

THE PATTERNS OF COMPANY: FIRM AND ORGANIZATION

NATHÁLIA PUFAL

Federal University of Rio Grande do Sul
School of Management
NITEC Innovation Research Center
Brazil
nathaliapufal@gmail.com (Corresponding)

PAULO ANTÔNIO ZAWISLAK

Federal University of Rio Grande do Sul
School of Management
NITEC Innovation Research Center
Brazil
paulo.zawislak@ufrgs.br

ABSTRACT

Any existing company is both a firm, i.e., the economic agent developing and transacting goods and services, and an organization, i.e., the structure to efficiently coordinate the production of these goods. If firms are different, then there are different patterns of organizing the firm. In that sense, for each one of those different knowledge and organizational abilities and routines, there will be different capabilities. The goal of this research is to analyze different patterns of company, considering firm-organization combinations. The objective is achieved through the analysis of secondary data from a survey conducted in 1331 Brazilian manufacturing companies from 2010 to 2015. Results show four different patterns of company: *nearly balanced companies*, *firm-based companies*, *advanced organization-based companies* and *basic organization-based companies*. The four identified patterns suggest that companies may act towards efficacy, stability or fulfilling their innovative potential over time. In that sense, disorganization appears whenever firm and organization are unbalanced. However, that may be momentary, as a natural consequence of innovation, or permanent, as a consequence of internal inefficiency. Thus, there is no single best firm-organization combination, but there are different combinations for different positioning and, thus, different performances.

KEYWORDS: company, firm, organization, innovation, capabilities.

1 INTRODUCTION

The neo-Schumpeterian perspective of economic change highlighted that companies are different from one another (Nelson & Winter, 1982; Rosenberg, 1982). The approach was then reversed: instead of following a neoclassical perspective and identifying the reason why companies should be equal, the literature focus turned to be on why companies differ (Nelson, 1991). Based on that, differences among companies under real constraints came into the spotlight, especially on

their performances: why do some companies succeed while others fail? As a precondition to understand that, it turns relevant to understand the very essence of the company.

Any existing company¹ is, at the same time, a firm, i.e., the economic agent developing and transacting goods and services, and an organization, i.e., the structure to efficiently coordinate the production of these goods (Zawislak et al., 2012). By being so, companies internalize, within their organizational limits, the different levels of knowledge they are able to deal with (Coase, 1937; Penrose, 1959). The organization is responsible for structuring the way the firm will effectively make what it has decided to make – instead of buying. Thus, if firms are different, then there are different patterns of organizing the firm. For each one of those different knowledge and organizational abilities and routines, there will be different capabilities (Alves et al., 2017; Richardson, 1972).

Thus, capabilities can be viewed as the reasoning to why companies differ from each other and why there are performance differences across them (Madhok, 2002). Within this context, Bessant, Rush & Hobday (2000) add that companies will be different accordingly to their capabilities, and, mainly, accordingly to how they are connected to the need to innovate. Considering that, the innovation capabilities, which allow companies to perform and profit from innovation, should be arranged in ways to explore their strengths (Teece, 1986).

Through this perspective, every company, by being a firm and an organization at the same time, will perform different strategic functions related to innovation in terms of development, operations, management and transaction (Zawislak et al., 2012). Therefore, for each function, there should be a specific capability. The firm sphere is related to development and transaction capabilities, while the organization sphere relates to operations and management capabilities (Zawislak et al., 2012).

Despite the historical and ever increasing attention on firm and organization studies (Alchian & Demsetz, 1972; Coase, 1937; Cyert & March 1963; King, Felin and Whetten, 2010; Knight, 1921), a number of fundamental aspects remain unclear regarding the connection of both concepts. Also, the understanding of the role of company-level variables on innovation remains less developed than that of industry-level variables (Protogerou, Caloghirou and Vonortas, 2017). What is indeed the organization of the firm? What is an organized firm? On what kind of effort should the coordination structure of the firm rely? What is the adequate organization for different types of firms? Aiming to answer these questions, the goal of this research is to analyze different patterns of company, considering firm-organization combinations.

According to Nelson (1991), the diversity of companies is an essential aspect in the processes that promote economic progress. In that sense, this research helps to broaden the understanding of why companies differ, through the barely explored relationship between firm and organization under the capabilities approach. Results show four different patterns of company: *nearly balanced companies*, *firm-based companies*, *advanced organization-based companies* and *basic organization-based companies*. The four identified patterns suggest that companies may act towards efficacy, stability or fulfilling their innovative potential over time. Therefore, disorganization appears whenever firm and organization are unbalanced, which can be either momentary or permanent.

¹ There are several different synonyms referring to company, such as organization, firm, enterprise, or business. Scholars suggest, however, that a company is composed by a firm and an organization, which ensures its ability to transform technology into business (Baecker, 2006; Zawislak, 2012).

2 FIRM, ORGANIZATION AND CAPABILITIES

To identify the different patterns of companies, two different research approaches of the firm are considered. One approach, related to transaction costs, perceives firm as a nexus of treaties working under limits and according to a governance structure (Alchian & Demsetz, 1972; Coase, 1937; Williamson, 1985). The other, related to capabilities, considers the firm as a set of resources, knowledge, experience, skills and routines (Chandler, 1992; Nelson & Winter, 1982; Penrose, 1959; Richardson, 1972; Teece, Pisano & Shuen, 1997). Before discussing over the capabilities that promote different patterns of company, it is relevant to understand what lies behind a company: its firm and its organization.

