

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

### **Relações Entre Processo e Institucionalização da Aprendizagem Organizacional e Interorganizacional com o Desempenho**

Fabiano Larentis<sup>1</sup>

Universidade de Caxias do Sul - UCS  
flarenti@ucs.br

Verena Alice Borelli<sup>1</sup>

Universidade de Caxias do Sul - UCS  
verena.borelli@gmail.com

Mayara Pires Zanotto<sup>1</sup>

Universidade de Caxias do Sul - UCS  
mpzanotto@gmail.com

Eduardo Robini da Silva<sup>1,2</sup>

Universidade de Caxias do Sul – UCS/Faculdade de Antônio Prado - FAP  
eduardorobini@gmail.com

**Abstract:** This study aims to verify the interrelations between process and institutionalization of organizational learning (OL) and interorganizational learning (IL) with organizational performance. We have proposed and tested a theoretical model applied to 181 companies from 14 cooperation networks of the southern region of Brazil, through a survey and using the Structural Equation Modeling. We have identified that OL process influences OL institutionalization, that in turn influences IL process, IL institutionalization and company performance. IL process influences IL institutionalization and relationship-based corporate performance, as well as company

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<sup>1</sup> Universidade de Caxias do Sul — Rua Francisco Getúlio Vargas, 1130 – CEP 95070-560 – Caxias do Sul (RS) – Brasil

<sup>2</sup> Faculdade de Antônio Prado - ERS 122, Km 126, nº 190 - CEP 95250-00 - Antônio Prado (RS) – Brasil.

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## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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performance impact on relationship-based corporate performance. We have rejected the hypotheses regarding the relations between OL process with IL process, IL process and institutionalization with company performance and IL institutionalization with relationship-based corporate performance. The results have reinforced that although OL and IL are conceptually different, they are complementary.

**Keywords** – Organizational Learning Process; Interorganizational Learning Process; Organizational Learning Institutionalization; Interorganizational Learning Institutionalization; Organizational Performance.

**Resumo:** Este estudo objetiva verificar as relações de processo e institucionalização de aprendizagem nos níveis organizacional e interorganizacional com o desempenho organizacional. Um modelo teórico foi testado junto a 181 empresas de 14 redes de cooperação, através de uma survey e com o uso da Modelagem de Equações Estruturais. Identificou-se que o processo de Aprendizagem Organizacional (AO) influencia a institucionalização de AO, que por sua vez interfere no processo de Aprendizagem Interorganizacional (AI), na institucionalização de AI e no desempenho da empresa. O processo de AI influencia a institucionalização de AI e o desempenho corporativo a partir do relacionamento, assim como o desempenho da empresa interfere no desempenho corporativo a partir do relacionamento. Rejeitaram-se as hipóteses das relações entre processo de AO com processo de AI, do processo e institucionalização de AI com desempenho da empresa e da institucionalização de AI com o desempenho corporativo a partir do relacionamento. Os resultados reforçam que AO e AI são conceitualmente diferentes, apesar de complementares.

**Palavras-chave** – Processo de Aprendizagem Organizacional; Processo de Aprendizagem Interorganizacional; Institucionalização de Aprendizagem Organizacional; Institucionalização de Aprendizagem Interorganizacional; Desempenho Organizacional.

### Introduction

Every activity in an individual's life may be considered as a learning opportunity which may happen both in casual social situations and formal experiences (Antonello & Godoy, 2010). Therefore, learning is not only a cognitive and individual phenomenon but it is also social and collective (Nicolini et al., 2003).

In this regard, one must consider that Organizational Learning (OL) relies on individual levels and their interactions: group, intergroup, organizational and interorganizational, which are interpersonal levels (Antonello & Godoy, 2010). Hence, OL is a multilevel phenomenon, since it depends on learning obtained at individual, group, organizational and interorganizational levels (Nogueira & Odelius, 2015).

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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Learning in organizations may be perceived as a process of acquisition, dissemination, interpretation, use, and storage of information/memory within or between organizations; that is, learning between organizations, or interorganizational (IL) (Mohr & Sengupta, 2002). Interorganizational relationships are involved in IL (Knight, 2002; Mozzato & Bitencourt, 2014).

Interorganizational relationships are not only chosen but also developed (Hunt et al., 2006). Thus, one may infer that intra and interorganizational learning does not occur in an isolated manner, instead they are jointly developed through internal interactions in organizations and their multiple external contexts (Barringer & Harrison, 2000; Holmqvist, 2003; Larentis et al., 2019; Mohr & Sengupta, 2002).

Acquisition, dissemination, interpretation and use may refer to learning processes, while storage/memory may refer to their institutionalization (Crossan et al., 1999, Huber, 1991). Such aspects, involving both OL and IL may lead to better organizational performance (Bitencourt, 2002; Carmeli et al., 2017; Dibella & Nevis, 1999; Garvin, 1993; Kull & Ellis, 2016; Larentis et al., 2014; Rajala, 2018).

In this regard, Antonello and Godoy (2010) stress the need to look into the connections between the OL analysis from the individual all the way to the interorganizational level. Larentis et al. (2014) suggest analysing how these levels interact in the practice of interorganizational relationships. On the other hand, investigating and analysing OL in four different levels poses a great challenge for researchers (Nogueira & Odellius, 2015).

