of the firm as an organization capable of creating, protecting and avoiding the dissipation of value, seeking its maximization (Saes, 2009). It seeks to avoid as much as possible that attributes no longer be measured, bringing these costs to the *ex-ante*, but knows that, if necessary, there may be costs of *ex-post* measurement, considering the two moments in the decision.

For RBV, the Rationale is that organizations must maintain possession of resources and capabilities; if necessary, they may integrate vertically, so the production chain also increases its competitiveness and leads to greater control of the various affected stages (Augusto et al., 2018; Tebboune & Urquhart, 2016; Ghozzi et al., 2016; Gulbrandsen et al., 2017). From the property that the agent possesses, they command and have determining information about the process. Given the costs of protecting property rights over resource attributes, owners generally

choose to control the relevant property rights at different levels, according to the value that may be appropriate for that resource (Foss, 2005; Saes, 2009; Augusto et al., 2018; Tebboune & Urquhart, 2016; Ghozzi et al., 2016). According to Augusto et al. (2014), decision making occurs *ex-ante* in the creation of superior resources, while superior capabilities, in *ex-post*.

Finally, the complementarity of the Rationale is due to the sustainability of the strategy, which needs to take captures and the cost of controlling them into account. Thus, for Foss (2005), the protection and support of this competitive advantage is given by adequate governance structure, on the condition of strategic resources (RBV) which correspond to aspects of attributes of the transaction (TCT) and difficulty of measurement (MCT).

#### **4.1.2 Proposition of complementarity 2 – vertical integration**

From the discussion presented, with specific reference to the proposition of complementarity for the decision of vertical integration, a more definite reflection in relation to what was sought with this argument is necessary.

In the meantime, the different theoretical aspects about the assumptions of each approach regarding the decision of the governance structures are notorious, whether opting for the market, contracts or vertical integration. From the proposition of complementarity presented above, based on literature that explored this theme, it is understood that: the attributes of the transaction (frequency, uncertainty and asset specificity, within TCT), the conditions of the resource (presence of strategic resources, within RBV) and measurement (degree of difficulty to measure the attribute, within MCT), can directly interfere in the choice of ideal governance structure.

Nonetheless, this paper specifically sought complementarity between the three approaches (TCT, MCT and RBV) in favorable decisions for vertical integration, thus discussing the assumptions directly involved in this form of choice by organizations. Initially it can be considered that, within TCT, Williamson (1985) defines the governance structure mainly by the asset specificity attribute. Thus, he formulated a graph that demonstrates the choice of governance structure according to the asset specificity level. Through the lens of Barzel (2005) within MCT, the decision of governance structure is reached by the identification of the attributes of the assets. Thus, if the measurement is expensive and subject to error, if the transactors are not sure of how they will perform in their exchanges, their economic rights are not well defined, it indicates methods such as the choice for vertical integration.

In turn, RBV considers recent contributions in relation to the option for vertical integration. These start to differ from their unit of analysis, and there are few studies that suggest the establishment of solid assumptions in the definition of the vertical integration structure. Taking into account the theoretical reflection which has been developed so far, it can

be understood that within RBV the vertical integration is recommended by the types of resources and capabilities present in the transaction, besides the understanding that companies integrate vertically those activities that furnish it with efficiency (Saes, 2009; Argyres, 1996; Augusto et al., 2018; Tebboune & Urquhart, 2016; Ghozzi et al., 2016; Gulbrandsen et al., 2017).

Based on the assumptions of each theory, one can propose the idea of complementarity in the choice of vertical integration when there are highly specific assets (TCT), strategic resources (RBV), and that both be difficult to measure in their attributes (MCT). This complementarity is due to the fact that internal strategic resources (RBV) can present themselves in the understanding of subsets of specific assets and, thus, be analyzed from the TCT perspective. However, it is emphasized that not every specific asset is a strategic (asset) resource (Saes, 2009; Crook et al., 2013). Moreover, the way attributes are gathered to be a resource will depend on their origins, at which point transaction costs are shown (Argyres & Zenger, 2010).

