OmniaScience

Journal of Industrial Engineering and Management
JIEM, 2018 – 11(4): 617-631 – Online ISSN: 2013-0953 – Print ISSN: 2013-8423
https://doi.org/10.3926/jiem.2634

Study of the Realized Absorptive Capacity in the Organizations of Colombia and Brazil

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Received: April 2018
Accepted: May 2018

Abstract:

Purpose: The transformation and exploitation of knowledge are part of the absorptive capacity carried out. The article presents, from a linear regression model, the analysis of these two dimensions in 155 organizations in Brazil and 61 in Colombia.

Design/methodology/approach: The methodology uses analysis of variance method and a linear regression model. the results and conclusions show a positive linear correlation between transformation and exploitation of external knowledge inside the studied organizations.

Findings: The analysis of variance method and a linear regression model applied to a sample of 61 Colombian SMEs (DANE, 2012) and 155 SMEs of Brazilian ones (IBGE, 2011), results showed the positive linear correlation between the variables "transformation" and "exploitation" of knowledge, which shows interdependence between these two dimensions that make up the realized absorptive capacity.

Practical implications: Research helps to show that if a high level of development of the capacity of knowledge transformation leads to a high level of organizational knowledge exploitation is verified.

Originality/value: The empirical demonstration of the relationship between the dimensions that are part of the absorption capacity carried out, has been very little proven in the world. The research presents the first measurement that in organizations of Brazil and Colombia is carried out on the absorption capacity carried out.

Keywords: absorptive capacity, realized absorptive capacity, transformation, exploitation

To cite this article:

Perez, E., & Toro-Jaramillo, I.D. (2018). Study of the Realized Absorptive Capacity in the Organizations of Colombia and Brazil. *Journal of Industrial Engineering and Management*, 11(4), 617-631. https://doi.org/10.3926/jiem.2634

1. Introduction

Organizational learning (Kogut, Zander, 1992; Davenport & Prusak, 2000; Friedman, Lipshitz & Popper, 2005), and, in particular, the development of absorptive capacity, one of the key factors of this learning (Cohen & Levhintal, 1990), is currently a prominent issue in the organizational context (Flatten, Engelen, Zahra & Brettel, 2011).

The transfer of knowledge is a critical aspect for the survival of organizations in the long term (Zahra & George, 2002; Murovec & Prodan, 2009), and within it is internal learning as a determining factor (Szulanski, 1996; Pérez-Nordtverdt, Kedia, Datta & Rasheed, 2008; Jansen, 2005; Lucas & Ogilvie, 2006; Wijk, Jansen & Lyles, 2008).

In the analysis of organizational learning, attention should be given to the development of absorptive capacity (ACAP) as one of the processes that favors the achievement of a sustainable competitive advantage for the organizations (Grant, 1996; Jansen, Van den Bosch & Volberda, 2005; Lichtenthaler & Lichtenthaler, 2009; McEvily & Chakravarthy, 2002). It allows greater profitability and organizational survival (Czarnitzki & Kraft, 2004, Geroski, Machin & Van Reenen, 1993; Hall, 2000; McAdam, Antony, Kumar & Hazlett, 2014) and plays a determining role for organizational innovation (Czarnitzki & Kraft, 2004; Chalmers & Balan-Vnuk, 2012; Geroski et al., 1993; Hall, 2000; Lane, Koka & Pathak (2006); Lengnick-Hall & Inocencio-Gray, 2013; Tzabbar & Kehoe, 2014; Zahra & George, 2002).

Camisón, Forés and Puig (2009) presented absorptive capacity as one of the constructs that has been most discussed in literature in recent years, referring to it as a skill that favors identification, assimilation and application of valuable external knowledge (Cohen & Levinthal, 1990; Lane, Salk & Lyles, 2001; Lane & Lubatkin, 1998; Mowery, Oxley & Silverman, 1996; Todorova & Durisin, 2007), or as a four-dimensional capacity (Jansen et al., 2005; Jiménez-Barrionuevo, García-Morales & Molina, 2011; Kim, 1998; Lane et al., 2006; Lichtenthaler & Lichtenthaler, 2009; Szulanski, 1996; Zahller, 2012; Zahra & George, 2002). These authors considered it as a dynamic capacity, made up of two components and four dimensions, so that the enterprise acquires, assimilates, transforms and exploits external knowledge, and it is finally analyzed as a factor of organizational learning (Hernández-Perlines & Yáñez-Araque, 2015).