2.1 Firm and Organization

Within transaction costs economics, Coase (1937) argues that the use of the word “firm” in economics may be different from the use of the term by the “plain man.” Accordingly, Zawislak et al. (2012) say that in the concrete world, the firm is commonly viewed as a business enterprise, in other words, as a legal-institutional entity. Economic theories, however, go further than this solely contractual arrangement (Alchian & Demsetz, 1972).

In Zawislak’s et al. (2012) definition, the firm is the transaction-economic agent that carries out the production and sales of goods and services within the expectations of another agent, the customer. Through this perspective, firms should translate specific knowledge into an efficient, well-arranged set of organized and structured procedures, decision rules, specific skills, and products aiming to fulfill the knowledge gap in the market (Zawislak et al., 2012). In other words, the firm requires an organization to transform the specific knowledge into selling products (Zawislak et al., 2012). In that sense, if the firm is responsible for developing and selling the product, organization is in charge of its operation and management control over the processes.

The organization is then characterized as the structure responsible for the availability of resources (human, materials, energy and equipment) according to a given technology (knowledge, methods and practices) for the production and sale of goods and services with value (Zawislak et al., 2012). The organization is an indirect but necessary consequence of any firm. In Penrose’s words, “the business firm, as we have defined it, is both an administrative organization and a collection of productive resources” (Penrose, 1959, p. 28).

Remarkable is that either between the so-called Coasean “plain man” and the literature, there are several different nomenclatures used to refer to a firm, such as organization in a general perspective, enterprise, company or business. Considering that every firm requires an organization to be able to transform technology into business, these concepts can be unified.

Thus, putting all together, any company is a firm (i.e., the economic agent that develops, produces and transacts goods and services in the market) operating under an organizational structure and changing over time, both by internal and external forces. Once the firm decides to make rather than buy, the organization will work on operationalizing how to make to later sell. In fact, through both the entrepreneurial and the coordination point of view, any company handles the same purpose: to transform technology into business. Thus, *every company is both firm and organization*. So, the essence of every company is to be an organized firm.

Considering that the firm needs to transform specific knowledge into selling products, there should be an organization adequate to the market in which the firm aims to act; and not the contrary. This happens because it is only after the firm has decided to make, that the organization will search for the best way to allocate the necessary resources to make so. In that sense, Knight (1921) states that the primary problem or function of the company is on deciding what to do (the firm) and, then, on how to do it (the organization).

This is why the organization will help on determining the structure of the firm only after the firm has already determined the specificity of knowledge to be transformed into products. In other words, *the organization is a function of the firm*. Nelson (1991) highlights then that organizational change must be perceived as a handmaiden to technological advance, and not a separate force behind economic progress.

2.2 Capabilities and Patterns of Company

The way the company will be internally structured is dependent on its resources and capabilities (Bessant, Rush & Hobday, 2000; Madhok, 2002; Richardson, 1972), being this the main role of organization, which is to ensure coherence to the firm acts in a specific market. In that sense, Kogut (2000) states that an important source of value for a firm lies in the capabilities supported by organizing principles of work. There is no perfect organizational form, as any actual management structure will exhibit advantages in some respects that have been acquired at the cost of disadvantages in others (Richardson, 2003). The quest is then related to the most suitable pattern between firm and organization.

Richardson (1972) suggests that capabilities are determinants of the boundaries of the company, since they determine, accordingly to Coase, the relative costs of different firms in organizing particular activities (Alves & Zawislak, 2015; Langlois & Foss, 1999). Considered that, Langlois and Foss (1999) present the capabilities view not as an alternative to the transaction cost theory but as a complementary area of research. While transaction cost theory proposes that there are some costs because of the natural limitations of knowledge and information, capability approach insists that those limitations of knowledge and information are the key to understand everything an organization does (Langlois & Foss, 1999).

If the firm decides whether to make or not, and the organization coordinates how to make it, it is then through the orchestration of different capabilities that companies reach the ideal internal combination to succeed. In other words, *firms are organized based on their capabilities*. The capabilities of a company represent its different possibilities of combining firm and organization.

Within this context, Teece (1996) states that firm organization is an important determinant of innovation. Bessant, Rush & Hobday (2000) add that companies will be different accordingly to their capabilities, and, mainly, accordingly to how they are connected to the need to innovate.

Expanding on the idea that solely the technological capabilities, i.e., those related to product and process, will lead a company to achieve innovative performance, Zawislak et al. (2012) propose an innovation model that encompasses technological and non-technological capabilities. For them, every company will perform four different strategic functions: technology development, operations, management and transaction. For each function, there should be a specific capability of innovation. The ensemble of these four capabilities composes the innovation capabilities.

Innovation capabilities refer then to the “ability to absorb, adapt and transform a given technology into specific operational, managerial and transactional routines that can lead a firm to Schumpeterian profits, i.e., innovation” (Zawislak et al., 2012, p. 23). Thus, the model of Zawislak et al. (2012) presumes that every company has some level of four innovation capabilities affecting their performance and that innovation can emerge from each one of these capabilities. This model has been tested and validated through empirical data from different manufacturing sectors, which ensures its accuracy when depicting innovation capabilities of companies (Alves et al., 2017; Reichert, Camboim & Zawislak, 2015; Reichert et al., 2016; Zawislak et al., 2013; 2014).

The model proposed by Zawislak et al. (2012) presents the idea that every firm starts by having a special knowledge advantage that supposedly can be translated into a technology that has value on market. For the authors, if the firm exists to transact what it knows how to do, and this applied know-how corresponds to the firm’s specific technology, the firm sells technology.