Nevertheless, TCT is associated with the interpretation of resources as a set of attributes that determine property rights. But for the design of property rights, measurability analysis is required, introducing MCT (Saes, 2009). Then, integration from the perspective of each theory establishes a structure of protection from opportunism and capture of quasi-rents, together with the support it offers in sustaining competitive advantage due to the control that it grants to the firm (Foss, 2005; Augusto et al., 2014, 2018).

Accordingly, Liu (2016) argues that vertical integration transforms the way to foster investment in organizations in general, as it demonstrates an effect on coordination. As a result, internalization leads to better coordination within the integrated organisation, eradicating the obstacle of delays. Consequently, incentives for upstream and downstream investment are improved (Liu, 2016).

In this context, regarding the advantage of generating control that vertical integration provides: from the TCT perspective, it is understood that price control or barring entry were not the strategy orientation of vertical integration, but rather cost savings focused on efficiency. It is then emphasized, that considering specific assets, they can be tangible or intangible and they are irrecoverable, in the sense that there will be no recovery through the market if the initial business relationship is broken, and so a situation of uncertainty is created (Williamson, 1985). In this case, the control obtained with the internalization may correspond to a reduction in the level of uncertainty, considering the investments made (Tebboune & Urquhart, 2016; Williamson, 1985; Augusto et al., 2018). Therefore, vertical integration demonstrates a means for greater control, given that specific assets generate a greater dependency, which may generate disputes, and to solve such dependency,

prevent and control this opportunistic capture action, vertical integration is adopted (Zylbersztajn, 2009; Ghozzi et al., 2016).

For MCT, control is important in guaranteeing the delineation of property rights (economic), because the choice of vertical integration is adopted for dimensions that are difficult to measure. Therefore, in MCT, there is vertical integration due to the difficult measurement of attributes, and also due to the protection aspects of guarantees among intermediaries of the chain. With respect to RBV, the benefit of control by integration is shown by Poppo & Zenger (1998), based on the discussion of pure RBV. If the competitive advantage ultimately comes from valuable, difficult to imitate and immobile resources (Barney, 1991), then the choices of boundaries define the ownership and composition of such resources. In this case, the integration provides the control to ensure their immobile condition.

Thus, for RBV authors, its premise is supported by the idea that the integration of the firm provides greater control of the various stages involved in the chain (Foss, 2005; Tebboune & Urquhart, 2016; Ghozzi et al., 2016; Gulbrandsen et al., 2017). Given that, we understand the complementarity of the control provided by vertical integration, as it reduces uncertainty (TCT), assists in guaranteeing property rights in the measurability of attributes (MCT) and reinforces the non-mobility of resources (RBV).

In addition, there is the view that companies vertically integrate efficient comparative capability and outsource access to capabilities in which the firm is comparatively inefficient (Argyres & Zenger, 2010). Foss (2005) and Saes (2009) argue that vertical integration is required for the protection of the property rights of resources, their appropriation of value, and the pursuit of their maximization. According to Leite & Primo (2014), RBV is more active when there is vertical integration, with the control and protection of the resources obtained (Tebboune & Urquhart, 2016; Ghozzi et al., 2016).

It should also be noted that, in view of the aspects discussed, the idea presented by Augusto et al. (2018, p. 709) can be considered by the theory as a proposition referring to vertical integration, that "the effect of specific assets on the decision to vertically integrate is due to their difficulty of measurement and their condition of strategic resource" (our translation). Therefore, it is understood that if there are highly specific assets (TCT), difficult-to-measure assets (MCT) and highly strategic resources (RBV), the greater will be their demand for vertical integration. Accordingly, Crook et al. (2013) indicate that vertical integration can be more justified in the presence of assets that are specific and, at the same time, strategic, than when there are assets that are only specific.

In addition, integration may not occur just for the protection of opportunism or specific assets. Barney (2002) emphasizes, in relation to capabilities, that the firm needs to achieve integration in processes where they have valuable,

rare and difficult to imitate resources. In the case of activities that do not have the necessary resources to gain competitive advantage, it should avoid integration. In this manner, integration is recommended only when there are conditions for the sustainability of the relationship, whether in protecting or sustaining competitive advantage.

