

WHAT IMPACTS THE PERFORMANCE OF TECHNOLOGY ORGANIZATION? AN ENTREPRENERIAL PERSPECTIVE

ABSTRACT

This article proposes the construction of a theoretical review from Corporate Entrepreneurship (CE), Institutional Entrepreneurship (IE) and Organizational Performance (OP) viewpoints. To identify and discuss the relationship between indicators of Corporate Entrepreneurship and Organizational Performance and indicators of Institutional Entrepreneurship and Organizational Performance, this study presents the dimensions and definitions of each indicator, and their relationships with Organizational Performance. The literature shows two different relationships between Corporate Entrepreneurship with Organizational Performance and Institutional Entrepreneurship with Organizational Performance. Organizational Performance is presented with indicators including return on assets, profitability and sales growth. The relationships between all indicators are presented with a theoretical framework that was tested using 72 information technology organizations. The relationships between the dimensions of Corporate Entrepreneurship and Institutional Entrepreneurship with Organizational Performance were confirmed. The results show that indicators of Institutional Entrepreneurship dimension and characteristics of control variables when presented are isolated can be mechanisms for improving Organizational Performance levels in organizations, as well as when the combined effect, considering specific indicators of Corporate Entrepreneurship and Institutional Entrepreneurship, the organization tends to have better returns to Organizational Performance. In this study we did not consider the fact that the sample companies were mostly born global in the IT industry, which may have influenced the results.

Keywords: Organizational Performance. Corporate Entrepreneurship. Institutional Entrepreneurship.

O QUE IMPACTA O DESEMPENHO DA ORGANIZAÇÃO TECNOLÓGICA? PERSPECTIVA EMPRESARIAL

RESUMO

Este artigo propõe a construção de uma revisão teórica dos pontos de vista de Corporate Empreendedorismo (CE), Empreendedorismo Institucional (IE) e Desempenho Organizacional (DP). Para identificar e discutir a relação entre indicadores de Empreendedorismo Corporativo e Desempenho Organizacional e indicadores de Empreendedorismo Institucional e Desempenho Organizacional, este estudo apresenta as dimensões e definições de cada indicador e suas relações com o Desempenho Organizacional. A literatura mostra duas relações diferentes entre Empreendedorismo Empresarial com Desempenho Organizacional e Empreendedorismo Institucional com Desempenho Organizacional. O desempenho organizacional é apresentado com indicadores, incluindo retorno sobre ativos, rentabilidade e crescimento de vendas. As relações entre todos os indicadores são apresentadas com um quadro teórico que foi testado usando 72 organizações de tecnologia da informação. As relações entre as dimensões do Empreendedorismo Corporativo e o Empreendedorismo Institucional com o Desempenho Organizacional foram confirmadas. Os resultados mostram que os indicadores de dimensão e características do empreendimento institucional das variáveis de controle, quando apresentados isoladamente, são mecanismos para melhorar os níveis de desempenho organizacional nas organizações, bem como quando o efeito combinado, considerando indicadores específicos de Empreendedorismo Corporativo e Empreendedorismo Institucional, a organização tende a Ter melhores Devoluções para seu desempenho organizacional. Neste estudo, não consideramos o fato de que as empresas de amostra nasciam na maior parte globais na indústria de TI, o que pode ter influenciado os resultados da pesquisa.

Palavras-chave: Desempenho Organizacional. Empreendedorismo corporativo. Empreendedorismo Institucional.

¿QUÉ IMPACTA EL DESEMPEÑO DE LA ORGANIZACIÓN TECNOLÓGICA? UNA PERSPECTIVA EMPREENDEDORA

RESUMEN

Este artículo propone la construcción de una revisión teórica de los puntos de vista del Emprendimiento Empresarial (CE), el Emprendimiento Institucional (IE) y el Desempeño Organizacional (OP). Para identificar y discutir la relación entre indicadores de Emprendimiento Corporativo y Desempeño Organizacional e indicadores de Emprendimiento Institucional y Desempeño Organizacional, se presentan las dimensiones y definiciones de cada indicador y sus relaciones con el Desempeño Organizacional. La literatura muestra dos relaciones diferentes entre el Emprendimiento Corporativo con el Desempeño Organizacional y el Emprendimiento Institucional con el Desempeño Organizacional. El desempeño organizacional se presenta con indicadores que incluyen en la rentabilidad de los activos, rentabilidad y crecimiento de las ventas. Las relaciones entre todos los indicadores se presentan con un marco teórico que se probó utilizando 72 organizaciones de tecnología de la información. Se confirmó la relación entre las dimensiones del Emprendimiento Corporativo y el Emprendimiento Institucional con el Desempeño Organizacional. Los resultados muestran que los indicadores de la dimensión de Emprendimiento Institucional y las características de las variables de control, cuando se presentan aisladamente, son mecanismos para mejorar los niveles de desempeño organizacional en las organizaciones, y cuando el efecto combinado, considerando indicadores específicos del Emprendimiento Corporativo y del Emprendimiento Institucional, tiende a tener mejores Retornos a su Desempeño Organizacional. En este estudio no se consideró el hecho de que las empresas de muestra nacían en su mayoría en la industria global de TI, que puede haber influido en los resultados de la investigación.

Palabras clave: Desempeño Organizacional. Emprendeduría corporativa. Emprendimiento Institucional.