Selling technology is based on external coordination, which is based on specific capabilities. On the one hand, technology development capability relates to the external environment when interpreting, absorbing and transforming technology into new solutions within company’s boundaries. On the other hand, transaction capability is concerned with reducing transaction costs, regarding company’s external interaction with the market, to sell what has been developed.

Through this perspective, both technology development and transaction capabilities constitute the **firm**, by coordinating the search of a new knowledge that can be applied in effective solutions to existing and identified market gaps and, then, by coordinating its transposition to effective markets and profitable sales.

However, solely external coordination does not ensure company’s success. As stated by Nelson (1991), the firm needs an organizational structure that supports the building and sustaining of the core capabilities needed to carry out external coordination effectively. The potential technological solution must be translated into an operational arrangement and thus be efficiently managed to guarantee the delivery of the expected outcome in the market.

In that sense, the applied technological solution becomes concrete due to the operations capability, which uses already stabilized technology with established routines and procedures translated into productive capacity (Zawislak et al., 2012). Stability inside a company is guaranteed not only by its operations capability though, but by the combination of that with indirect procedures, resources allocation, decision rules, and coherent arrangements, which refer to the management capability.

Thus, internal coordination, aiming to achieve internal efficiency and stability, may be achieved by the combination of the management with the operations capabilities, which constitute the **organization**. The organization is then related to the control effort that guarantees the operations, from development to market. It may be perceived that the structuring of operations and management capability depends on what is developed and transacted, by technology development and transaction capabilities. In other words, the organization depends on the firm.

Considered that, based on Zawislak’s et al. (2012) model, Figure 1 shows the present study research framework translated into a Firm-Organization Capabilities Model, highlighting both the capabilities related to the firm and the capabilities related to the organization.

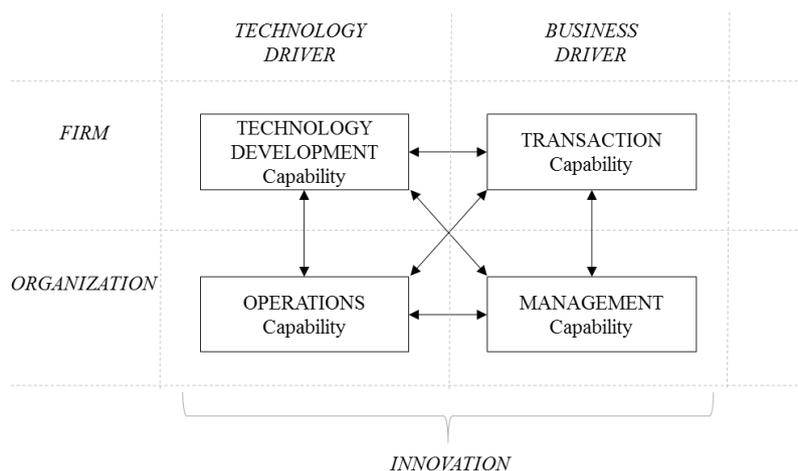


Figure 1: Firm-Organization Capabilities Model
Source: Adapted from Zawislak et al. (2012).

Zawislak's et al. (2012) innovation capabilities model offers possible explanations not only for companies' existence but also for their differences regarding firm and organization. By presuming that every company has some level of four innovation capabilities and that innovation can emerge from each one of these capabilities, it is possible to suppose that there is a variety of capabilities combination within companies, creating, thus, different patterns of company. Therefore, the present study sheds light on the different patterns of company and broaden the understanding of why companies differ, through the barely explored relationship between firm and organization under the capabilities approach.

3 DATA, MEASURES AND ANALYSIS

3.1 Data

For the development of the study, secondary data from the project entitled "Paths of Innovation in the Brazilian Industry" coordinated by the NITEC Innovation Research Center were used. The project was carried out from 2010 to 2015 and focused on understanding the innovation dynamics in the Brazilian manufacturing industry (see Alves et al. (2017, p. 236-240) for detailed information on the survey procedures and questionnaire development). The survey received a total of 1,331 valid responses, composing a 21.7% response rate.

3.2 Measures

The questionnaire used in the survey encompasses the technology development, operations, management and transactions capabilities. Thus, it was adequate to achieve the study objectives, since the firm dimension can be understood by analyzing the technology development and transaction capabilities, whereas the operations and management capabilities refer to the organization dimension.

The analyses used 20 survey items, presented as statements, to measure all four innovation capabilities. Respondents rated their level of agreement to each item using a five-point Likert scale

ranging from “strongly disagree” to “strongly agree”. The analyses used Principal Component Analysis (PCA) extraction method to reduce the original set of variables into a smaller group and extract latent factors (innovation capabilities). The numbers of factors extracted followed Kaiser’s eigenvalue-greater-than-one criterion and were expected to finish in a total of four, considering the previous literature background on the four innovation capabilities. The rotation method was Varimax, and missing values were excluded listwise (Field, 2009; Hair et al., 2010). Factors with loading of 0.5 were considered as practically significant (Hair et al., 2010). Kaiser-Meyer-Olkin (KMO) measure indicated a value of 0.905 and Bartlett’s test of sphericity was significant ($p = 0.000$), which showed adequacy to the conduction of factor analysis (Kaiser, 1974; Field, 2009). The Correlation Matrix did not present any value greater than 0.9 and its determinant was 0.001, greater than the necessary value of 0.0001 (Field, 2009). Therefore, multicollinearity was not a problem for the data (Field, 2009). All the final variables presented meritorious Measure of Sampling Adequacy (>0.84) (Cerny & Kaiser, 1997).