#### **4.2 Considerations on complementarity: Proposition of a theoretical scheme**

Considering what has been exposed above, the following thought arises for the theoretical proposition of this paper: 'the decision of vertical integration for protection of specific (TCT) and difficult to measure (MCT) assets provides only indications, that is, justifications for the adoption of integration, because even in this favorable scenario to adopt vertical integration, if the organization does not have the necessary resources and capabilities (RBV) for integration, it will not have the means to carry it out.' Moreover, the literature of RBV, in dealing with the theme, also did not clarify how these resources can be determinant for the integration process, that is, essential for it to occur, whether or not based on the justifications of the theories of TCT and MCT.

It is therefore suggested that, to the extent that RBV can support the integration decision, resources and capabilities are essential in this process. In the same manner, one must ask 'why, in some cases, are organizations that in theory should integrate not integrated in practice?' In this work, we intended to clarify that one possible explanation for the non-integration is the lack of resources and capabilities.

Thus, it is assumed that in the case of companies where vertical integration is indicated but they do not have the resources and capabilities to do so, they need to look for other organizational forms, such as contracts or act in the market. With the lack of resources, they end up adopting these other forms of governance structures, which can be considered less efficient. Although it is the most efficient form among the viable alternatives, it may not be the best choice for your type of company, and it will not have the protection of resources and competitive advantage sustained by theories, which in the long run may result in inefficient paths.

Then, from the discussion presented so far, the arguments of complementarity on its general theoretical aspects (section 4.1.1) as well as vertical integration (section 4.1.2) have been demonstrated. These justify the following proposition, in which we seek to expose considerations of complementarity in determining vertical integration by means of the constructs of each approach.

Therefore, the proposition, next to the sub propositions in the theoretical scheme formulated, have the following acronyms as correspondences: (A) refers to TCT (Asset Specificity); (B) refers to MCT (Measurement); (C) indicates the Governance Structure (Vertical Integration); (D) refers to RBV (Capabilities and Resources). In view of



the above, this study has the following proposition: "Vertical integration is justified when high specificity and difficult-to-measure assets are traded, but its viability is conditioned to the availability of resources and capabilities."

In decomposing this main proposition, given the indications of complementarity in Bacharach (1989) and

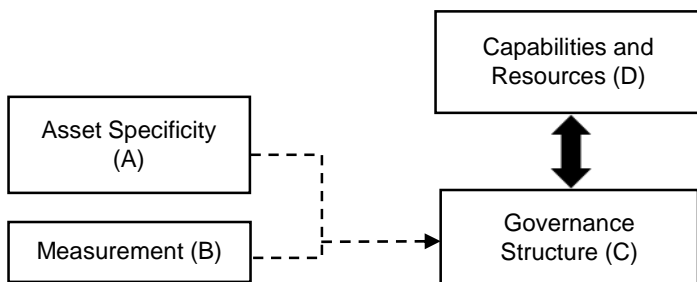
Suddaby (2010), the interactions between the main categories were raised: (1.1) asset specificity and measurement difficulty level; (1.2) asset specificity; measurement difficulty level; and capabilities and resources. The sub-propositions are in Table 1 and in Figure 2.

**Table 1**  
Theoretical proposition of complementarity for vertical integration

TCT (A)	TCM (B)	VBR (D)	Proposição de Complementaridade	Sub Proposições (Figura 2)
The greater the asset specificity: the greater the need for vertical integration (JUSTIFY)	The greater the difficulty of measurement: the greater the need for vertical integration (JUSTIFY)	The greater the availability of resources and capabilities: the greater the condition of vertical integration (DETERMINE)	“Vertical integration is justified when highly specific and difficult-to-measure assets are traded, but their viability is conditioned by the availability of resources and capabilities”.	(1.1) A + B= They justify but do not determine the governance structure (C).  (1.2) A+B+D = They justify and determine the governance structure (C).

Source: Developed by the authors.

From the relationship presented between the theories on the condition of complementarity for the decision by the integration structure (Table 1), it was possible to propose the formulation of the theoretical scheme by the proposition and sub-propositions (Figure 2).



**Figure 2:** Theoretical layout for analysis of the complementarity of vertical integration.

Source: own elaboration.