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1 INTRODUCTION

Born global firms are organizations that quickly become global businesses and expand their actions around the world, using existing paradigms of international business (Gabrielsson & Kirpalani, 2004). Born globals have been studied mainly because of the high speed of their growth.

Information technology (IT) organizations possess the cultural ability to adapt to the research and development sector. These organizations need to build a portfolio of products to maintain their competitiveness and gain competitive advantages (Huang Wu, Dyerson, & Chen, 2012; Martinez-Noya, Garcia-Channel, & Guillen, 2012). Thus, in order to enhance competitiveness, the stronger their need to rely on local resources, the less likely companies are to enter emerging economies, meaning that the level of development of an emerging economy's market-supporting institutions directly influences multinational enterprises' (MNEs) entry strategies (Meyer Estrin, Bhaumik, & Peng, 2009).

Due to the characteristics of these kinds of organizations, this research was conducted using 72 IT companies located in Santa Catarina state, in Brazil, which is an emerging economy and an important cluster of IT firms. The sample was selected according to snowball sampling, whereby each interviewee recommended another to be interviewed. This procedure was followed in order to identify accessible born global IT companies, since it is difficult to find these companies in Brazil. To verify the framework's effectiveness, we used a quantitative research method adopting different technique: multiple correspondences, decision tree and dendrogram. These analyses are simple and easy to use as reference of proving hypotheses.

Organizations that include entrepreneurial processes in their activities are more likely to improve their organizational performance, providing profitability and sales growth (Covin & Slevin, 1991; Zahra, 1993b; Antoncic & Hisrich, 2001; Antony & Bhattacharyya, 2010; Martz, 2013). Some studies have investigated the relationship Organizational Performance has with Corporate Entrepreneurship (CE) and Institutional Entrepreneurship (IE), and proven that the relationship improves the level of Organizational Performance (OP). However, this study investigates the relationship between the variables that compose the theories of Corporate Entrepreneurship with Organizational Performance and Institutional Entrepreneurship with Organizational Performance. Some extant studies have investigated only the influence of Corporate Entrepreneurship on Organizational Performance (Kuratko & Audretsch, 2013; Lumpkin & Dess, 1996; Zahra, 1991), and others have investigated Institutional Entrepreneurship's effects on Organizational Performance (Casero, Mogollón, and Urbano (2005); Urbano, Casero and

Mogollón (2007); Haro (2010); Haro, Ceballos and Salazar (2010); Haro and Gómez (2011); Haro, Aragón-Correa and Cordón-Pozo (2011); Gómez and Haro (2012); Haro, (2012); Alvarez and Urbano (2012); Urbano and Alvarez (2014); Gómez and Haro (2016)). This study contributes to aggregating the findings of isolated studies by summarizing them in a single work and providing a more comprehensive views of the topic in question. This article also explores the relationship of combined Corporate Entrepreneurship and Institutional Entrepreneurship with Organizational Performance.

Organizational Performance is the method of value creation for the organization, which creates a metric of change for its financial status, and facilitates decision making by managers and enforcement of decisions by actors. Organizational Performance also entails a complex relationship between the criteria of profit, productivity, organizational flexibility, intra-organizational tension, effectiveness, efficiency, quality, innovation and profitability (Rolstadas, 1998; Carton, 2006).

Corporate Entrepreneurship is a process whereby an organization diversifies through internal development. From this process, questions emerge from entrepreneurs' individual behavior, which affects the organization as a whole. However, Corporate Entrepreneurship provides better competitive positioning and transforms the organization, market or industry, creating value by developing innovation. Corporate Entrepreneurship provides new business development, new technologies and products, and the entry into new markets, thereby promoting improvements in Organizational Performance (Burgelman, 1983; Covin & Miles, 1999; Stopford & Baden-Fuller, 1994; Hoeltgebaum, Amal & Andersson, 2014a; Hoeltgebaum, Amal & Andersson, 2014b; Urbano & Alvarez, 2014; Gómez & Haro, 2016)).

Macroeconomic factors and structural environment affect entrepreneurial activity. The environment influences the strategy, structure and process of starting any entrepreneurial activity. Institutional Entrepreneurship provides entrepreneurs with challenging positions and stable historical actors, building a strategic source of power, which enables these entrepreneurs to discover different areas, and instigates environmental changes (Battilana, Leca & Boxenbaum, 2009; Levy & Scully, 2007; Sánchez, 2013).

Therefore, this study has the purpose to address the following question: what are the relationships between Corporate Entrepreneurship and Institutional Entrepreneurship? And how such relationships influence the organizational performance of IT companies? Based on these investigations regarding the related questions, we will contribute to the literature of entrepreneurship by identifying and characterizing each dimension and their indicators, and also estimating an empirical model to establish how

corporate entrepreneurship and institutional entrepreneurship affect the performance firms operating in high tech industry. Finally, we contribute to the literature by particularly analyzing the case of firms operating in Emerging Economy.

The remainder of this article is structured as follows. In section two we present the literature review and the hypotheses. In section three we present the methodological procedures and in section four we estimate the model and discuss the main findings. We conclude our study in section five.