The results confirmed the presence of the four capabilities: technology development capability (6 items with Cronbach’s $\alpha = 0.842$), operations capability (5 items with Cronbach’s $\alpha = 0.789$), management capability (4 items with Cronbach’s $\alpha = 0.758$) and transaction capability (5 items with Cronbach’s $\alpha = 0.772$). The total variance explained for the four factors representing the four innovation capabilities was 57.37%. Table 1 presents the list of items and the respective factor loadings.

Table 1: Factor analysis for innovation capabilities

Items - Does your company:	TDC	OC	TC	MC
(TDC5) Prototypes its own products	.769			
(TDC7) Launches its own products	.755			
(TDC1) Designs its own products	.750			
(TDC2) Monitors the latest technological trends in the sector	.678			
(TDC3) Adapts the technology in use to its own needs	.649			
(TDC6) Uses formal project management methods (Stage-Gate, PMBOK, innovational funnel, etc.)	.626			
(OC7) Delivers the products promptly		.748		
(OC6) Establishes a productive routine that does not generate rework		.739		
(OC9) Manages to ensure the process does not lead to products being returned		.735		
(OC5) Carries out the productive process as programmed		.668		
(OC8) Manages to expand the installed capacity whenever necessary		.607		
(TC4) Imposes its prices on the market			.772	
(TC5) Imposes its negotiating terms on its customers			.763	
(TC3) Imposes its negotiating terms on its suppliers			.742	
(TC6) Uses formal criteria to select its suppliers			.647	
(TC2) Conducts formal research to monitor the market			.512	
(MC7) Uses modern financial management practices				.745
(MC5) Updates its management tools and techniques				.739
(MC1) Formally defines its strategic objectives annually				.699
(MC6) Maintains the personnel adequately trained for the company functions				.661

Extraction Method: Principal Component Analysis.

Note: TDC = Technology Development Capability, TC = Transaction Capability, OC = Operations Capability, MC = Management Capability.

With all factors identified, the variables of technology development and transaction capabilities factors were grouped, forming thus, the *firm* variable, and the variables of operations and management capabilities factors were also grouped, forming the *organization* variable, under the notion of multiple scale, in which all variables with high loadings of a factor are combined and the resulting mean score is used as a new variable (Hair et al., 2010).

Since innovation is solely perceived as such if it brings positive returns to the company in terms of extraordinary profits (Schumpeter, 1942), innovation performance was measured using three outcomes identified by OECD (2005), Schumpeter (1942) and Reichert, Camboim & Zawislak (2015): profit growth, market share growth and revenue growth. Respondents were requested to rate their level of agreement for each item (i.e., answering if each item has grown continuously over the last three years) using a five-point scale ranging from “strongly disagree” to “strongly agree”.

3.3 Data Analysis

Factor analysis was first conducted and, from that moment on, technology development and transaction capabilities variables factors combined were a proxy to analyze the firm and operations and management capabilities variables factors combined were a proxy to analyze the organization (Zawislak et al., 2012). A two-step cluster analysis procedure was then conducted to reveal natural groupings within the dataset that would otherwise not be apparent (Garson, 2012; Hair et al., 2010; Norusis, 2008). Four statistically significant ($p < .001$) different groups were identified. Using regular mean of variables, Pearson Correlation analysis was conducted to investigate the relationship between firm and organization variables of clusters.

Finally, descriptive variables, such as mean, standard deviation and frequency distribution, regarding all four capabilities (technology development, operations, management and transaction) of each cluster were analyzed, as well as each cluster performance indicators. ANOVA and post hoc tests were performed to determine if there was statistically significant difference among the groups and to examine where their differences laid (Hair et al., 2010). The software Statistical Package for Social Science – SPSS version 21 was used.

4 RESULTS

Four different patterns of company were identified within the sample, with a total of 1,156 valid cases. These patterns corroborate with the assumption that firm and organization are moderately correlated ($r = .61$, $p < .001$), showing that when firm (technology development and transaction capabilities) varies, organization (operations and management capabilities) varies. To illustrate, a scatter plot was created (Green & Salkind, 2014), having firm as the independent variable and organization as the dependent variable. The four clusters are shown within the scatter plot in Figure 2.