Given the fact that OL and IL do not occur in an isolated manner and the importance of analysing learning as a multilevel phenomenon, which contributes to the development of organizations, this study aims to verify interrelations between the process and institutionalization of OL and IL and their impact on organizations' performance. In order to accomplish our purpose, between August and October 2016 we applied a survey to companies participating in 14 cooperation networks using the Structural Equation Modeling.

Firstly, the study contributes to the examination of learning in horizontal networks (cooperation networks), whose impact on innovation, strategic actions and participating companies' performance is considerable (Howard et al., 2016).

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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Secondly, this study encompasses IL processes, which has become a relevant research area as researchers seek to understand aspects and scenarios involved in new arrangements and organizational relationships (Mozzato & Bitencourt, 2014), particularly in horizontal networks (Gibb et al., 2017).

Thirdly, the study deepens the understanding of OL and IL, whose importance is pointed out by Holmqvist (2003) and Gieske et al. (2019). We must stress that in this study the relations between OL and IL do not involve only processes but also aspects related to the institutionalization of learning.

Lastly, we consider the effect on two kinds of performances, one on organizations themselves and another on interorganizational relationships.

### **Interrelations between OL, IL and Performance: Proposing a Conceptual Model**

Learning always occurs due to the activity, context and culture in which it occurs (Lave & Wenger, 1991). Learning also represents social and cultural phenomena (Nicolini et al., 2003). In this regard, learning is linked to people's daily lives and originates mostly from informal sources. Since learning involves intersubjective meanings it denotes continuous experience (Weick & Westley, 2004).

Although the individual is the agent and the subject of the learning process, learning content and context rely on collective settings. In the organizational setting, management of learning content, information accumulation, knowledge acquisition, use and internal sharing are the explanatory mechanisms of how learning occurs (Nogueira & Odelius, 2015).

In this setting, organizational learning occurs through individual levels and their interactions: group, intergroup, organizational and interorganizational; that is, learning is a multilevel phenomenon (Knight, 2002; Antonello & Godoy, 2010; Nogueira & Odelius, 2015). Hence, IL is understood as a dynamic process that occurs in interorganizational cooperative relationships, in different social spaces (structured or unstructured), which promote learning situations, also called learning episodes (Knight, 2002, Mozzato & Bitencourt, 2014). One must point out that intra and interorganizational learning do not occur in an isolated manner, instead they take place through joint internal and external organizational actions (Barringer & Harrison, 2000; Holmqvist, 2003; Mohr & Sengupta, 2002).

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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In agreement with the statement above, Larentis et al. (2014) consider that IL is made up of bases, processes, results and contexts. IL bases are linked to trust, commitment, stability and relational dynamics as well as cultural aspects. IL processes are related to the interaction between formal and informal learning, between tacit and explicit knowledge and between exploration and exploitation. Moreover, it implies resource combination, uncertainty absorption and boundary spanners' roles. IL results in collaborative practices of management and cultural elements such as learning of systems and concepts, learning of cultural elements and cooperation. Situated learning context is divided into two axes: the temporal axis, which encompasses the past, the present and the future of the network and the spatial axis, which comprises the intra and interorganizational levels.

Hence, the hypotheses developed and their consequent theoretical model (Figure 1) are based on the assumption that learning at organizational and interorganizational levels consists of processes and results (Larentis et al., 2014). Therefore, we highlight the institutionalization of learning whose two central elements are: organizational memory (Huber, 1991) and institutionalization, which ensures that routine actions take place by means of systems, structures, processes and strategies (Crossan et al., 1999).

OL may be seen either as a result or as a process (Bitencourt, 2002; Tondolo & Bitencourt, 2014). Moreover, it is presumed that processes and institutionalization relate to the company's performance and its corporative development in terms of relationships or relational performance (Boyle & Dwyer, 1995).

On the other hand, according to Nogueira and Odellius (2015) OL develops as a multilevel phenomenon, which requires multidisciplinary and multilevel approaches in order to be studied. According to the authors, research in organizations must take into account both the notion of cross-level and phenomenon inferences.

Considering that learning is multilevel phenomenon that occurs inside and between organizations through processes and their institutionalization, we propose a model that consists of 6 constructs: Organizational Learning Process (organizational level), Organizational Learning Institutionalization, Interorganizational Learning Process (interorganizational level), Interorganizational Learning Institutionalization, Company Performance and Relationship-based Corporative Performance (or Relational Performance). We present below the hypotheses validation that result in the theoretical model.

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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Learning is the process by which capabilities, skills, knowledge, behaviors, or values are acquired or modified as a result of experience, formation, reasoning and observation (Antonacopoulou, 2006). This process involves both formal and informal aspects (Antonello, 2011; Larentis et al., 2014), generation, sharing and interpretation of information and knowledge (Huber, 1991). The process leads to learning results with emphasis on organizational systems, procedures, artifacts and cultural elements (Larentis et al., 2014), hereby named learning institutionalization, which is related to organizational memory (Huber, 1991) and institutionalizing (Crossan et al., 1999). The result of individuals' learning and their groups may result in organizational change (Larentis et al., 2014).