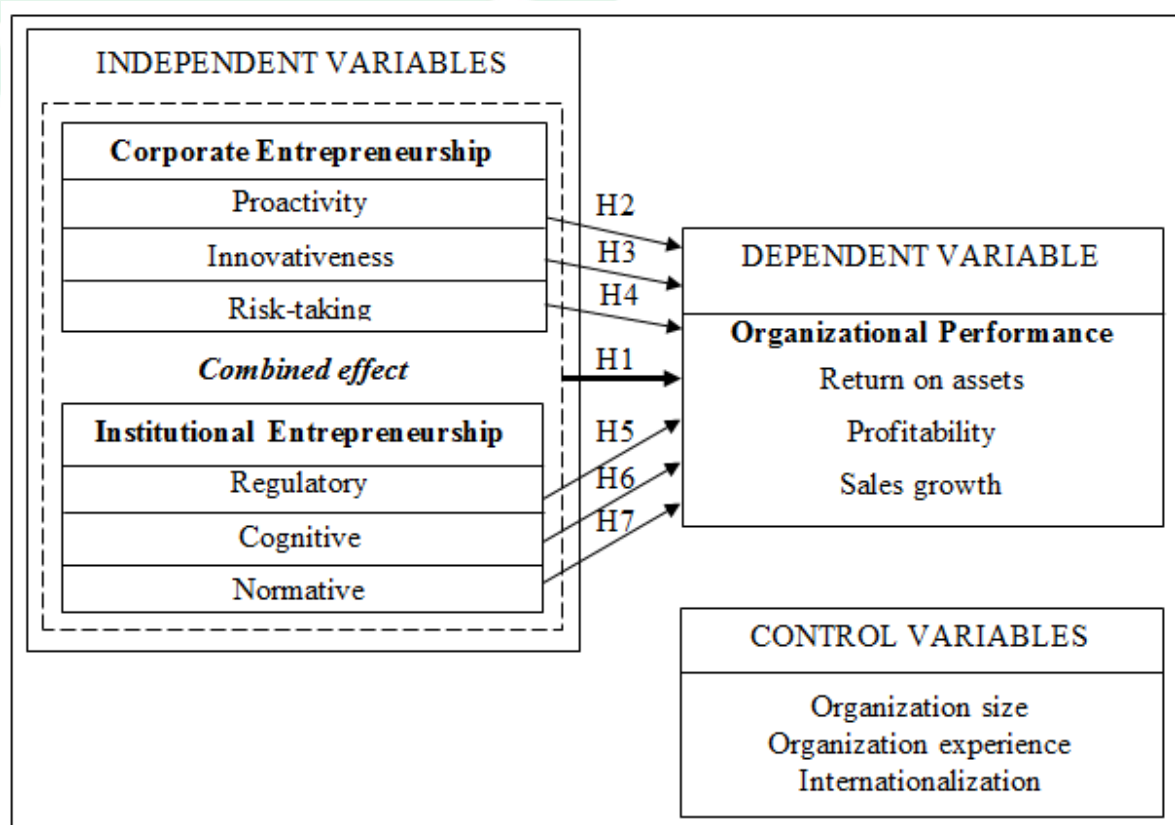
2 THEORETICAL FRAMEWORK AND HYPOTHESIS

Expanded and in-depth studies of entrepreneurship are necessary to ensure the survival of organizations and their ability to improve their profitability and growth, while institutional change factors provide foundations of competitiveness and position organizations within their fields (Droege & Marvel, 2010; Viotti, 2007; Zahra, Filatotchev, & Wright, 2009).

Most of the studies on Corporate Entrepreneurship has focused on firms resources and their impact on performance and growth Acs, Z. (2006); Sapienza; Autio; Gorge and Zahra (2006); Barbero, Casillas and Feldman. (2011); Ngo, Janssen, Leonidou and Christodoulides (2016); Silva, Styles and Lages (2016)). In this study we focus on the impact of Corporate Entrepreneurship on firm performance and we as well attempt to investigate the role of Institutional Entrepreneurship

Furthermore, we identify a lack in previous studies, particularly related to the relations between Corporate Entrepreneurship and Institutional Entrepreneurship with Organizational Performance in technology-based organizations. We, therefore, propose to develop the following framework as presented in Figure 1, where the organizational performance of firms is determined by the Corporate Entrepreneurship characteristics such as proactivity, innovativeness and risk taking, as well by different levels of Institutional Entrepreneurship (regulatory, normative and cognitive pillars).

Figure 1 - Methodological framework



In light of the above presented framework, we first present the discussion on organizational

performance measurement and its determinants, than we successively draw our hypotheses on the role of

Corporate Entrepreneurship and Institutional Entrepreneurship.

2.1 Organizational Performance

Organizational Performance is a complex relationship between seven criteria listed by Rolstadås (1998): effectiveness, efficiency, quality and productivity, quality of work life, innovation, and profitability for for-profit organizations or budgetary capacity for nonprofit organizations.

Organizational Performance enables the organization to become more competitive; however, there is a need to find ways to optimize Organizational Performance (Zahra & Covin, 1993; Kim & Mauborgne, 2003). Some indicators that measure Organizational Performance have strong relationships with the criteria listed by Rolstadås (1998), and have been used in studies by authors such as Lumpkin and Dess (2001), Zahra and Garvis (2000) and Sánchez (2013). Rauch, Wiklund, Lumpkin and Frese (2009) dimensions of corporate entrepreneurial orientation (innovation, risk-taking, pro-activeness) are of equal importance when explaining Organizational Performance.