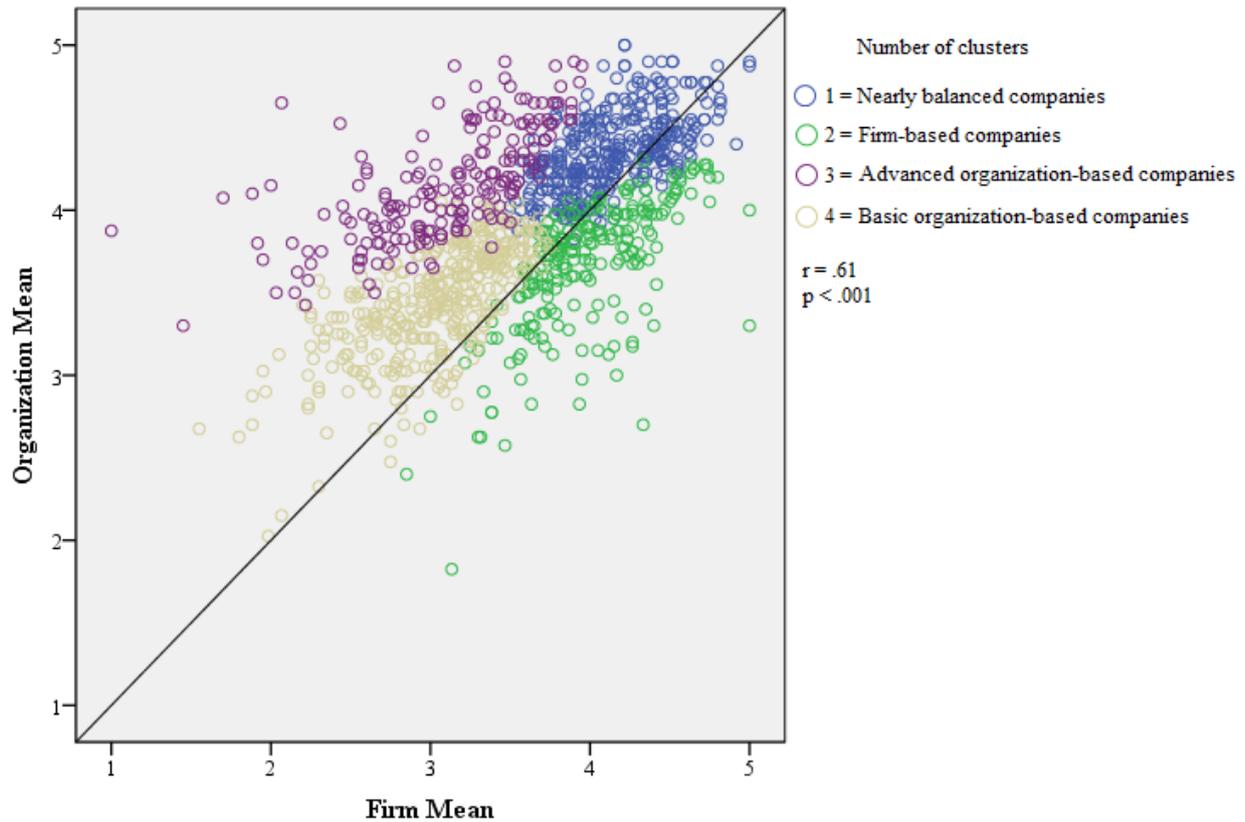


Figure 2: Bivariate Scatter Plot with Firm-Organization Means, Highlighting Four Different Clusters

The scatter plot shows the diversity of companies within the sample, based on their firm and organization capabilities. That underlines the idea that companies' capabilities can be developed in many ways, creating different patterns of firm-organization combination and is an initial step towards the identification of on what kind of effort should the coordination structure of the firm rely on to be successful.

Table 2 shows that the four clusters are significantly different ($p = .000$) in terms of firm-organization capabilities. Organization mean is greater than firm mean in all clusters, except for cluster 2. In that sense, the four different clusters represent, in fact, different patterns in which organization is greater than firm (organization-based companies) and one pattern where firm is the main driver (firm-based companies).

Table 2: Mean Analysis of Firm and Organization Comparing Clusters

Cluster	Firm		Organization	
	Mean	Std. Deviation	Mean	Std. Deviation
1 (n=358)	4.13	.32	4.35	.24
2 (n=233)	3.98	.37	3.68	.39
3 (n=200)	3.10	.51	4.15	.34
4 (n=365)	3.03	.40	3.44	.34
All clusters (n=1156)	3.58	.64	3.89	.50

Note: The highest figures are highlighted. $p < .001$ for all cases.

Companies in cluster 1 represent a pattern in which firm and organization are closer to a perfect balance between firm and organization. It is clear that they may be mostly considered as organization based-companies, due to the predominance of organization within their structure; however, firm indicators are not that far behind. Thus, companies in cluster 1 may be called as *nearly balanced companies*. Companies in cluster 2, in turn, are the only example of companies figuring under the reference line in the scatter plot, i.e., in the firm sphere. By being so, they present higher means in firm and are, therefore, perceived as *firm-based companies*. Companies in cluster 3 are highly more organization-based than firm-based because they present higher mean in organization than in firm. They are, thus, *advanced organization-based companies*. Companies in cluster 4 have the lowest firm and organization means. These companies represent the organization-based companies pattern as well, in which organization is more expressive than firm. However, by presenting the lowest means within the sample, they may be considered as *basic organization-based companies*. To further explore these differences and similarities, the characteristics of each pattern are analyzed, regarding innovation capabilities and performance indicators.

4.1 Innovation Capabilities of the Different Patterns

Mean analysis related to the description of each capability in detail was conducted to explore differences within groups and to build the understanding of what represents to be in each cluster. Therefore, each variable of each capability is analyzed. By doing so, differences between clusters and explanations on why some companies were grouped together are elucidated.

Table 3: Mean Analysis of Technology Development Capability Comparing Clusters

Technology Development Capability	Cluster 1: Nearly Balanced (n=358)		Cluster 2: Firm-based (n=233)		Cluster 3: Advanced Organization-based (n=200)		Cluster 4: Basic Organization-based (n=365)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Designs its own products	4.30	.68	4.25	.67	3.09	1.25	3.16	1.05
Monitors the latest technological trends in the sector	4.42	.64	4.23	.74	3.57	.96	3.25	.84
Adapts the technology in use to its own needs	4.28	.62	4.02	.73	3.64	.89	3.28	.80
Prototypes its own products	4.25	.78	4.12	.87	3.10	1.42	3.00	1.40
Uses formal project management methods (Stage-Gate, PMBOK, innovational funnel, etc.)	4.08	.78	3.80	.84	2.85	1.07	2.52	.91
Launches its own products	4.32	1.07	4.45	.89	3.03	1.48	3.24	1.25
Total	4.27	.43	4.14	.49	3.21	.84	3.08	.71

Note: The highest figures are highlighted. SD = Standard Deviation.