Learning in organizations can be perceived as a process result or changes in context (Takahashi & Fischer, 2010). Under this perspective, OL is an adaptation of companies to the environment and it implies knowledge absorption by individuals in collective properties legitimately recognized and incorporated into their practices (Takahashi & Fischer, 2010). OL may be seen, therefore, as a continuous process of knowledge creation and appropriation at individual and organizational levels, which refer to individual and collective learning (Prange, 2001)

Furthermore, one must point that individuals inside an organization share information through dialogues, which allow interpretation and sense making (Selnes & Sallis, 2003). Therefore, the learning process, whose formal and informal aspects are inseparable, (Antonello, 2011) contributes to the emergence of routines, procedures, systems, structures and norms, which are associated to learning results; that is institutionalization of learning (Crossan et al, 1999; Huber, 1991; Larentis et al., 2014). Having said that the following hypothesis is presented:

H1 - Organizational Learning Process positively influences Organizational Learning Institutionalization

IL is developed in the context of groups of organizations that have cooperative relationships, that is, in the context of interorganizational relationships (Knight, 2002). Studies on interorganizational relationship identify that IL similarly to OL have been analysed in four stages: (a) acquisition (information, experiences and exchanges), (b) dissemination, (c) interpretation and (d) relationship storage/memory

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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(Fang et al., 2011; O'cass & Weerawardena, 2010; Sánchez et al., 2011). These stages involve both formal aspects such as trainings, IT structures and informal aspects such as interaction and socializations between individuals and information and meaning sharing (Larentis et al., 2014). There are processes (generation, sharing and interpretation) and there is institutionalization (results/ organizational memory), which are not restricted to the organizational level, in the presence of interorganizational relationships (Barringer e Harrison, 2000; Holmqvist, 2003; Mohr & Sengupta, 2002). OL processes and institutionalization would contribute to IL.

Therefore, IL deals with a high level of complexity and organizational and interorganizational dynamics based on a continuous collective process of interpretation and interaction between individuals (Huelsmann et al., 2005). Hence, it is understood that OL processes as well as their institutionalization contribute to IL as stated by the following hypotheses:

H2 - Organizational Learning Process positively influences Interorganizational Learning Process

H3 - Organizational Learning Institutionalization positively influences Interorganizational Learning Process

Furthermore, relationship specific memories are developed once the acquired knowledge is integrated. Memory is decentralized and is expressed as beliefs, behavioral routines and physical artifacts. It is important to say that retention may be external to the organization but internal as regards the relationship (Selnes & Sallis, 2003). Thus, one may infer that aspects related to organizational memory, in other words, OL institutionalization, including interorganizational relationships, shall contribute to the memory of the relationship, which is the IL institutionalization. Hence, we present the following hypothesis:

H4 - Organizational Learning Institutionalization positively influences Interorganizational Learning Institutionalization

Learning does not comprehend only actions and activities but also language and other cultural and material artifacts; it also comprehends the nature of social interactions and individuals' tacit responses (Gherardi & Nicolini, 2001). Therefore, organizations can increase their performances through individuals

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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who can realize what occurs when a continuous experience is evidenced (Weick & Westley, 2004). In this context, the development of strategies and procedures to be built continuously in order to achieve better results relies on people's effective participation in the process of acquisition and dissemination of knowledge (Bitencourt, 2002).

OL, therefore, allows to maintain or improve a company's performance through acquired experience (Dibella & Nevis, 1999). We present the following hypothesis based on the transformation of knowledge resulting from learning, in other words, its institutionalization related to changes in organizations' practices, which may lead to organizational improvements (Garvin, 1993; Bispo, 2013).

H5 - Interorganizational Learning Institutionalization positively influences Company Performance.

Companies engaged in stable relationships can develop a joint interpretation of information and experience since they are generated by combined problem-solving, which may lead to storage, that is, institutionalization (Larentis et al., 2014). Through generation, dissemination and interpretation at individual and group levels companies may achieve consensus to validate shared experiences. This process can contribute to relationship memory through methodologies, systems and repositories as well as artifacts, which in other words means IL institutionalization (Holmqvist, 2003; Selnes & Sallis, 2003). Thus, we present the following hypothesis:

H6 - Interorganizational Learning Process positively influences Interorganizational Learning Institutionalization

IL comprehends cooperative relationship. Although this concept focuses on organizations, the relationship between people occurs. Therefore, IL encompasses individuals with different backgrounds who cooperate with each other (Knight, 2002). According to Cannon and Perreault (1999) effective relationships help parts involved manage uncertainties and dependence, thus increasing efficiency by reducing costs and improving market orientation. Moreover, should employees be engaged to learn and be encouraged by the organization, organizational performance will improve (Dibella & Nevis, 1999; Ruas

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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et al., 2005). Knowledge involves both individuals and organizations within the formal and informal contexts of OL processes.

As IL is a key-factor for the development of interorganizational relationships (Barroso-Méndez et al., 2015), which contributes to the development of companies. Therefore, one understands that IL processes shall develop and results shall be obtained due to the institutionalization and the formalizations of practices (Leung et al., 2019), which shall impact on organizations' performance (Carmeli et al., 2017, Kull & Ellis, 2016). Hence, we propose the following hypotheses:

H7 - Interorganizational Learning Process positively influences Company Performance;

H8 - Interorganizational Learning Institutionalization positively influences Company Performance.