Return on assets is directly related to the efficiency of the organization, and enables it to identify gains on the assets used. Profitability is the ultimate goal of any for-profit organization, and enables it to understand the success of its investments and profit margins. Sales growth enables the organization to develop positively, strengthening cells and increasing its market share (Bottazzi, Secchi & Tamagni, 2008; Lumpkin & Dess, 2001; Sánchez, 2013; Zahra & Garvis, 2000).

Entrepreneurship can influence the profitability of an organization on a limited scale, as this profitability may also suffer from internal or external influences. The position of an organization when taking risks can lead to growth in profitability (Dess et al., 2003; Zahra, 1991; Zahra, 1995).

According to Zahra (1996), sales growth is directly related to the ability of an organization to innovate and launch new products, and also contributes to market participation rates and Organizational Performance. For this, research and development teams should be well equipped to create support for Organizational Performance.

2.2 Corporate Entrepreneurship

In order to measure entrepreneurial dimensions, researchers have operationalized entrepreneurial behavior as the whole: from product innovation to market, from pro-activity to decision-making and from risk-taking (Miller, 1983; Miller e Friesen, 1978). Corporate Entrepreneurship is composed of formal and informal activities, which seek the creation of new business through innovations in products or processes, or market development.

This activity occurs at functional or project levels, in order to improve the competitiveness and performance of the organization (Zahra, 1991).

Stopford and Baden-Fuller (1994) emphasized that the term “Corporate Entrepreneurship” emerged with reference to individual entrepreneurs’ behaviors. If this is true, individual entrepreneurs have the capacity to influence actions in the organization as a whole. Corporate Entrepreneurship also helps to identify three types of corporate entrepreneurship: (1) the creation of new organizations within a venture; (2) the activity most associated with the transformation or renewal of existing organizations; and (3) situations in which organizations change the rules of competition for their industry.

Proactivity is freedom for renovation with extensive experimentation by groups. Organizations can be proactive when they lend ideas to others as a way to break past behaviors (Covin & Slevin, 1991; Zahra, 1993a; Stopford & Baden-Fuller, 1994).

Thus, Lumpkin and Dess (1996) point out that the common attributes of Corporate Entrepreneurship described by Stopford and Baden-Fuller (1994) are autonomy, innovativeness, risk-taking and aggressive competitiveness, which are important attributes in the development of Corporate Entrepreneurship. Essentially, these attributes are informed by aspects of organizational culture, a system of shared values, and corporate vision.

Lumpkin and Dess (1996) suggested the development of various types of organizational behaviors that induce Corporate Entrepreneurship to be more strongly characterized by attributes in different combinations. Research by authors such as Lumpkin and Dess (2001), Zahra (1991), Zahra (1993a), Zahra and Covin (1995) and Kuratko and Audretsch (2013), have confirmed the positive relationship between Corporate Entrepreneurship and Organizational Performance, demonstrating that growth of entrepreneurship is positively associated with Organizational Performance.

Proactivity is an important indicator of Corporate Entrepreneurship, and can be understood as the capacity and emphasis of an organization when introducing new products, services, or technology into the market. The competitive position of an organization in relation to proactivity is instigated by renewal processes (Zahra, 1993b; Zahra, 1995; Zahra & Covin, 1995). Thus, we propose the following:

H1: The greater the proactivity of an organization, the greater the Organizational Performance.

McFadzean, O’Loughlin and Shaw (2005) defined Corporate Entrepreneurship as an effort to promote innovation in an uncertain environment, where innovation is understood as the process of creating value for the organization, suppliers and customers. Innovation improves Organizational Performance, in terms of developing new or modifying existing

products, processes or organizational systems. Innovation also supports organizational actors in order to build new ideas, experiments and creative processes, which help in the development of the product or process, allowing experiments to go beyond the reality of the organization. However, when innovation is not present in the organization there is no Corporate Entrepreneurship, even when other dimensions can be identified (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Zahra, 1995; Zahra & Covin, 1995; and Covin & Miles, 1999). With this in mind, we propose the following:

H2: The greater the innovativeness of an organization, the greater the Organizational Performance.

The concept of risk-taking is often used to generically describe entrepreneurship. The ability of an organization to take risks is directly associated with its support for innovation, even if the success of these innovative activities is uncertain. However, such activities enable the organization to exploit opportunities and gain competitive advantage. Therefore, the ability of the organization to take risks provides a better basis on which to make profits (Lumpkin & Dess, 1996; Zahra, 1995; Zahra & Garvis, 2000). Thus:

H3: The greater an organization's propensity to take risks, the greater its Organizational Performance.

2.3 Institutional Entrepreneurship

Scott (1995) studied the Institutional Theory supported on three pillars: Cognitive, Regulatory and Normative, as being an analysis on the environment and its behavior and influence on the organizations. Battilana et al. (2009) described the concept of Institutional Entrepreneurship as the adoption of leadership when building an institution. To be characterized as an institutional entrepreneur, an organizational actor needs to follow two steps: initiate changes that create conflicts of opinion and actively participate in the implementation of these changes.

The perspective of institutional theory on the concept of Institutional Entrepreneurship characterizes the entrepreneur as an innovative institution, or an agent of institutional change. This characterization leads to numerous motivations and builds innovation into different scenarios. The institutional entrepreneur has to understand and choose institutional logics by observing the selected innovation scenario. Selection of these institutional logics depends on the institutional environment in which the organization operates, even if the market is transitory (Greenwood & Suddaby, 2006; Leca, & Naccache, 2006; Pacheco, York, Dean, & Sarasvathy, 2010; Haro, 2010; Alvarez & Urbano 2012; Urbano & Alvarez, 2014; Gómez & Haro, 2016).