In addition to certain theoretical contributions, an empirical study on realized absorptive capacity (RACAP) is also presented in the article, since, according to Knoppen, Sáenz and Johnston (2011), there are few studies whose purpose is empirical measurement of each of the PACAP's dimensions. The study, carried out in two phases, presents the level of development of transformation and exploitation, the dimensions of the realized absorptive capacity.

The article includes a review of literature about the realized absorptive capacity and the corresponding hypotheses. Next, the article presents the data, variables and methodology used for the development of the linear regression model applied in the research, one of the first to be carried out in Colombia and Brazil, which allows measuring the realized absorptive capacity in SMEs. Finally, the discussion of the empirical results, its subsequent analysis and some conclusions are presented.

2. Theoretical Background

2.1. Realized Absorptive Capacity

Zahra and George (2002) present potential and realized absorptive capacities as two components of organizational absorptive capacity. The aforementioned authors express that the two components play different roles, although complementary in the achievement of diverse results of the Enterprise and, in addition, the way in which each enterprise develops them is particular and specific.

Zahra and George (2002) propose two dimensions for the realized absorptive capacity: knowledge *transformation* capacity (related to the enterprise's abilities of linking its own knowledge to innovations produced in the Market; integrating internal technology with the one produced abroad; making adjustments inside Enterprise; and adapting strategies based on environment's knowledge) and exploitation capacity (understood as the enterprise's ability of using new products or services; acquiring knowledge; using environment's knowledge for making

technology adjustments; modifying existing products using innovations and ideas developed elsewhere; and exploiting results of developed innovations through new products and services). Table 1 shows, because of review of literature, some of the components and dimensions of the realized absorptive capacity, addressed by different authors.

The first dimension of realized absorptive capacity is *transformation* –which, according to Jiménez-Barrionuevo et al. (2011), Todorova and Durisin (2007), Volberda, Foss and Lyles (2010), Zahler (2012) and Zahra and George (2002), It can be explained as the ability of employees to combine new knowledge with the knowledge they already possess. This process facilitates the recognition of new opportunities and requires two fundamental processes: internalization and conversion of knowledge. The number of ideas or research projects focused on new products may be an indicator of the degree of success of the transformation process (Zarha & George, 2002).

In particular, Todorova and Durisin (2007) argue that transformation is an alternative process to assimilation, which occurs when new knowledge cannot be altered to fit existing one. In other words, transformation is the ability to link new knowledge through the construction of new cognitive schemas.

Research took into account, for measurement of *transformation*: valuation of external knowledge/innovations made by Enterprise; ability of integrating enterprise's technologies with outside's ones; ability to make enterprise reconfigurations, based on environment's knowledge; and ability to apply new knowledge in the practical activities of each employee at his job place.

Capacity	Component	Authors
Realized absorptive capacity.	Renovation.	Camisón et al. (2009)
	Personnel training.	Murovec & Prodan (2009)
	Integration with outside environment knowledge.	Jansen et al. (2005)
Transformation.	Reconfiguration and sharing of formal and informal experiences and practices.	Jansen et al. (2005)
	Integration of I+D activities with other related sectors.	Jansen et al. (2005)
	Mental opening to face new ideas and entries.	Flatten et al. (2011)
	Combination of enterprise's knowledge with successful technologies.	Flatten et al. (2011
	Conversion and combination of knowledge.	Flatten et al. (2011)
	Application of new knowledge in the practical work by the employees.	Ettlei & Pablou (2006)
Realized absorptive capacity.	Use of the surrounding environment's obtained knowledge to respond to changes and generating new products.	Camisón et al. (2009) Vega-Jurado, Gutiérrez- Gracia & Fernández de Lucio (2008)
	Development of new products applying acquired knowledge and experiences.	Jansen et al. (2005) Camisón et al. (2009)
Exploitation.	Patents development.	Vega-Jurado et al. (2008) Camisón et al. (2009)
	Modification of existing products using ideas learned from others.	Camisón et al. (2009)
	Knowledge exploitation. Example: development of new products or technologies.	Flatten et al. (2011)