The term performance is somewhat diffused (Cunha & Zwicker, 2009) and may be defined as the consequence of a company's effort to build up capabilities; the outcome of the competitive strategies adopted (Sellitto & Walter, 2006). In this regard relational performance may be defined as how effective interorganizational exchanges and interactions are (Boyle & Dwyer, 1995). According to Winklhofer et al. (2006), the benefits of interorganizational relationships, that is, relationship-based corporate performance, shall depend on learning processes, including interorganizational levels.

Learning, as a process and as a result, strengthens the development and the performance of relationships (Altinay & Brookes, 2012) because learning aims to build up knowledge (Sánchez et al., 2011). Moreover, it has been identified that IL impacts on superior relational performance compared to other types of performance such as market, operational and innovation (Rajala, 2018). Therefore, as IL may be perceived as its own process and its own institutionalization, which contributes to the performance of companies engaged in interorganizational relationships (Gibb et al., 2017), the following hypotheses are presented:

H9 - Interorganizational Learning Process positively influences Relationship-based Corporate Performance;

H10 - Interorganizational Learning Institutionalization positively influences Relationship-based Corporate Performance.

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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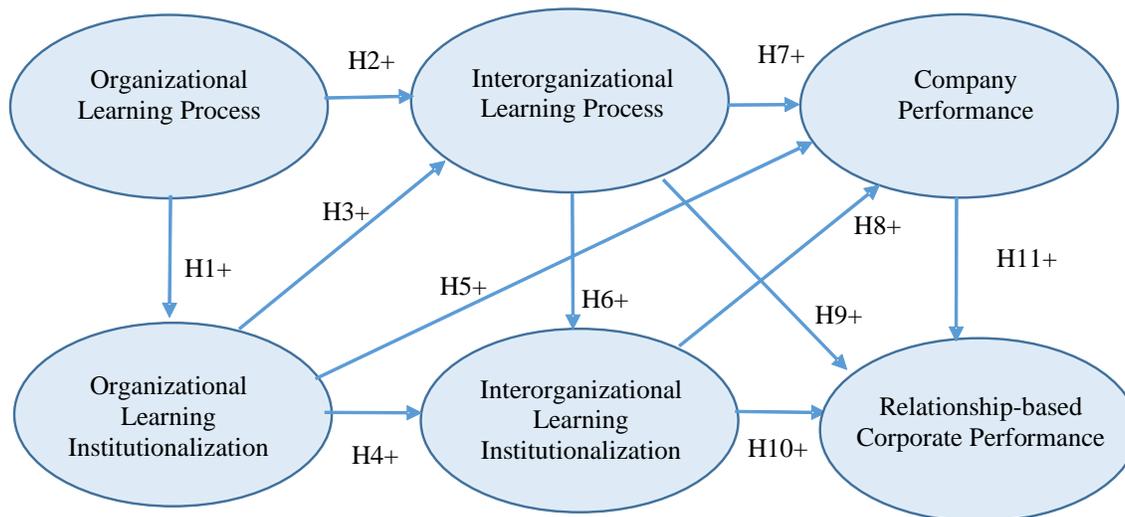
Lastly, developing individuals' capacities and qualifications becomes indispensable so that they may help organizations maintain their competitiveness and economic viability (Pawlowski et al., 2001). Moreover, one must take into account the fact that performance involves the consequences of a company's strategies and actions, which relate to the context. Relationship-based corporate performance relies on efficient and efficacious interorganizational exchanges (Boyle & Dwyer, 1995). Corporate performance depends on organizations' internal capacity and its results (Gibb et al., 2017). Therefore, we present the following hypothesis:

H11 - Company Performance positively influences Relationship-based Corporate Performance.

The theoretical model below is grounded on the hypotheses (Figure 1)

**Figure 1.**

*Theoretical Model*



## **Methodology**

Having proposed the theoretical model (Figure 1), a survey was applied in companies that participated in 14 cooperation networks in the South of Brazil. This research field is justified because it encompasses closely-knit and interrelated companies whose aim is to create and offer competitive solutions collectively and coordinately within a collective learning setting (Balestrin & Verschoore, 2016).

For the analysis we have considered the scales by Silva Filho (2009) based on the translation of López et al. (2005) that includes items related to acquisition, distribution, knowledge interpretation and organizational memory. We have also used items related to intuition, interpretation, integration and codification by Kostopoulos et al. (2011) as well as Lloria's and Moreno-Luzon' (2013) items related to individual, group, organizational and interorganizational levels. Scales written in English have been translated and back-translated.

Regarding OL scales, grounded on definitions by Huber (1991) and by Crossan et al. we have considered as belonging to the institutionalization construct the items related to organizational memory, codification and learning at organizational level

Items involving acquisition, distribution and knowledge interpretation belong to the OL process construct, which is based on studies by Antonacopoulou (2006), Antonello (2011), Larentis et al. and Lloria and Moreno-Luzon (2013). A PhD researcher in the OL field has participated in the validation. The choice of resulting items for the collection instrument has taken into account their psychometric properties and similarities.

For the scales of IL processes and institutionalization, inclusions and adaptations have been made based on two items in the study by Lloria and Moreno-Luzon (2013) concerning interorganizational learning level and the OL scale items, which have been previously presented. In this regard, we have maintained the substance of OL items when adapted to IL context, given the fact that intra and interorganizational learnings do not occur separately (Barringer & Harrison, 2000; Holmqvist, 2003; Mohr & Sengupta, 2002). Moreover, IL can be seen as extension of OL (Mohr & Sengupta, 2002). The adapted items have been validated by a PhD researcher in IL.