The different institutional pillars—regulatory, cognitive and normative—can change the entrepreneurial capacity of an organization, providing different levels of entrepreneurial activity (Busenitz, Gomez, & Spencer, 2000).

The regulatory pillar consists of laws, which are regulations and government policies that may support or inhibit entrepreneurial activities (Scott, 1995; Veciana & Urbano, 2008; Busenitz et al., 2000; Wicks, 2001; Haro (2010); Alvarez & Urbano (2012); Urbano & Alvarez (2014); Gómez & Haro (2016)). In order to directly impact the entrepreneur, laws facilitate entrepreneurial activity shares, as well as increasing or reducing business risks.

The primary regulatory function of an institution is to constrain and regulate behavior, implement rules, and inspect or review the conformity of actions of others in the institution with these rules (Scott, 1995). We propose to test the following hypothesis:

H4: The more tightly an organization is institutionally regulated, the greater the Organizational Performance.

The cognitive indicator directly reflects the knowledge and skills of an organization's staff when operating a new business. The indicator represents individual behavior based on rules and subjective meanings that build thoughts, feelings and actions (Scott, 1995; Wicks, 2001; Busenitz et al., 2000; Veciana & Urbano, 2008; Haro (2010); Alvarez & Urbano (2012); Urbano & Alvarez (2014); Gómez & Haro (2016)). Thus:

H5: The greater an organization's cognitive institutional presence, the higher the Organizational Performance.

Normative questions identify the degree to which organizational actors are satisfied with entrepreneurial activity, along with the value of creative skills and innovative thinking. This normative aspect represents a behavioral model based on obligatory dimensions of a social interaction. Thus, if the cultural context and values of an entrepreneurial organization are higher than those in another, a higher level of entrepreneurship will result in higher performance (Busenitz et al., 2000; Scott, 1995; Wicks, 2001; Haro (2010); Alvarez & Urbano (2012); Urbano & Alvarez (2014); Gómez & Haro (2016)), leading us to posit that:

H6: The greater an organization's institutional normative capacity, the higher the Organizational Performance.

We have reviewed the above relationship between Institutional Entrepreneurship and EC on the firms' performance. However, it is important to

investigate in which extent the combination of the two dimensions can affect performance. Different authors have mainly addressed the direct effect of institutional and corporate entrepreneurship on organizational performance (Busenitz et al., 2000; ; Haro (2010); Alvarez & Urbano, 2012; Urbano & Alvarez, 2014); Gómez & Haro, 2016), we proposed to test the combined effect of institutional and corporate entrepreneurship. This means that institutional pillars can change and shape the effect of innovation, risk taking and pro-activeness on the performance of firms (Haro, 2010); Alvarez & Urbano, 2012); Urbano & Alvarez (2014); Gómez & Haro (2016)). So we suggest testing the following hypothesis:

H7: The greater the presence of Corporate Entrepreneurship and Institutional Entrepreneurship, the greater the Organizational Performance.

3 METHOD

This study utilized a quantitative research method via a structured questionnaire for construction and replication of the data collection. The study drew from Lumpkin & Dess (2001) to measure Corporate Entrepreneurship; Busenitz et al. (2000) to measure Institutional Entrepreneurship; and Zahra & Garvis (2000) to define the criteria for Organizational Performance.

The questionnaire included 28 questions divided into four blocks, which individually represent each study criteria, covering the issues necessary to measure each indicator and achieve specific goals.

Table 1 - Variable vs Questions vs Authors

VARIABLE	QUESTIONS	AUTHORS
DEPENDENT		
Organizational Performance		Zahra & Gavis (2000) Lumpkin & Dess (2001)
Return of assets		
Profitability		
Sales growth		
Independent		
Corporate Entrepreneurship (CE)		
Pro-activeness (PRO)	1,2,3	Lumpkin & Dess (2001)
Innovativeness (INO)	4,5,6	
Risk taking (ASS)	7,8,9	
Institutional Entrepreneurship		
Regulatory (REG)	10,11,12,13,14	Busenitz, Gomez & Spencer (2000)
Cognitive (COG)	15,16,17,18	
Normative (NOR)	19,20,21,22	
Control		
Organization Size (POR)		Zahra & Gavis (2000)
Organization experience (EXP)		
Internationalization (INT)		

The dimensions are outlined, along with the control variables, as follows: Corporate Entrepreneurship reveals the presence of proactivity, innovativeness and risk-taking in the sample organizations, and has nine related control variables. Institutional Entrepreneurship refers to the institutional context in which the organizations operate in terms of their Regulatory, Cognitive, and Normative situation, and comprises 13 issues. Organizational Performance reveals the satisfaction of respondents in relation to performance, through verification of return on assets items, sales, and profitability growth, and has seven issues. The control variables consist of the organizations' size, age and internationalization.

We used three different methods in order to analyze the data. Cluster analysis, or "k-means", used three convergence criteria classes with a maximum of

10 iterations. Decision tree analysis, with 60 cases of training, enabled us to identify the rules for evaluating Organizational Performance as a function of Corporate Entrepreneurship and Institutional Entrepreneurship. Finally, multiple correspondence analyses provided a factorial map of the research.