Regarding *technology development capability*, shown in Table 3, balanced and firm-based companies present the highest means, which are not statistically significant different ($p = .107$), i.e., they behave similarly. However, there is a difference ($p = .000$) when comparing each one of these two groups with the advanced and basic organization-based companies separately. Besides, advanced and basic organization-based companies also present similar levels of technology development capability with no statistically significant difference ($p = .114$) between them, behaving similarly as well.

Table 4: Mean Analysis of Operations Capability Comparing Clusters

Operations Capability	Cluster 1: Nearly Balanced (n=358)		Cluster 2: Firm-based (n=233)		Cluster 3: Advanced Organization-based (n=200)		Cluster 4: Basic Organization-based (n=365)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Carries out the productive process as programmed	4.41	.55	3.79	.72	4.34	.59	3.61	.70
Establishes a productive routine that does not generate rework	4.38	.56	3.75	.75	4.29	.60	3.61	.68
Delivers the products promptly	4.35	.68	3.78	.75	4.29	.75	3.57	.78
Manages to expand the installed capacity whenever necessary	4.39	.63	3.86	.77	3.98	.79	3.26	.88
Manages to ensure the process does not lead to products being returned	4.48	.53	3.95	.61	4.37	.56	3.79	.61
Total	4.40	.35	3.83	.47	4.25	.46	3.57	.49

Note: The highest figures are highlighted. SD = Standard Deviation.

Nearly balanced companies present the highest means in every item of *operations capability* (Table 4), when compared to each cluster (nearly balanced vs advanced organization-based, $p = .002$; nearly balanced vs firm-based or basic organization-based, $p = .000$). All other mean differences are statistically significant ($p = .000$).

Table 5: Mean Analysis of Management Capability Comparing Clusters

Management Capability	Cluster 1: Nearly Balanced (n=358)		Cluster 2: Firm-based (n=233)		Cluster 3: Advanced Organization-based (n=200)		Cluster 4: Basic Organization-based (n=365)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Formally defines its strategic objectives annually	4.20	.70	3.53	.92	4.01	.85	3.32	.89
Updates its management tools and techniques	4.24	.68	3.35	.82	3.99	.70	3.12	.73
Maintains the personnel adequately trained for the company functions	4.42	.63	3.67	.84	4.26	.67	3.61	.78
Uses modern financial management practices	4.32	.67	3.55	.89	3.95	.75	3.23	.74
Total	4.29	.40	3.53	.58	4.05	.49	3.32	.57

Note: The highest figures are highlighted. SD = Standard Deviation.

Regarding *management capability*, Table 5 shows that nearly balanced companies also present the highest means in every item comparing to the other clusters ($p = .000$). Besides, mean differences are statistically significant ($p = .000$) in all other cases.

Table 6: Mean Analysis of Transaction Capability Comparing Clusters

Transaction Capability	Cluster 1: Nearly Balanced (n=358)		Cluster 2: Firm-based (n=233)		Cluster 3: Advanced Organization-based (n=200)		Cluster 4: Basic Organization-based (n=365)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Conducts formal research to monitor the market	4.05	.92	3.49	1.06	2.78	1.08	2.47	.98
Imposes its negotiating terms on its suppliers	4.02	.69	3.92	.71	3.17	.90	3.31	.82
Imposes its prices on the market	3.79	.87	3.89	.79	2.74	1.07	2.94	.88
Imposes its negotiating terms on its customers	3.91	.76	3.86	.78	2.94	.96	2.93	.83
Uses formal criteria to select its suppliers	4.17	.79	3.96	.82	3.29	1.01	3.29	.80
Total	3.99	.46	3.82	.52	2.98	.65	2.99	.57

Note: The highest figures are highlighted. SD = Standard Deviation.

When considering *transaction capability*, table 6 shows that nearly balanced companies present the highest means compared to other clusters (nearly balanced vs firm-based, $p = .005$; nearly balanced vs advanced organization-based or basic organization-based, $p = .000$), except for the item 'imposes its prices on the market'. Advanced and basic organization-based companies present similar levels of transaction capability with no statistically significant difference ($p = .999$) between them, behaving similarly just as in the technology development capability. Thus, it is possible to verify that firm (technology development + transaction capabilities) presents no difference between advanced organization-based and basic organization-based companies.

Table 7: Mean Analysis of Innovation Capabilities Comparing Clusters

Cluster	Firm				Organization			
	TDC		TC		OC		MC	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nearly Balanced (n=358)	4.27	.43	3.99	.46	4.40	.35	4.29	.40
Firm-based (n=233)	4.14	.49	3.82	.52	3.83	.47	3.53	.58
Advanced Organization-based (n=200)	3.21	.84	2.98	.65	4.25	.46	4.05	.49
Basic Organization-based (n=365)	3.08	.71	2.99	.57	3.57	.49	3.32	.57
All clusters (n=1156)	3.69	.83	3.47	.72	4.00	.57	3.79	.66

Note: The highest figures are highlighted. SD = Standard Deviation, TDC = Technology Development Capability, TC = Transaction Capability, OC = Operations Capability, MC = Management Capability.

In sum, Table 7 shows the overall mean analysis for each capability composing either firm or organization. Nearly balanced, advanced organization-based and basic organization-based companies, which have the highest mean in organization, present highest means both in operations and management capabilities. Firm-based companies, however, have the highest mean in firm, due to its development technology capability.

4.2 Performance of the Different Patterns

Table 8 shows the mean analysis performed to identify which cluster presents the highest performance mean.