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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We have also adapted the scale by Kostopoulos et al. (2011) for company performance and we have developed a scale for relationship-based corporate performance (relational performance), which has been adapted from Homburg and Pflesser (2000) and validated by researcher in the area. We have worked with seven points for the answers. The instrument resulted in 37 variables (see appendix).

Data collection was carried out by interviewers through face-to-face and phone interviews. The interviewers were properly trained and respondents were managers capable to answer about OL and IL items. Interviews were carried out between August and October 2016. Respondents have remained anonymous. There have not been significant statistical differences from the 0.05 level between face-to-face and phone interviews and between data collection months (ANOVA).

A total of 193 cases was initially achieved. 12 questionnaires have been eliminated because those that presented all the same answers should be removed as well as normality analysis based on asymmetry and kurtosis levels and outliers analysis through the Mahalanobis test (Hair et al., 2009, Kline, 2011). No answers were missing and we carried out the linearity, multicollinearity and homoscedasticity tests (Hair et al., 2009, Kline, 2011), which showed results within literature parameters.

Through the Harman's analysis variance, we have concluded that the study is not susceptible to common method bias. The first factor does not explain over 50% of total variance (Bido et al., 2018, Podsakoff et al., 2003, Rafael & Lopes, 2019). The unrotated solution generated 6 factors whose eigenvalues was over 1%, which explains 68.5% of the variance. The contribution of the first factor was 39.4%.

The final sample of 181 cases allowed an average of 4.9 cases per variable. Data analysis has been carried out by software SPSS 23.0 for descriptive statistics and by Amos 23.0 for structure equation modeling (SEM). Within SEM, we have performed the Confirmatory Factor Analysis (CFA) and the Hybrid Model Estimation. The estimation method we have used is the one of maximum likelihood for samples around 200 (Hair et al., 2009). The data entry matrix was covariance as suggested by Hair et al. (2009) and Kline (2011).

In the resulting sample 52% of the companies participating in the cooperation network belong to retail segment (mainly supermarkets, pharmacies, building material stores and clothes/ shoes) 38% of the companies are service providers (mainly kindergarten schools, hotels, communications/ event services)

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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and 11% are manufacturing companies (mainly in the metal mechanic segment). Regarding the number of employees 49% of the companies employ up to 9 people, 30% between 10 and 20 and 21% have over 20 employees. In terms of revenue, 47% have a revenue of up to R\$ 360 thousand, 35% between R\$ 360.1 thousand and R\$ 3.6 million. Concerning net profit margin, 40% of the companies show up to 5%, 28% between 5.1% and 15% and 32% over 15%.

In the Confirmatory Factor Analysis (CFA) we have assessed the identification of the structural model for every construct. The model proposed has been adjusted according to Chi-squared test for Degrees of Freedom ( $\chi^2 / DF$  - recommended below 5), GFI, TLI, NFI, CFI (recommended 0.80 or over) and RMSEA (recommended between 0,05 and 0,08). Unidimensionality has been assessed according to results from AFE on every construct analysed, as well as by the analysis of standardized residuals (below 12, 58I, according to Garver and Mentzer (1999), adequation of measure model considering composite reliability (minimum of 0.70) and extracted variance (minimum of 0.50

Factor loads and errors have also been considered (impact on reliability and extracted variance). Afterwards, we have evaluated the validity of the model (convergent validity and construct discriminant validity). Lastly, we have evaluated the model's global adjustment, path interpretation (analysis of the hypotheses) and determination coefficient ( $R^2$ ).

### **Findings**

#### **Confirmatory Factor Analysis (CFA) of Constructs**

According to the criteria presented in the methodology, CFA shows that construct of OL Process retained four variables out of the eight initially predicted (v4, v5, v6 and v8: mean 5.55; standard deviation 1.29). OL Institutionalization has retained three out of five (v10, v11 and v12: mean 5.05; standard deviation 1.78). IL Process has retained four out of six (v14, v15, v16 and v19: mean 5.21; standard deviation 1.61). As for IL Institutionalization, it has maintained three out of six variables (v20, v21 and v22: mean 5.10; standard deviation 1.80), while Company Performance retained variables have been four (v26, v27, v28, v29: mean 5.37; standard deviation 1.42). Lastly, Relationship-based Corporate

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

Performance has retained has retained five out eight (v30, v31 and v32, v33 and v35: mean 5.24; standard deviation 1.69).

The CFA analysis of individual constructs allows pointing out that the resulting constructs show convergent validity (Hair et al., 2009, Kline, 2011) as the factor loads are over 0.50 and values are close to or over the composite reliability level (0.70) and extracted variance (0.50).

Moreover, none of the pairs of constructs reached values higher than I2, 58I for standardized residuals. In Table 1, correlations and reliability measure for every construct are shown:

**Table 1.**

Pearson's Correlations, Cronbach Alpha (AC), Composite Reliability (CC) and Extracted Variance (VE).