Table 1. Realized absorptive capacity: analysis dimensions

On the other hand, exploitation, understood as the ability of the enterprise that favors the identification, assimilation and application of valuable external knowledge (Cohen & Levinthal, 1990), makes it possible to refine, extend and leverage existing competences or create new ones that incorporate acquired and transformed knowledge into their operations. For Van den Bosch, Volberda and De Boer (1999), the exploitation is an enterprise's capacity that allows perfecting, extending and taking advantage of existing competences, or creating new ones.

On the other hand, Lane and Lubatkin (1998) say about transformation that it is the capacity of the enterprise to use the new external knowledge competitively, to achieve institutional goals. In the same sense, Spender (1996) affirms that transformation helps to the continuous creation of new services, processes and new organizational forms.

On the other hand, a limitation that exploitation process presents are the mechanisms of social integration, since in some cases the mutual understanding between the receiving enterprise and the one that communicates the new knowledge is not effective, due to structural and cognitive causes.

Within the research, and for valuating *exploitation*, it was taken into account: use of environment's knowledge in favor of new enterprise's products or services; enterprise's technology adjustments; taking advantage of environment's new knowledge through processes or methodologies; development of new products or services using innovations or ideas developed by other organizations; modification of existing products or services using innovations or ideas developed elsewhere; exploitation of new products or services as a result of developed innovations.

In this context, the following hypotheses are considered:

H_o: "A high level of development of the ability to transform knowledge does not generate a high level of exploitation of organizational knowledge in new products and services."

H_1: "A high level of development of the capacity to transform knowledge leads to a high level of exploitation of organizational knowledge in new products and services."

3. Methodology

The carried-out research responds to a mixed methodology. In addition to the search inside scientific databases, such as *Web of Science* and *Scopus*, which allowed the review of literature, empirical work was also done, which was developed in two steps, on a simple random sampling (Casal, 2003). A sample of the total number of innovative SMEs in Medellín (Colombia) and Minas Gerais (Brazil) was taken to approach analysis and interpretation; multivariate ANOVA analysis of variance was used and, from this one, a linear regression model (MRL) explained the behavior of the variables. In the first step, the transformation of discrete variables into continuous ones was done, and in the second step, the structure of the model and the analysis of assumptions were elaborated.

For the measurement, the conceptual references were the works that has been carried out on measurement of absorptive capacities (Lane et al., 2001; Jansen et al.; 2005; Liao, Fei & Chen, 2007; Camisón & Forés, 2010; Jiménez-Barrionuevo et al., 2011; Flatten et al., 2011). In addition, a questionnaire was built to assess the level of development of absorptive capacity in SMEs.

Table 2 shows the polls carried out in Medellín, in 61 enterprise, with the following distribution: 4 enterprises in the agricultural subsector, 29 in commerce, construction, energy, industry and real estate and 28 in services, solidary sector, telecommunications and transportation. Table 3 presents enterprises that were taken into account in Minas Gerais. A total number of 155 fulfilled the research requirements, presenting the following composition: 77 enterprises from the chemical and pharmaceutical industry; 24 from sector of equipment supply for computer industry, electronic and optical; 46 from the automotive sector; and 12 enterprises from other sectors (Marcolino de Lima, 2015).

For the fieldwork, a simple random sampling was performed (Casal, 2003), taking into account the selected enterprises presenting the following characterization:

- That during the year 2015 they had advanced some innovative project and that it has been implemented between the years 2016 and 2017.
- That they had made investments in innovation (that all the innovative projects had received support for its implantation).
- That the enterprises that were part of the sample were in the state or city where the fieldwork is done.
- That the enterprises had an active registration in the Chamber of Commerce, in the case of Colombia, and in the National Registry of Legal Entity (CNPJ), in the case of Brazil.
- That they had 10 or more employees during the period of data collection, and at least one year of operation.