Table 8: Mean Analysis of Performance Comparing Clusters

Cluster	Performance	
	Mean	Std. Deviation
1: Nearly Balanced (n=358)	3.92	.58
2: Firm-based (n=233)	3.63	.73
3: Advanced Organization-based (n=200)	3.36	.85
4: Basic Organization-based (n=365)	3.13	.74
All clusters (n=1156)	3.52	.78

Note: Figures are highlighted in a descendant order of values. $p < .001$ for all cases.

All four clusters are significantly different ($p \leq .005$) in terms of performance and nearly balanced companies present the highest financial returns.

5 DISCUSSION

The pattern of company, considering the firm-organization combination, represents the extent to which a company seeks to employ the most advantageous arrangement of its capabilities. As every company produces and sales solutions in the market, organizational costs are thus inherent. Therefore, neither firm nor organization can be null within a company structure. However, different levels of company's capabilities arrangement are possible – and expected. Different patterns of company may exist in the same period of time, evincing the myriad of strategies in the business environment in which companies are inserted (Tigre, 1998).

It has been argued that organization is a function of the firm, and, therefore, operations and management capabilities hinge on what will be developed and later sold, based on technology development and transaction capabilities. That is, the more complex the firm is, the more costs the organization incurs. In that sense, a balance between firm and organization is envisioned. In the real world, however, this balance is not widely found.

Considering that, results show four different patterns of company: *nearly balanced companies*, *firm-based companies*, *advanced organization-based companies* and *basic organization-based companies*. It is clear to verify that neither firm or organization present zero values, in consonance with the assumption that all four innovation capabilities, studied here through the lenses of firm and organization capabilities combined, are never zero within a company (Zawislak et al., 2012). Therefore, all analyzed patterns have a sort of combination of all four innovation capabilities, in different levels.

Companies characterized as *nearly balanced companies* are those with higher performance indicators. Although being organization-based, they present higher levels of firm as well. They present, thus, organization costs that are justifiable given their firm characteristics, but could be reduced aiming at a more balanced company. By doing so, they would reach more internal stability that would enable them to keep on innovating – and thus unbalancing in the following steps. These companies present higher levels on management and operations capabilities, but they still present the highest levels in technology development and transaction capabilities within the sample as well. Formalization permeates all processes, from development to transaction, ensuring that each activity occurs as planned. The formalization in project management seems to echo in operations, since these companies carry the productive process as programmed, with routines that do not generate rework, and delivering the products promptly. These companies also present high flexibility to expand the installed capacity if necessary and high index of product conformity. Monitoring of technological and market trends allows these companies to keep up to date to the ever changing demands, profiting from that. Besides that, personnel are constantly trained and machines and equipment face also systematic improvement. Thus, the proposition that management capability can integrate and support a set of capabilities related to development, logistics, marketing, cost control, financial and human resources is seen in companies that are nearly balanced (Desarbo et al., 2005). In that sense, nearly balanced companies present a management capability that integrates all areas in order to achieve efficiency and stability, and thus to improve firm's performance through time (Pufal et al., 2014). As organization hinges on what is developed and then transacted, these companies incur in high organizational costs, shown by their means. That is, their organization is larger than firm – the turning point to achieve the right firm-organization balance. Thus, these

companies should seek to diminish organizational costs regarding either management or operation capabilities or either enhance firm specificity. By doing so, it would be expected that technology development or transaction capabilities would be more significant in terms of performance over time, rather than management capability as it currently is.

Coming in second place in terms of performance, *firm-based companies* focus more on technology development capability than in any other capability. In that sense, they invest in other capabilities solely to the extent that is needed to support their development activities. By doing so, they are able to reduce organizational costs, whereas maintaining firm complexity adequate to ensure positive economic outcomes. Related to that is their highest potential to establish prices in the market. Behaving similar to nearly balanced companies in terms of technology development capability, firm-based companies have a high level of own product development and prototyping, build on technological trends monitoring and the ability to adapt technologies to their own needs. That shows the agile responsiveness these companies present to market changes whenever necessary, which is essential to maintain their high level of own product launching. The indication of formal project management methods corroborates to the high structured product development activities, ensuring that these companies achieve positive outcomes as planned. Considering that firm-based companies focus on development, they invest solely what is needed to ensure that operations capability supports what is developed. However, companies in this pattern have management capability as the less expressive one. Focusing on development, they put management aside, with lower levels than the other groups. As stated by Penrose (1959) through the idea of organization learning and capabilities development, the more established routines a company presents, the less management resources should be used. Thus, by having formalized procedures in technology development and operations capability, these companies present lower level of management capability. However, that might also represent a lack in the management structure, which is expected to change over time, so that it does not turn to be a bottleneck for growth.

Higher organizational levels are also seen in the so-called *advanced organization-based companies*. Companies in this pattern present higher means on operations and management capability and are, therefore, organization-based. They present low level of technology development capability and even lower of transaction capability. Thus, the idea that highly organization-based companies should not exist – given that organization, in fact, is dependent upon firm – can be revised through the lenses of this group's characteristics. It is not a problem to be organization-based, since the company can profit from it. It is remarkable that these companies elucidate the proposition made by Child (1972) that, in order to try to secure a favorable demand that will be expressed by a high return based on company's products or services offered, operational limits influence strategic transaction actions as to move into or out of given markets or areas of activity. Organization, through operations and management capabilities, must highly coordinate and align in-between process from production to sales, to enable firm to achieve efficacy levels even though the high costs and the low complexity. Presenting their highest mean in operations capability, these companies are very good in producing, rather than developing. By doing so, they can be perceived as highly effective in ensuring that production is conducted as programmed, delivering products promptly to their customers and assessing high levels of product conformity. In consonance, the higher level of management capability elucidated that there is an adequate established structure that allows the company to act effectively. On the other hand, they lack technology development and

transaction capabilities. Behaving similar to basic organization-based companies in terms of firm, advanced organization-based companies have low technology specificity and transaction complexity, since their strategy is also reactive. What differs them from that other group is their management capability, that ensures not a basic organization structure, but a well-structured company to attend several customers, with flexibility.