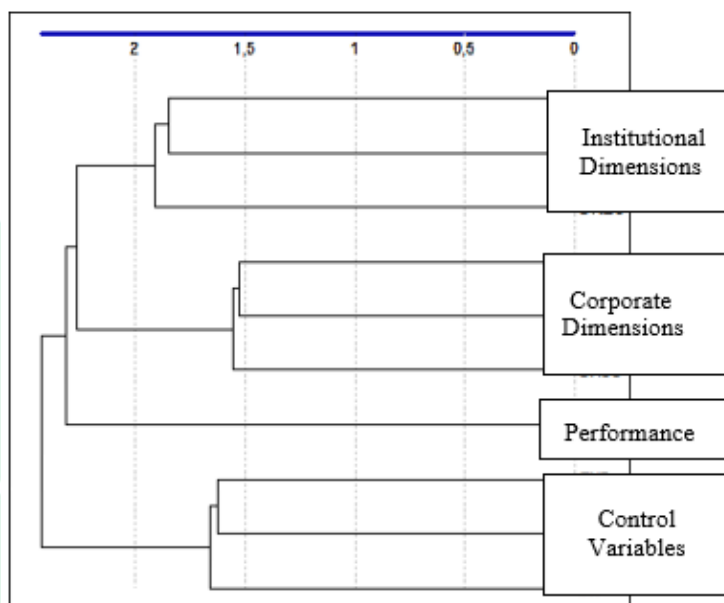
This survey was conducted in the city of Blumenau, one of the largest location for companies operating in the development of IT- systems. The region hosted about 700 IT- organizations in 2012, being about 80 companies that are associated with BLUSOFT. We surveyed all the companies located in Blumenau, as received 72 full-responded questionnaires (BLUSOFT, 2014; INOVA @ SC, 2014).

4 MODEL ESTIMATES AND DISCUSSIONS

First, we validated the dimensions proposed in this study through hierarchical clustering, also known as cluster analysis or hierarchical classification. This analysis built hierarchically organized sub-groups based on similarities between the entities, with organizations grouped according to their levels of training provided (Loesch & Hoeltgebaum, 2012).

We generated an average variable by grouping the variables by the study indicators. For example, the Corporate Entrepreneurship indicators were represented by the variables PRO1, PRO2 and PRO3 gathered under DPRO; the INO1 variables, INO2 and INO3, were gathered under DINO; and the ASS1 variables, ASS2 and ASS3, were gathered under DASS. Similar groupings were performed for the dimensions Institutional Entrepreneurship and Organizational Performance.

Figure 2 - Cluster dendrogram



The grouping of variables occurred in accordance with the theoretical definitions. Institutional Entrepreneurship grouped the DNOR variables, consolidating the average normative indicator, DCOG, from the cognitive indicator and DREG as the average regulatory indicator, as suggested by Busenitz et al. (2000). This grouping represented proximity between the variables grouped on each tree branch. However, DNOR and DCOG have the highest correlation, however, for most of the variables, this indicator is relatively low, pointing to low multicollinearity risk.

Table 2 - Correlation Matrix

Variável	POR	EXP	INT	DPRO	DINO	DASS	DREG	DCOG	DNOR	DPER
POR	1									
EXP	0,693	1								
INT	-0,066	-0,050	1							
DPRO	0,088	0,215	-0,090	1						
DINO	0,156	0,151	-0,065	0,583	1					
DASS	-0,178	-0,213	-0,001	0,249	0,547	1				
DREG	0,210	0,140	-0,238	0,110	0,174	-0,047	1			
DCOG	0,145	-0,040	0,448	-0,273	-0,128	-0,024	0,163	1		
DNOR	-0,025	-0,187	-0,278	-0,169	-0,215	-0,130	0,216	0,314	1	
DPER	0,012	0,094	0,083	-0,041	-0,112	-0,225	-0,003	0,131	0,224	1