Characteristics	Medellín's enterprises			
	N.°	Researched ones		Correspondent %
Population - Sample	363	61		16.80%
Having made some innovation activity during the last year.		61		100%
Being located in the city where the research was made and being registered as a juridical person.		61		100%
Innovation investment annual percentage.	61	0.9% (annual)	29	47.5%
		Between 1% and 2%	19	31.1%
		Between 2.1% and 3%	5	8.2%
		Between 3.1% and 4%	4	6.5%
		More than 4%	3	4.9%
Having more than a year of existence.	61	1-5 years	14	23 %
		6-10 years	6	9.9 %
		11-15 years	9	14.7%
		16-20 years	10	16.4%
		21-25 years	4	6.5%
		26-30 years	4	6.5%
		More than 30 years	14	23 %
Number of employees.	61	10 employees	9	14.7%
		11 to 49 employees	21	34.5%
		More than 50 employees	31	50.8%
Sectors.	61	Services	40	65.6%
		Goods	18	29.5%
		Goods and services (they offer both)	3	4.9%
Total number of enterprises (363).				
Number of interviewed enterprises (sample).				61
Error range.				7%
Confidence interval.				95%

Table 2. Characteristics of innovative enterprises in Medellín

Initial CNAE	Description	Number of enterprises (population) – Rais, 2013	Number of polled enterprises (sample)
20 e 21	Chemical and pharmaceuticals industrial products.	447	73
26	Equipment for information technology industry, electronic and optical products,	142	24
29	Automotive sector.	281	46
01,06,17,19	Others.	76	12
Total.		946	155
Error range.			7%
Confidence interval (IC).			95%

Table 3. Characteristics of innovative enterprises in Minas Gerais (Own elaboration, with Marcolino de Lima's support, 2015)

3.1. Triangulation of Information

To validate the questions, two experts were asked to review the survey questionnaire; then, taking into account their suggestions and observations, the respective adjustments were made. Once the questionnaire was organized, a pilot test was carried out in two Medellín's enterprises. Likewise, from the observations, some final adjustments were made and the survey was applied to the chosen sample of enterprises, in the two scenarios. The quality criterion for estimating the sample size was set at 7%, with a reliability level of 95%, which resulted in a sample of 61 enterprises for Scenario 1 (Medellín) and 155 enterprises for the Scenario 2 (Minas Gerais).

As key informants for delivering the information (Hambrick & Cannella, 2004), innovation managers or staff in a management position within the enterprises, preferably knowledgeable about innovation, were taken into account.

4. Results

Once each of the variables to be evaluated in each of the two databases of the sample was organized, a parsimonious model was developed and the grades given by each of the respondents were unified assigning a weight to each of the questions and adding then the results of each of them to obtain a total score of each variable.

Cronbach's Alpha by variance was used to verify the reliability of the instrument used, presenting results between 0.7 and 0.8, which shows a good level of reliability of the survey questions (George & Mallery, 2003). Figure 1 presents the analysis schema of that was done through Cronbach's Alpha for each of the two variables (transformation and exploitation).

Figure 1. Validation of weights in Cronbach's Alpha

4.1. Information Analysis

For the analysis to be done, statistical package R 3.3.1 (as a support for descriptive statistics), development of correlation graphs (trend graphs, using the Pearson coefficient), boxplots, medians, average and graphs bars were used. For the confidence intervals, a significance of 5% was used. The results showed that the correlation level is positive linear.

5. Discussion

Table 4 presents a summary of the transformation and exploitation ratings in the surveyed enterprises; the main reason is that the construct "absorption capacities" is difficult to characterize in a specific context (Murovec & Prodan, 2009; Volberda et al., 2010).

Table 5 presents the results for transformation and exploitation processes, showing that the used instrument is reliable or very reliable for both scenarios, according to George and Mallery (2003).