In view of the theoretical scheme (Figure 2), it is indicated that the transaction of high specificity assets (TCT=A) and the difficulty of measurement (MCT=B) only justify vertical integration (C), but the Resource-Based View (RBV=D), points out that the choice of agents also depends on the availability of capabilities and resources. It is emphasized that the idea of correlation between D and C outlined above is due to the proposition that, given that strategic capabilities and resources (D) confer competitive advantage, being in the form of a structure of vertical integration (D), this can foster the development (generate value) and at the same time the protection of the attributes of these capabilities and resources, making the competitive advantage also sustainable.

In this context, the question of how capability and resource constructs influence the choice of vertical integration in institutional arrangements by being integrated with transaction and measurement cost constructs is re-

examined. This questioning is in line with studies such as that of Argyres (1996), who realized that, unlike the logic of transaction costs, the approach of capabilities is not enough to make predictions, but only to offer *ex-post* explanations.

Thus, regarding the interaction of the categories (1.1), asset specificity and measurement difficulty level, it is noticeable that the high asset specificity shows itself as a motivator for vertical integration, as it demonstrates an environment of more uncertainty, commanding vertical integration in an attempt for more control over these specific investments (assets) (Williamson, 1985; Tebboune & Urquhart, 2016; Gulbrandsen et al., 2017). When combined with the difficulty of measuring the attributes of assets and maintaining control over them, the fragility of verification and guarantees between supplier and final buyer is pointed out, which indicates that, by maintaining the contractual relationship, it is not possible to guarantee property rights and protect itself from the risk of loss of value in the transaction (Barzel, 1997; 2005). It is understood, therefore, that in the presence of opportunities to capture quasi-rents or the free-rife effect on the guarantee, it is possible that the conclusion of the contractual relationship may occur; therefore, united, these factors justify vertical integration as the most appropriate governance structure for the firm (Williamson, 1985; Barzel, 2005). Consequently, the choice of vertical integration is justified when there are assets of high specificity (TCT), that demonstrate difficulty in having their attributes measured (MCT), together with difficulties in guaranteeing the (economic) rights of these.

However, although they justify verticalization, Argyres (1996) found in its studies some empirical cases where the transaction cost aspects would foresee vertical integration; regardless, the firm opted for outsourcing, with a justification that was consistent with the relative capability argument. Therefore, it demonstrates that only specific assets or the

difficulty of measurement may not be independent reasons for integration and the contractual relationship may be maintained, confirming the sub-proposition '(1.1). The greater the specificity of the asset and the more difficult the measurement, the more the need to opt for vertical integration is justified, but vertical integration is not determined.'

At the same time, this study of Argyres (1996) identified cases in which, in the different stages of production, it was possible to find activities carried out internally (integration) and outsourced activities, having as motivation both the transaction costs as well as determinants related to capabilities (Argyres, 1996). Recently, Gulbrandsen et al. (2017) strengthened these same findings in their study, considering that apparently in empirical models of TCT there is a lack of elements related to capabilities, which are necessary to explain more fully the decision of the firm's boundaries. Thus, it is understood that the motivations of the theories of transaction costs and measurement costs have empirical validation in addition to showing greater comprehensiveness when complementing each other to explain the integration decision. However, for such explanation, it is also necessary to associate them simultaneously with the presence of capabilities and resources, in order to understand theoretically the aspects that make this decision feasible, that is, to determine the occurrence of vertical integration.

In this sense, the interaction of the three categories (1.2), namely asset specificity, measurement difficulty level and capabilities and resources, is sought. In relation to RBV, there is already the understanding that capabilities and strategic resources are considered in determining which governance structure to adopt, including vertical integration (Augusto et al., 2018; Argyres & Zenger, 2012; Saes, 2009; Ghozzi et al., 2016; Gulbrandsen et al., 2017). From this perspective, it is possible to notice some points. Some capabilities and strategic resources may be derived from what Foss & Stieglitz (2010) point out as *path dependence*, a stock of specific assets (TCT), accumulated and developed throughout the company's history, which are strategic resources and in this case are related and may be decisive for vertical integration. For the authors, the competitive advantages derive from these stocks of resources/assets specific to the firm, which need to be accumulated internally as manufacturing capabilities, technological knowledge and brand reputation.