Constructs	1	2	3	4	5	6	AC	CC	VE
1. Organization Learning Process	1						0.80	0.81	0.52
2. Organizational Learning Institutionalization	0.69	1					0.73	0.73	0.48
3. Interorganizational Learning Process.	0.44	0.69	1				0.89	0.88	0.66
4. Interorganizational Learning Institutionalization	0.46	0.70	0.78	1			0.81	0.83	0.62
5. Company Performance	0.43	0.62	0.67	0.42	1		0.87	0.87	0.63
6. Relationship-based Corporate Performance	0.35	0.54	0.69	0.59	0.41	1	0.93	0.93	0.72

Obs: All correlations are significant at 0.01 level.

In order to verify the discriminant validity between constructs, we have opted for Fornell and Larcker test (1981). In this case, extracted variance for every construct must be higher than the shared variances (squared correlations) with other constructs. In this regard, the constructs show extracted variances that are higher than shared variances, exception made to OL Institutionalization, which showed a shared variance of 0.49 along with IL Institutionalization, which is slightly higher than its extracted variance (0.48)

### Analysis of the Structural Model

Having concluded the CFA for every construct, we have analysed the structural model in order to verify the significance of hypothesized relations according to the theoretical model proposed. We have

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

chosen to estimate the structural paths through the hybrid model estimation technique, one of the options suggested by Kline (2011).

The hybrid model estimation combines the measurement and structural models. The adjustments indexes, shown in Table 2, are within or near the baseline recommended by literature.

**Table 2**  
Confirmatory Factor Analysis

$\chi^2$	P	GL	$\chi^2 / GL$	GFI	AGFI	NFI	TLI	CFI	RMSEA
468,3	0,00	219	2,14	0,82	0,77	0,84	0,89	0,91	0,08

The hypothesis analysis is carried out according to the estimated regression coefficients. Table 3 shows the hypotheses, structural paths, non-standardized coefficients, standardized coefficients and resulting likelihood.

**Table 3**  
Coefficients of Hypothesized Relationships

Hypotheses.	Structural Paths	Non-Standardized Coefficients		Standardized Coefficients	T Test	P	Result (at 0,05)
		b	Standard Errors	B			
H1	OL Process → OL Institutionalization	1.00	0.17	0.70	5.78	0.000	Unrejected Hypothesis
H2	OL Process → IL Process	-0.12	0.19	-0.08	-0.64	0.521	<b>Rejected Hypothesis</b>
H3	OL Institutionalization → IL Process.	0.79	0.17	0.74	4.68	0.000	Unrejected Hypothesis
H4	OL Institutionalization. → IL Institutionalization.	0.26	0.10	0.29	2.70	0.007	Unrejected Hypothesis
H5	OL Institutionalization. → Company Performance	0.57	0.14	0.67	4.16	0.000	Unrejected Hypothesis
H6	IL Process → IL Institutionalization.	0.49	0.10	0.59	5.01	0.000	Unrejected Hypothesis
H7	IL Process → Company Performance	-0.12	0.12	-0.15	-0.96	0.337	<b>Rejected Hypothesis</b>

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

H8	IL Institutionalization → Company Performance	0.07	0.15	0.07	0.46	0.649	<b>Rejected Hypothesis</b>
H9	IL Process → Relationship-based Corporate Performance	0.70	0.15	0.59	4.58	0.000	Unrejected Hypothesis
H10	IL Institutionalization → Relationship-based Corporate Performance	0.07	0.18	0.05	0.39	0.698	<b>Rejected Hypothesis</b>
H11	Company Performance → Relationship-based Corporate Performance	0.25	0.11	0.17	2.36	0.018	Unrejected Hypothesis

As shown in Table 3, out of the eleven hypotheses in the model, four have been discarded based on a 0.05 significance, namely, relation between OL Process and IL Process (H2), relation between IL Process and Company Performance (H7), between IL Institutionalization and Company Performance (H8) and relations between IL Institutionalization and Relationship-based Corporate Performance (H10).

Table 4 shows the squared multiple correlations ( $R^2$ ) of every dependent variable.  $R^2$  shows the variance proportion of a dependent variable, which is explained by independent variables. Therefore, 48.5% of OL Institutionalization variable may be explained by the construct OL Process. 47% of IL Process is explained by OL Process and Institutionalization. 66.9% of IL Institutionalization variance is explained by OL Institutionalization and IL Process. 38.9% of Company Performance variance is explained by OL Institutionalization and IL Process and Institutionalization. 50.2% of Relationship-based Corporate Performance is explained by IL Process and Institutionalization and by Company Performance.

**Table 4**  
R<sup>2</sup> Values

Dependent Variables	R <sup>2</sup>
Organizational Learning Institutionalization	0.485
Interorganizational Learning Process	0.475
Interorganizational Learning Institutionalization	0.669
Company Performance	0.389
Relationship-based Corporate Performance	0.502

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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Out of the rejected hypothesis, two are related to IL Process (one is influenced by OL process; and the other is influenced by company performance) and the other two are related to IL institutionalization and its influence on the performances analysed. Among the unrejected hypotheses, we highlight those whose paths begin at OL institutionalization (H3, H4 and H5), also the two related to IL process and one related to company performance, which reinforces the importance of the construct for its association routines, procedures, systems, structures and norms related to learning (Crossan *et al.*, 1999, Huber, 1991, Larentis *et al.*, 2014).

In this regard, we have identified the indirect influence of OL institutionalization on relationship-based corporate performance, which is mediated by IL process and by company performance.