Scenario	Variable	Min.	1st Quar.	Median	Average	3d Quar.	Max.
Colombia	TRANS.	1.82	2.74	3.38	3.26	3.78	4.82
	EXPL.	1.38	2.54	3.20	3.15	3.80	4.50
Brazil	TRANS.	1.840	2.380	2.920	2.988	3.400	4.380
	EXPL.	1.160	2.780	3.40	3.180	3.780	5.000

Table 4. Statistical summary of the transformation and exploitation ratings in Medellín and Minas Gerais' innovative enterprises

Variable	Cronbach's Alpha application			
	Values for Colombia	Analysis	Values for Brazil	Analysis
Transformation	0.7801	Reliable	0.61	Reliable
Exploitation	0.8984	Very reliable	0.68	Reliable

Table 5. Results of the application of Cronbach's Alpha to the processes of transformation and exploitation in Medellín and Minas Gerais' innovative enterprises

5.1. Measurement of Transformation and Exploitation in Medellín and Minas Gerais' Innovative Enterprises

The results for variable "transformation" in Scenario 1 (as presented in Figure 2) show a median of 3.38 and an average of 3.26, which allows to infer that in most enterprises of this scenario the level of transformation of knowledge is close to the average, indicating that the majority of enterprises have the same development level of this ability.

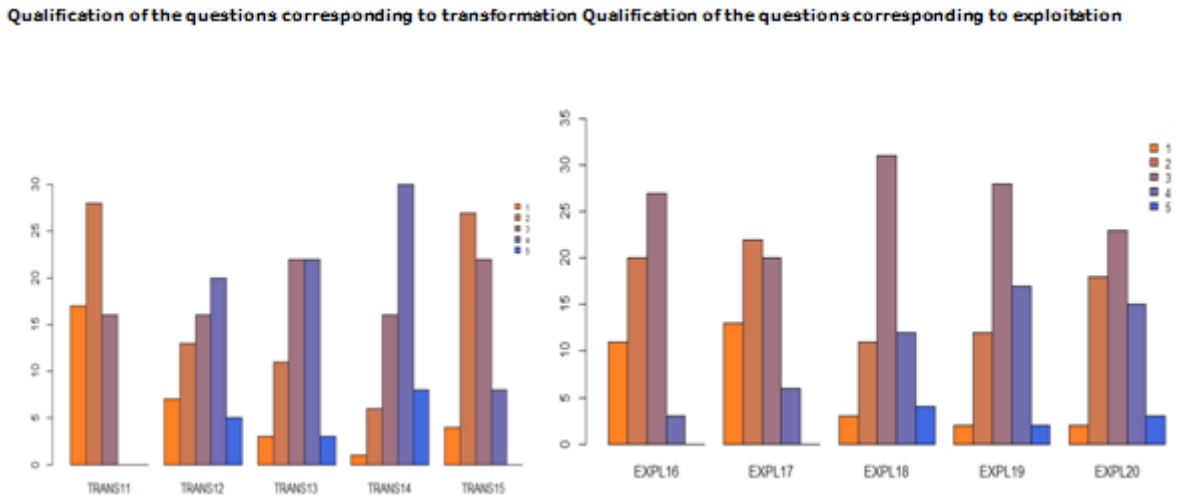
In Scenario 2, the median was 3.80 and average was 3.64, which shows a better result in transformation of knowledge processes with respect to Scenario 1's enterprises, which seems to indicate a better dissemination of knowledge inside enterprises.

In addition, the results show that those responsible for each of the enterprises in Scenario 1 point out that they seldom manage to link knowledge of enterprise's employees to innovations that come from the market. Very few enterprises are able to link the enterprise's technology with the one that comes from the surrounding environment, and only three of the surveyed ones were willing to make adjustments inside themselves, based on the knowledge they get from the environment.