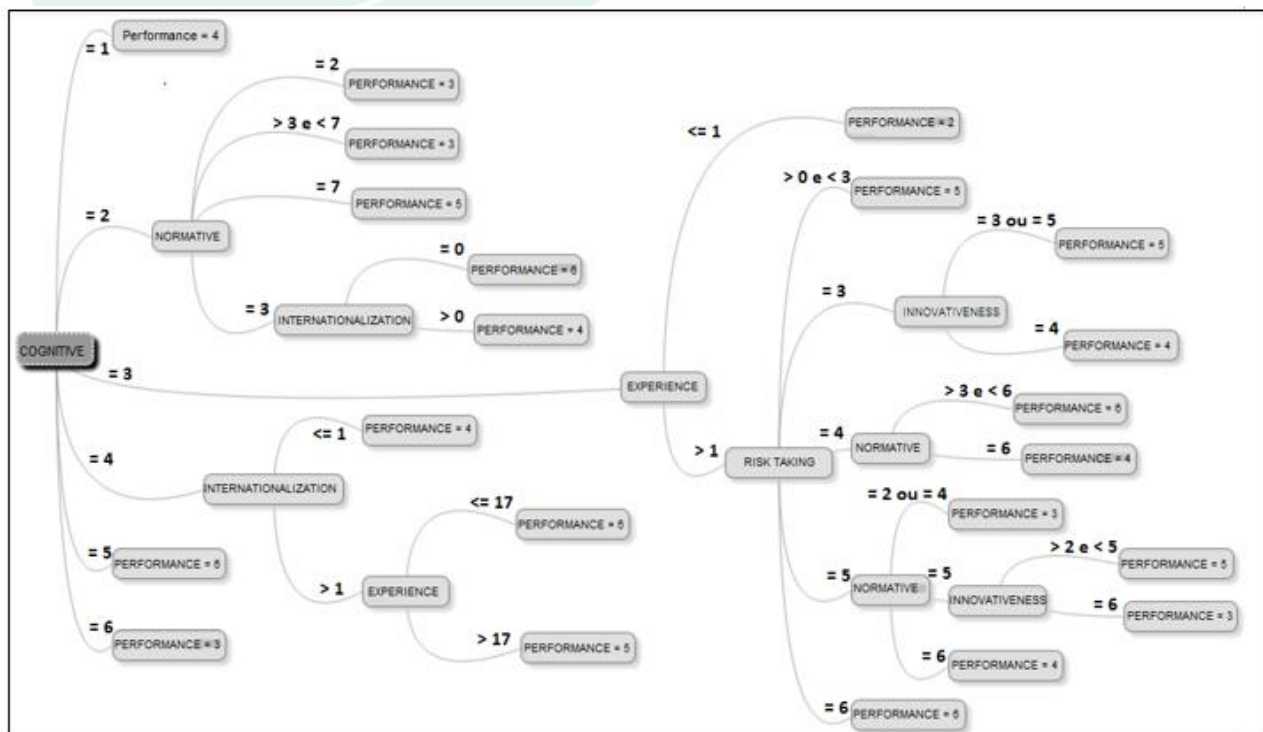
The variables that were consolidated as average Corporate Entrepreneurship indicators, as defined by Lumpkin and Dess (2001), were grouped in a separate dimension. This group portrayed a greater proximity between the indicators represented by the variables DINO, DPRO and DASS. The DINO and DPRO variables presented the strongest correlation.

Finally, the control variables were grouped and shown to have proximity to the three dimensions of the model. This group had a less close relationship with the dimensions of Institutional Entrepreneurship and

Corporate Entrepreneurship, but direct proximity to the level of Organizational Performance.

The distances between each variable were calculated using Euclidean distance and the aggregation method for the nearest neighbor. The aggregation method determines how to classify the distance between two variables. In the nearest-neighbor method, the shortest distance between the possible combinations of objects occupied by the two variables is considered (Loesch & Hoeltgebaum, 2012).

Figure 3 - Corporate Entrepreneurship decision tree: Institutional Entrepreneurship and Organizational Performance



Evaluation of the behavior patterns of Corporate Entrepreneurship and Institutional Entrepreneurship indicators depending on Organizational Performance was possible using the decision tree. The decision tree, relating Corporate Entrepreneurship and Institutional Entrepreneurship jointly with Organizational Performance, is shown in Figure 3.

Organizations with higher Organizational Performance indices have certain characteristics regarding the evaluation of their Corporate Entrepreneurship indicators and Institutional Entrepreneurship, and specific profile characteristics in particular.

Organizations that possessed an index of 6 for Organizational Performance had a value of 2 for the cognitive aspect, while most segments in the sample evaluation received a value of 3 for the normative indicator and internationalization equal to 0. Other cases yielding an index of 6 for Organizational Performance include when cognitive is equal to 3, older age 1 and to taking risks as equal to 4 and regulatory between 3 and 6, equal to or take risks 6. As well as, the cognitive equal to 4, further internationalization than 1 and less than or equal to the age of 17 years. Organizations that have the cognitive state equal to 5 have perceived PO levels of 6.

Table 2 consolidates the results of the analysis and the tests of the model's assumptions, representing the positive or negative impact of each hypothesis in relation to Organizational Performance. It also shows a summary of the hypotheses.

5 DISCUSSIONS

In order to test the above discussed hypotheses, we run a cross-section analysis of the data collected. While H1 points to the effects of pro-activeness into the organizational performance, the hypotheses 2 and 3 will, respectively test effects of innovativeness and risk-taking on the organizational performance of firms. The hypotheses H4 to H6 are seeking for evaluating the effect of the institutional environment, regulatory, cognitive and normative on the performance of firms. As proposed in our general framework, we attempted to verify the combined effects of the corporate and institutional entrepreneurship. For that purpose, we interact the variables of the two dimensions. Finally, we controlled for the organization size, experience and internationalization of the firms.

The table below reports the results of the estimate models.

Table 2 – Results

Hypotheses	Variables	Effect	Sig.
H1	Proactivity	+	0.619
H2	Innovativeness	+	0.256
H3	Risk-taking	+	0.643
H4	Regulatory	+	0.721
H5	Cognitive	+	0.043 **
H6	Normative	+	0.219
H7	Innovativeness	+	0.009 ***
	Risk-taking	-	0.053 *
	Normative	+	0.076 *
Control Variables	Organization size	+	0.416
	Organization experience	+	0.222
	Internationalization	+	0.031**

* $p \leq 0.07$, ** $p \leq 0.05$, *** $p \leq 0.01$

The statistical analysis confirmed acceptance for H1, H6 and H10 when analyzed for a group of companies that developed information systems. Hypotheses H6 and H10 were found to have a direct relation to Organizational Performance when studied individually. Thus, when only the cognitive indicator is presented, higher levels of Organizational Performance can be expected; alternatively, when an organization has a high presence in foreign markets, it is expected to present high rates of Organizational Performance.