Thus, this corresponds to the theory that internal strategic resources may be bundles of specific assets, and in their origins, there may be the presence of transaction costs (Foss, 2005). In the same sense, Jacobides & Winter (2005) suggest a complementarity, stating that for the understanding of capabilities, one should seek the roles of formation of transaction costs. Argyres & Zenger (2012) defend that beyond the understanding, considerations of transaction costs will outline the decisions of the companies about which resources to create, hold and abdicate,

analyzed from the perspective of TCT, complementing RBV and TCT.

A few points stand out in this regard, for Argyres & Zenger (2012). There are several specific or specialized investments that would cause specific assets or activities and would demand governance safeguards. However, only some of these investments would generate added value or sustainable competitive advantage for the company, i.e. those assets that are specific and strategic. According to Saes (2009) and Crook et al. (2013), not every specific asset is a strategic resource. Then, those assets that are specific (TCT) and strategic (RBV) (valuable, rare, difficult to imitate or replace) are more related and dependent on vertical integration than those assets that are only specific (Crook et al., 2013).

Furthermore, for these capabilities and resources to be truly strategic, that is, to ensure sustainable competitive advantage, they must respect the conditions of non-mobility and heterogeneity, resulting in a superior income, compared to the competition. In this manner, with regard to the choice of the organizational form of vertical integration, the distinct capabilities and resources (RBV) of the companies should be taken into consideration, seeking sustainable competitive advantage, with the purpose of protecting these strategic capabilities and resources (MCT) (Saes, 2009).

As Argyres and Zenger (2012, p.1648) argue, in a scenario where heterogeneity (RBV) and specific investments (TCT) 'the prescriptions of the two theories are quite consistent: firms integrate to create and protect value.' So, when it comes to protection safeguards, the role of MCT is introduced. In this sense, Saes (2009) noted that decisions on how the firm structures itself involve the purpose of protecting and valuing the attributes of resources/capabilities (assets). Among the strategic resources/capabilities, there are those with attributes considered difficult to measure. Consequently, they are difficult to protect and ensure so that they are used only by the company, without being imitated by competitors. Thus, they seek to protect these resources (assets), because they give the firm a competitive advantage, which can become sustainable through the internalization of production (*ex-post* integration) (Barney, 1991; Ghozzi et al., 2016; Tebboune & Urquhart, 2016; Gulbrandsen et al., 2017).

Augusto et al. (2018) argue that there is a need to internalize production in situations where resources and capabilities, such as technological knowledge, are easily transferred if they are not well protected. As such, there is complementarity between strategic resources (RBV) and measurement (MCT), because within the logic of RBV vertical integration presents itself as a means of protection and control of resources seen as strategic for the creation of income superior to competitors, even if in economic balance (Argyres & Zenger, 2012; Peteraf, 1993). At the same time, Foss (2005) states that, given the costs, owners generally choose to control the ownership rights of the relevant attributes at different levels, and the value that may be appropriate for a resource will reflect this scenario. In a

case of where it is difficult to delineate the property rights, vertical integration is sought.

In view of this, specific assets justify vertical integration, but alone they may not be determinant for it to occur (Gulbrandsen et al., 2017). In the same sense, just like TCT, MCT is unable to independently determine vertical integration due to the fact that attributes are difficult to measure. There will be scenarios in which organizations will not have ideal conditions to internalize their production, even if they face an environment of uncertainty (Tebboune & Urquhart, 2016), and know that it is necessary to avoid opportunistic captures, be them from quasi-rents or guarantees.

However, they may adopt verticalization if they observe, and are backed by their analytical bases, that the best way is integration and, at the same time, they also have the means (resources and capabilities) to achieve this internalization. Therefore, they would be faced with strategic conditions that could give them competitiveness, besides protecting and valuing the attributes of assets (resources), reducing transaction costs and achieving efficiency.