The effect of the interorganizational learning process on its institutionalization is also evident as well as the importance of internal performance for relationship performance. Effective relationships help companies manage uncertainties and dependence based on joint interpretation of information and experiences (Cannon & Perreault, 1999, Larentis *et al.*, 2014). According to Winklhofer, Pressey e Tzokas (2006), the benefits of interorganizational relationships shall depend on how appreciated and how rooted they are in organizations' culture, which may be related to OL institutionalization.

Company Performance is not influenced by either IL process or IL institutionalization, similarly to the interorganizational learning process with organizational learning process. On the other hand, relationship-based performance is influenced by IL process but not by its institutionalization, which underlines the fact that although OL and IL may share the same phases and may be complementary, they can be understood as conceptually different (Selnes & Sallis, 2003). One must also highlight the high degree of complexity and dynamics at organizational and interorganizational levels when it comes to IL (Huelsmann *et al.*, 2005).

In  $R^2$  evaluations, we highlight the explanatory power of OL processes over OL institutionalization, which nears 50%, meaning that more than half its variance relies on other organizational aspects unapproached in this study. Hence, one may see the complexity and multidimensionality of the organizational learning (Antonello e Godoy, 2010, Nogueira e Odelius, 2015).

In the same vein, it has been identified that nearly 50% of the IL process variant is explained by OL processes and institutionalization, which denotes the importance and dependence of

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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intraorganizational learning for the learning between organizations, even though the remainder of the variance is explained by other aspects than OL. This is an indicative that OL and IL do not develop separately. Instead, they are complementary despite their specifics, due to the presence and dynamics of interorganizational relationships, given the complexity and multilayered characteristics of learning (Barringer & Harrison, 2000, Holmqvist, 2003, Mohr & Sengupta, 2002, Nogueira & Odelius, 2015, Selnes & Sallis, 2003).

Nearly 70% of the IL institutionalization variance relies on OL processes and institutionalizations and IL processes. Thus, it is important to consider the path from OL process to IL process, passing by OL institutionalization in order to consolidate IL. As suggested by Wegner *et al.* (2019), transformations in cooperation networks result in a learning process that goes beyond organizations and influences the network.

However, IL institutionalization does not show enough strength to influence either company performance or relationship-based performance. Hence, although learning is an important success factor in interorganizational relationship, as stated by Barroso-Méndez *et al.* (2015), the contribution of relationship to company performance is limited to IL process.

IL is able to influence relationship-based corporate performance only through its processes, which stresses the importance of aspects related to sharing and interpretation of information, mainly informally. This corroborates the results from the study by Janowicz-Panjaitana e Noorderhavenb (2008), which identified that informal behaviors in interorganizational networks show consistently positive effects on learning results and on formal learning behaviors, which does not occur in formal learning behaviors.

The result above may be an indicative regarding the lifecycle of cooperation networks, particularly in sample where 82% of the companies are classified as micro or small and 81% participated in networks for 15 years at most. The study by Wegner *et al.* (2015) presents a 6-stage model for the lifecycle of small company networks: 1<sup>st</sup> stage is conception, 2<sup>nd</sup> stage is birth and formalizations, 3<sup>rd</sup> stage is development, 4<sup>th</sup> stage is consolidation and maturity, 5<sup>th</sup> stage is decline and 6<sup>th</sup> stage is dissolution. After the development stage, formalization and governance structures associated to IL are more qualified and incorporated to the network practice. In the maturity stage, a professional management level is achieved. In the study mentioned above by Wegner *at al* (2015), 32% of companies would be in the stages of

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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development and maturity. Given this evidence and the variables' means regarding the factors of process and institutionalization of IL, we may consider that there is room for further development in the third and fourth stages in the analysed sample.

Moreover, IL process develops independently from OL process. However, it is influenced by internal institutionalization, which is related to the identification of company performance influence in the relational performance. This stresses the contribution of internal capabilities in the results from effective activities of interorganizational exchanges (Boyle & Dwyer, 1995, Gibb *et al.*, 2017).

In this case, we resume the  $R^2$  of company performance, which is significantly influenced by OL institutionalization that stands at 0.389 compared to the  $R^2$  of relationship-based corporate performance, at 0.502 since it is indirectly influenced by OL institutionalization and the direct influence of IL processes and company performance. This aspect ratifies the central role of OL institutionalization in the model.

### **Final Remarks**

OL and IL do not occur separately; instead, they interact with each other, which means to say that learning in organizations is a multilevel phenomenon (Antonello & Godoy, 2010, Mozzato & Bitencourt, 2014, Nogueira & Odelius, 2015). Having said that, this study aimed to verify the interrelations between OL and IL institutionalization with organizations' performance through the proposition and test of a theoretical model.

Out of the 11 hypotheses proposed in the model, those related to OL have not been rejected (process and institutionalization) as well as those related to the influence of company performance in relationship-based corporate performance. IL process has positively influenced IL institutionalization and relationship-based corporate performance. Therefore, this study allows to stress the importance of intraorganizational learning as a whole. Moreover, one should highlight the importance of IL process for organizational performance, with its more informal approach to information and knowledge sharing (Child, 2001, Janowicz-Panjaitana & Noorderhavenb, 2008).