The hypothesis 1 outlined three indicators: innovativeness, risk taking and pro-activeness that, when combined, positively impact Organizational Performance; however, this result is only noted when the risk taking indicator has a negative effect on Organizational Performance.

Information-systems organizations that offer support for innovation but do not take risks beyond their capacity have the ability to leverage their performance results. In addition, the values, beliefs and

norms of those who are familiar with the context of technology-based organizations are satisfied and in accordance with the reality of the field. This provides adequate entrepreneurial drive for organizations to remain healthy, and improves their survival prospects. These aspects are of great importance for professionals of technology-based organizations.

The main findings point to a positive impact of the cultural cognitive distance on organizational performance, and was found to have statistical significance of 5%. The other factors related to institutional distance, although positively correlated with the Organizational Performance, were not found to be statistically significant. The second important result of our estimated model shows that the higher the internationalization of firms, the higher their organizational performance (at a statistical significance of less than 5%). Finally, in order to look at the interaction between corporate entrepreneurship variables and institutional variables, we tested the H7. The innovative and normative variables were found to be statistically significant and to have positive effects on the organizational performance of firms at a significance of 10% and 1%, respectively. However, it seems that the effect of risk-taking has a negative moderating effect on organizational performance, and is statistically significant at 1%. The corporative entrepreneurship variables, taken as individual variables, were not found to be statistically significant; however, all the variables were shown to have positive correlations with Organizational Performance.

The same can be stated for the institutional variables, both regulatory and normative, even though, when taken in isolation, they were found not to be statistically significant, but were positively correlated with Organizational Performance. When we consider the interaction between normative factors and corporate entrepreneurship variables, these variables moderate the effect of the corporate entrepreneurship variables in terms of the effect of Organizational Performance, and this was statistically significant. This suggests that firms' innovativeness and normative institutional behavior can be seen more as moderating variables than as exerting a direct effect on Organizational Performance.

We controlled for the size and experience of the firms; however, such variables, although positively correlated, were found not to be statistically significant. To sum up, the regression model provided support for the hypotheses H5 and H7. Also we found empirical evidences of the internationalization as a control variable.

H7. Also we found empirical evidences of the internationalization as a control variable.

Grouping of the Corporate Entrepreneurship indicators in one dimension, and Institutional Entrepreneurship and Organizational Performance in the other, improved understanding of Corporate

Entrepreneurship capabilities and Institutional Entrepreneurship in terms of the overall entrepreneurial context, which may be the internal organizational environment, the organization or the organizational field is presented as a whole.

6 CONCLUSION

The relationships between the dimensions of Corporate Entrepreneurship and Institutional Entrepreneurship with Organizational Performance were confirmed by a dendrogram generated via cluster analysis (see Figure 2), which thereby answered the main research question of this study. The variables were standardized to 0 with an interval of three different classes, as follows: (1) proactivity, innovativeness and risk-taking; (2) experience, size and internationalization; and (3) regulatory, cognitive, normative and performance indicators. The classes had a variation of 1.95 and a variance of 13.64.

Figure 2 allowed us to verify the groupings and the relationships between the Institutional Entrepreneurship variables. The normative (DNOR) and cognitive (DCOG) variables had a strong relationship and were grouped with the regulatory variable (DREG). Thus, H4, H5 and H6 were confirmed—that is, Institutional Entrepreneurship was proven to have an influence on Organizational Performance. Similar associations were found in relation to Corporate Entrepreneurship: the variables innovativeness (DINO) and proactivity (DPRO) had a strong relationship with each other, and were grouped with the risk-taking (DASS) variable; these variables were influenced by the variable performance (DPER), and H1, H2 and H3 were also confirmed by the dendrogram.

H7 was similarly confirmed by the dendrogram, highlighting the existence of a relationship between the two groups of variables. The first group consisted of the variables of Institutional Entrepreneurship and the second group those of Corporate Entrepreneurship.

The decision tree analysis enabled some direct relationships to be identified between Institutional Entrepreneurship and Corporate Entrepreneurship with Organizational Performance. This indicated that the organizations performed well when cognitive capacity was high, or when they had a low cognitive ability. It might be necessary for organizations to have been established for over a year and to take more risks in order to achieve better performance in the market.

It is possible to define two patterns or behavioral rules to explain Organizational Performance. When the cognitive capacity of an organization is low, but the organization is more than one year old and is able to assume many risks, its performance will be high. This information was confirmed in 24.9% of the cases studied here. On the other hand, when the cognitive ability of the

organization is high, the performance also reaches a high level. This information was confirmed in 11.2% of the cases.

The multiple correspondence analyses allowed us to identify a factorial map of the data-collection instruments and responses. Thus, the distance between the normative, regulatory and innovativeness variables, which had a strong influence the other variables studied, explains the low relationship with the other variables. In the same way, the innovativeness, proactivity and cognitive variables, which had a low influence on the other variables studied, explained the distant relationship with the other variables. In this study we did not consider the fact that the sample companies were mostly born global in the IT industry, which may have influenced the results of the research. Is it suggested that future research be conducted in other industries and in different kinds of companies.

The instrument was also limited by the dimensions studied, and did not include other variables that are not related to corporate entrepreneurial activities or organizations, which can influence Organizational Performance.

A final limitation is the fact that the organizations studied did not have public statements to verify their size, age and internationalization level, which required open questions in the survey instrument and meant that the respondents' interpretations could have based the data.

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