Williamson (1985) considers that in addition to transaction costs, it is possible that the comprehension of the adoption of vertical integration also encompasses strategic purpose. Thus, when a highly specific and strategic asset is complementary, vertical integration is more likely (Gulbrandsen et al., 2017). In addition, if the attributes of these assets (resources) that are specific and also strategic have a costly measurement because it is difficult to delineate their property rights, when aiming at the protection and increase in value of these attributes, it will also tend to the integration structure. By identifying this type of asset (resource), the decision-making process becomes more complete, showing that by aligning the theories it is possible to have more predictive power for verticalization.

Therefore, by aligning the constructs of the three theories analyzed, the sub-proposition '(1.2). The greater the specificity of the asset, the more difficult it is to measure, and the greater the availability of capabilities and resources, the greater the condition to opt for vertical integration is justified and determined' is confirmed. Thus, as a complementarity one can think that the reduction of transaction costs (TCT and MCT) can explain which governance structures will be adopted, through the available resources, in an effort to protect and explore the attributes of the (assets) resources.

## 5 FINAL CONSIDERATIONS

This essay aimed to present how a proposition-driven approach of complementarity of Transaction Cost Theory (TCT), Measurement Costs Theory (MCT), and Resource-Based View (RBV) can be based on an understanding of the choice of vertical integration structure in different institutional arrangements. Based on the proposed theoretical argument, it was possible to achieve the objective of this essay by theoretically building and

defending the proposition that "Vertical integration is justified when high specificity and difficult-to-measure assets are traded, but its viability is conditioned on the availability of resources and capabilities". For this purpose, a theoretical scheme of the complementarity of the decision of vertical integration was elaborated, being possible to analyze the proposition through the constructs of each theory.

In view of this and in order to contribute to a research agenda on the complementarity of these approaches, this study sought to discuss this theoretical direction, with dedicated attention to the interaction of the three theories, aiming at a more forceful response to the assumptions involving the decision of integration, to the extent that complementarity can overcome the particular limits in the analysis of each approach.

Therefore, by observing them in a complementary way, the study aims to contribute to the presentation of more bases of analysis for the decision-making of managers, enabling the adoption of governance structures that are efficient (TCT and MCT) and at the same time strategic (RBV) (Foss, 2005; Tebboune & Urquhart, 2016; Gulbrandsen et al., 2017). In line with Durand et al. (2017), the search for solutions for the problems of managers in general promotes theoretical pluralism and suggests that the field of strategic management be determined both by the subject and by the theory it implements. In this field, as discussed in this essay, in the absence of resources and capabilities, organizations may adopt other governance structures. Even having the most efficient performance in the scenario in which the firm operates, it may not be the best option for their type of company. Therefore, they run the risk of not having the valuation, protection and control of resource attributes (Saes, 2009), as well as their sustainable competitive advantage, which in the long run may result in inefficient paths.

As a result of the main objective, initial attention was also dedicated to understanding the (*ex-ante*) decision-making of vertical integration by RBV, which, according to its authors, is still unable to make predictions. This discussion provides initial guidance on how integration is determined given the resources and capabilities available, while complementing transaction and measurement costs theories. This teases to the fact that the argumentation of this study has room to be more theoretically explored and is also susceptible to empirical studies, in order to fill the gap this paper indicates. This also supports the perspective of Durand et al. (2017), who claim a significant feature of strategic management, as a field of study, is the emphasis on practical application. In this case, because it is constrained to a theoretical discussion with the proposition of a conceptual model, the lack of empirical application of this study is among the limitations, but the possibility of extending the research in the light of new perspectives of the approaches remains.

To this end, it is suggested as future research to consider this proposition empirically, in the study of

productive chains, in particular those belonging to agribusiness, since the field of studies of the NIE is one of the most widespread in regard to research applicability in this area (Zylbersztajn, 2009), combined with the application of Resource-Based View to promote the search for the development of efficiency and strategic purpose in the most varied production chains. Finally, it is suggested that studies explore other theoretical lenses, such as research focused on understanding the impact of the institutional sphere in this decision-making, along with the empirical validation of this complementarity, analyzing: the governance structure of productive chains; whether there is vertical integration and how it occurred; whether there should be vertical integration due to theoretical justifications and why they were not consolidated. Fostering, in such a manner, the search for more discussions for this plurality of the field.

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