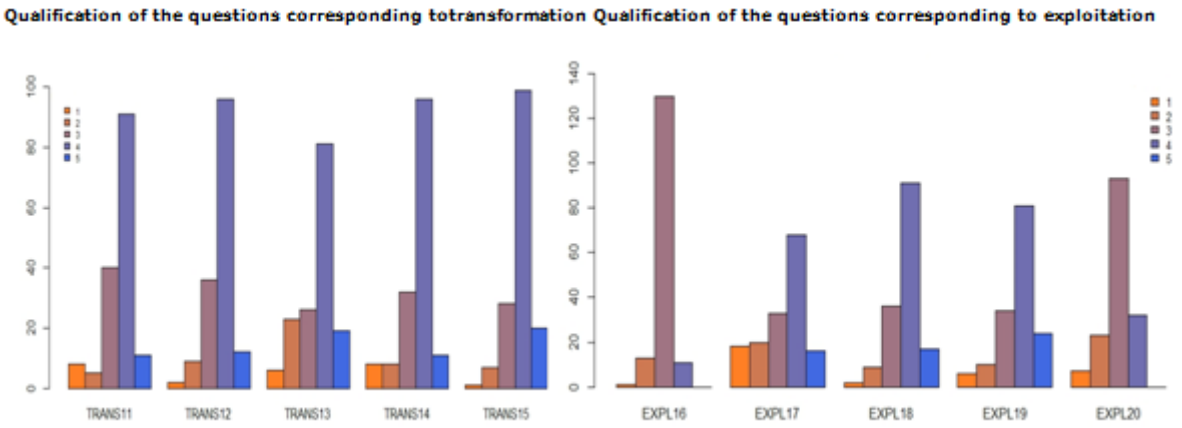
For Scenario 2, Figure 2 shows that 62% of enterprises say that most of the times they are able to link the knowledge that employees have within the enterprise with the innovations that are occurring in the market, which can help the enterprise keeping updated with the innovations of the sector. Among them, 18 enterprises always apply new knowledge at work. It is noteworthy that, in this scenario, 110 enterprises integrate technology created

inside themselves with the one that comes from the environment, and that there are 12 enterprises willing to reconfigure themselves with knowledge acquired from the environment, which seems to show that they are enterprises that can take risks, and that can facilitate innovation processes.

Scenario 1



Scenario 2



Note: The questions marked as "Trans" (from 1 to 5) correspond to *transformation* dimension, and the questions marked as "Expl" (from 1 to 5) correspond to *exploitation* dimension.

Figure 2. Questions that corresponds to transformation and exploitation variables in innovative enterprise

In the "exploitation" variable, Figure 1 showed: median is 3.21 and average is 3.15 for Scenario 1; responses' results to "transformation" and "exploitation" variables go from 2.96 to 3.34; median is 3.40 and average is 3.31 for Scenario 2; responses' results to transformation and exploitation variables go from 3.22 to 3.40, with a reliability interval of 95% for both scenarios. From these results, it can be inferred that, in Scenario 1, there are few enterprises taking advantage of knowledge gained from environment –to improve their products/services, expand their portfolio, make some adjustments in their technologies or improve existing processes or methodologies–, while in Scenario 2, about 83% of enterprises use knowledge that comes from abroad to improve their products.

5.1.1. Correlation of Independent Variables

The correlation analysis presented in Figure 4, for Scenario 1, shows the existence of a strong positive linear correlation of 0.55 between "transformation" and "exploitation" variables. There is a positive linear correlation

(0.75) between these two variables for Scenario 2, which allows inferring that there is a greater tendency in this scenario's enterprises for linking, integrating and reconfiguring environment's knowledge with internal one and for its subsequent application in work places. It makes possible for this knowledge being exploited in new products or services for the Enterprise.

Scenario 1 Scenario 2

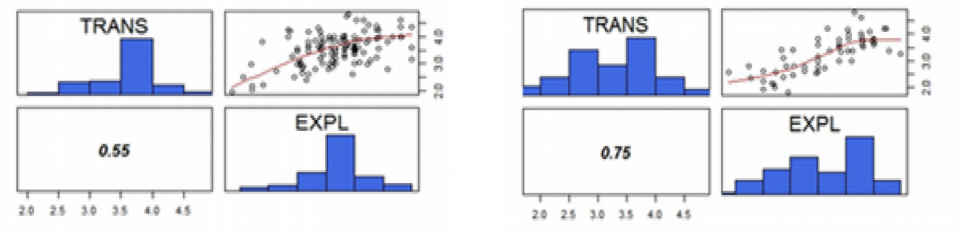


Figure 3. Correlation between transformation and exploitation in innovative enterprises in each of the two scenarios

5.1.2. Proposed Regression Model

The proposed model wants to explain exploitation in terms of transformation in each one of the two scenarios.