Basic organization-based companies, though, are those that represent the typical structure of reactive production service supplier companies. They not only have the lowest firm and organization means, but also the lowest performance mean within the sample. Being dependent on pre-established specifications, they were expected to present, aiming at a balanced structure, the lowest organizational cost function possible. Moreover, they were expected to present a stablished organization that would allow them to profit from being less specific. That is not the fact, however. Organization hinders firm, instead of being a consequence of it and allowing its best working. Although presenting management capability as the second most developed capability, these companies present solely the ideal management structure to make basic operations feasible and ensure its coherent course. It is just sufficient to stablish the necessary set of tools, techniques, training and financial management to the company act. They have lower levels of product prototyping, development and launching in the market. Both technological and market trends monitoring are low, as well as project management formalization. In that sense, they present a transaction capability that allows them to simply deal with customers and deliver what has been previously defined. They have, thus, little power to negotiate and do not need to conduct formal research to monitor trends. The focus of companies in this pattern is large production scale, given the stable operational processes already achieved. These companies, however, are less flexible than others in terms of capacity expansion, which demonstrates that they can only produce what has been previously decided. That means the installed capacity may configure a restriction to enter in a new market or to expand its portfolio, maintaining these companies in the same position (Reichert, Camboim & Zawislak, 2015), without much endeavor to change.

As stated by Schumpeter (1942), innovations are solely perceived as such if they bring positive returns to the company in terms of extraordinary profits. Results show, thus, that performance is higher when, having firm highly developed, a company tends towards nearly balanced companies or firm-based companies. That corroborates with the idea proposed by Williamson (1991) that the more specific the asset, the higher the costs it incurs and the higher the returns it offers. On the other hand, when organization is highly developed, companies with high performance tend towards nearly balanced companies or advanced organization-based companies.

6 CONCLUDING REMARKS

The purpose of this study has been to analyze different patterns of company, considering firm-organization combinations. By detailing the different patterns of company, it is possible to understand what lies behind innovation and disorganization within the analyzed companies.

Therefore, as the present study portrays a static view of the analyzed companies, it is possible to suggest, based on its results, the dynamic in firm organization that lies behind organized innovative firms. Companies that are *firm-based* as a result of technological or marketing innovation

may develop an organizational structure over time, aiming at stability in processes and coordination, as a way to ensure long-lasting positive outcomes, until the next innovation takes place. Once the company achieves a *balanced structure*, as proposed by the literature under the notion of a well-tuned company, it achieves stability. The right balance, thus, illustrates the ideal type of organized firm acting in a stable way. In this type of company, no matter which level of firm and organization it has, its performance fulfills the strategic expectations. However, that does not mean it should remain still. Given the decreasing returns of organization and technology, the company that does not innovate will succumb. That means, these companies should always keep on changing their firm and, thus, keep on changing their organization. In other words, these companies should always keep on innovating, and, thus, promoting new disequilibrium in their firm organization. If that does not happen, companies will face an *organization-focused* arrangement of their capabilities. By doing so, these companies may remain performing just the same as in previous times, seeking for standardization instead of innovation. If it is aligned with company's strategy, this pattern of company may be required. However, it can work for a while, but companies that do not change over time are destined to fade.

Thus, disorganization appears whenever firm and organization are unbalanced. However, that may be momentary, as a natural consequence of innovation, or permanent, as a consequence of internal inefficiency. As a conclusion, it is possible to suggest that there is no single best firm-organization combination, but there are different combinations for different positioning and, thus, different performances. In that sense, the disorganized firm is the firm that does not have the adequate organization that guarantees its best outcomes at a given moment.

6.1 Study Implications, Limitations and Future Research

This study provides two main implications. First, it may help managers understand that being an organization-based company is risky if firm does not present an adequate and aligned level of development. The study elucidates directions to be followed by companies that aim at advancing their firm complexity towards a more balanced company, and future directions to those companies that already present satisfactory outcomes, according to each positioning. Second, the study also sheds light on the importance of alignment between regulatory agencies and the direction of a nation's competitiveness. By doing so, the study can help make policy makers aware that S,T&I policies should focus on innovations primarily focused on the firm sphere, to, later, organization be structured – and not vice versa.

This study has some limitations. The identification of institutional constraints configures a limitation of this study, since it was not included in the questionnaire used – although that was an adequate research instrument to define different patterns of company, considering firm-organization combinations. Another limitation concerns the fact that the questionnaire is based on respondent's opinion, and, therefore, answers are narrowed to that point of view. That may cause biased scores, considering that value perception may vary from one respondent to another. However, this limitation has not affected the results in the study, since significant differences were verified among scores. Finally, the method used in the cluster analysis may configure another limitation to the study, given that different clustering methods can generate different grouping results, and thus different patterns of company could be verified.

To deeper explore the different patterns of company identified in this study, future studies could be conducted through case studies, exploring each pattern with more details. Besides that, the reapplication of this study in countries with different conjuncture configurations could provide interesting insights on the differences of patterns according to the location companies are inserted in.

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