The central role of OL institutionalization must be emphasized, from OL process, in relationship-based corporate performance, which is on the one hand mediated by IL process and company performance

## **Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance**

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on the other. One can see learning with a flux from sharing and organizational structures to interorganizational interactions (Barringer & Harrison, 2000, Holmqvist, 2003, Mohr & Sengupta, 2002, Larentis et al., 2014; Larentis et al., 2019). This aspect may be an indicative to the need for good structures and internal processes, more related to OL institutionalization in order to spread over to interorganizational relationships.

The findings show that IL may be perceived as an extension of OL (Mohr & Sengupta, 2002) due to OL influence level, as identified with  $R^2$ . There is a path from OL institutionalization to IL institutionalization mediated by OL institutionalization and IL process. On the other hand, this study has identified, mainly through the rejected hypotheses, that due to its dependence on interorganizational cooperative relationships, IL may be understood as conceptually different from OL (Selnes & Sallis, 2003), despite their having similarities in terms of factor constitution involving processes and learning institutionalization (results).

Considering the sample of this study and the complexity of its interorganizational arrangement, the results corroborate that cooperation networks are formed in a specific point in time by companies that operate together but remain independent. They aim to accomplish certain tasks that they would not be able to accomplish by themselves (Wincent et al., 2014).

Moreover, it is clear the need to consider activities that facilitate IL and its exchanges (Nembhard, 2012), which are related to OL, including aspects of governance and taking into account the networks' lifecycle (Wegner et al., 2015; 2019).

Regarding the limitations of this study, we have looked into the a specific interorganizational arrangement, whose focus lies on processes and institutionalizations of OL and IL. For further studies we suggest testing the model proposed in other contexts involving interorganizational relationships such as contract agreements including franchises, strategic alliances and supply chains. One can consider in the model antecedent aspects items such as trust, commitment and power asymmetry (Barroso-Méndez et al., 2015, Cheng, 2012, Gundlach & Cannon, 2010). Furthermore, one may want to look into moderation relations such as relationship span, company size and lifecycle stage through multigroup analysis.

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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### Appendix – Variables used in the study

**OL Process.** V1- People in our organization are capable of disrupting traditional perceptions in order to see things under a new perspective. V2- People in our organization try to understand the way their co-workers think and act.

## Interrelations Between Process and Institutionalization of Organizational and Interorganizational Learning with Performance

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V3- The organization's database and files provide its employees with all the information they need in order to do their job effectively. V4- Groups within the company share a common understanding about subject regarding the areas they work in. V5- Meetings are periodically held so that all employees are aware of any news and developments within the organization (Lloria & Moreno-Luzon, 2013). V6- People in our organization can combine and synthesize distinct data and ideas. V7- People in our organization are encouraged to present new ideas and solutions to problems (Kostopoulos, Spanos & Prastacos, 2011). V8- Employees share knowledge and experiences by talking to one another (Silva Filho, 2009). **OL Institutionalization.** V9- The organization periodically produces a report/newsletter through which all employees are informed about the organization's actions. V10- The organization's procedures and processes are described in guidebooks, instruction or similar material. V11- The people management system through its reward schemes encourages employees to share knowledge. V12- The company has databases to store experience and knowledge to be retrieved afterwards. V13- The organization offers other opportunities to learn (visits to other departments within the organization, internal training programs, etc) in order to make individuals aware of other people's responsibilities (Lloria & Moreno-Luzon, 2013). **IL Process.** V14- Companies in the network are able to disrupt traditional perceptions in order to see things under a new perspective. V15- Companies in the network try to understand how partners/associates think and act. V16- Companies in the network share a common understanding about areas and businesses in which they operate. V17- Meetings are periodically held so that everyone involved can be aware of any news or developments in the network (adapted from Lloria & Moreno-Luzon, 2013). V18- The network develops partnerships with universities, entities or research and technology centers in order to encourage learning (Lloria & Moreno-Luzon, 2013). V19- Companies in the network share knowledge and experiences through dialogues (Silva, 2009). **IL Institutionalization.** V20- The network periodically produces a report/newsletters through which all companies are informed about what has been done. V21- Suggestions made by member companies are often incorporated to the processes and network services. V22- The network works with procedures or means to encourage its members to share knowledge and good practices among the companies (adapted from Lloria & Moreno-Luzon, 2013). V23- In our network, we can reach agreements about actions and activities to be put in place. V24- In our network, companies develop and join different projects and actions among them. V25- Our network tries to register our best practices (adapted from Kostopoulos, Spanos & Prastacos, 2011). **Company Performance.** V26- Our company uses its resources efficiently. V27- Our company can achieve its sales targets. V28- Our company can achieve its profitability targets. V29- Our company is capable to respond quickly to problem (adapted from Kostopoulos, Spanos & Prastacos, 2011). **Relationship-based Corporate Performance.** V30- Participating in the network has contributed to improve the company's profitability. V31- Participating in the network has contributed to the company's sales increase. V32- Participating in the network has contributed to an increase in efficiency of internal processes and waste reduction. V33- Participating in the network has improved relationship with customers. V34- Participating in the network an increase in satisfaction of the company's employees. V35- Participating in the network has improved relationship with suppliers. V36- Participating in the network has increased innovation in the company's services and products. V37- Participating in the network has contributed to improving the company's image in the market (adapted from Homburg & Pflesser, 2000).

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