For Scenario 1:

H_0: "A high level of development of the ability to transform knowledge does not generate a high level of exploitation of organizational knowledge in new products and services".

H_1: "A high level of development of the capacity to transform knowledge leads to a high level of exploitation of organizational knowledge in new products and services".

For Scenario 2:

H_0: "A high level of development of the ability to transform knowledge does not generate a high level of exploitation of organizational knowledge in new products and services".

H_1: "A high level of development of the capacity to transform knowledge leads to a high level of exploitation of organizational knowledge in new products and services".

To verify the proposed hypotheses, the following models were constructed:

For Scenario 1: exploitation = 0.50926 + 0.80827 of transformation.

For Scenario 2: exploitation = 1.64488 + 0.577 of transformation.

Significance of the model:

Variance analysis					
Resource	**SD**	**Squares' addition**	**Average's square**	**F-Value**	**Pr>F**
Results for Scenario 1: Medellín					
Model	1	19.26328	19.2632823	78.156	2.11e-12
Error	59	14.54182	0.2464715		
Corrected total	60	33.8051			
Results for Scenario 2: Minas Gerais					
Model	1	15.6511	15.6510997	65.355	1.77e-13
Error	153	36.64032	0.2394792		
Corrected total	154	52.29142			

For Scenario 1:

$$R^2 = \frac{SSR}{SST} = 0.569. \qquad R^2{}_{\text{adj}} = 1 - \frac{MSE}{MST} = 0.563$$

For Scenario 2:

$$R^2 = \frac{SSR}{SST} = 0.299 \qquad R^2{}_{\text{adj}} = 1 - \frac{MSE}{MST} = 0.295$$

Results show a value of 57%, for Scenario 1, and a value of 30%, for Scenario 2, which corresponds to the explained percentage, from variable "exploitation", by variable "transformation", showing the existence of a positive linear correlation in both scenarios between these two ACAP's dimensions.

A significance test for the independent variable was performed to describe the model.

Coefficients' significance test:

Variable	Parameter estimator	p Value	Alpha	Comparison	Conclusion
Intercept	0.50926	0.1	0.05	Vp>α € 0.1>0.05	H_0 is accepted
TRANS.	0.80827	2.11e-12	0.05	Vp<α € 2.11e-12< 0.05	H_1 is rejected
Intercept	1.64488	3.83e-09	0.05	Vp<α € 3.83e-09 <0.05	H_0 is accepted
TRANS.	0.577	1.77e-13	0.05	Vp<α € 1.77e-13 <0.05	H_1 is rejected

Significance test allows verifying how significant transformation variable is for the proposed model. That explains that the enterprises, in both scenarios, present a good knowledge transformation process, which facilitates their better knowledge exploitation, being less significant for the enterprises in Scenario 2, which shows that this scenario's SMEs must make greater efforts to achieve applying acquired knowledge regarding their products and services.

In both scenarios, H_1 is rejected and it is concluded that transformation (TRANF.) significantly influences the dimension of the Enterprise's knowledge exploitation. In other words, it is expected an average increase in the operation of 0.80827 units for Scenario 1 (by a unitary increase in the conversion rate) and of 0.577 units for Scenario 2, when all other variables remain fixed.

5.1.3. Summary of Transformation and Exploitation Variables

Figure 4 shows that the process of knowledge transformation obtained the highest average in the Scenario 1's enterprises results, which allows inferring that this scenario's enterprises present skills to articulate employees' knowledge with the new one that comes from outside. In addition, it was observed that the transformation process results' score is much higher than the exploitation ones', which seems to show that there is no good use of the knowledge acquired, assimilated and transformed by the Enterprise.

Similarly, in Figure 4, it can be observed that in Scenario 2 the highest average was obtained by "exploitation" variable, which allows inferring that this scenario's enterprises are better predisposed to use environment's new and valuable knowledge and to apply them in favor of new products.

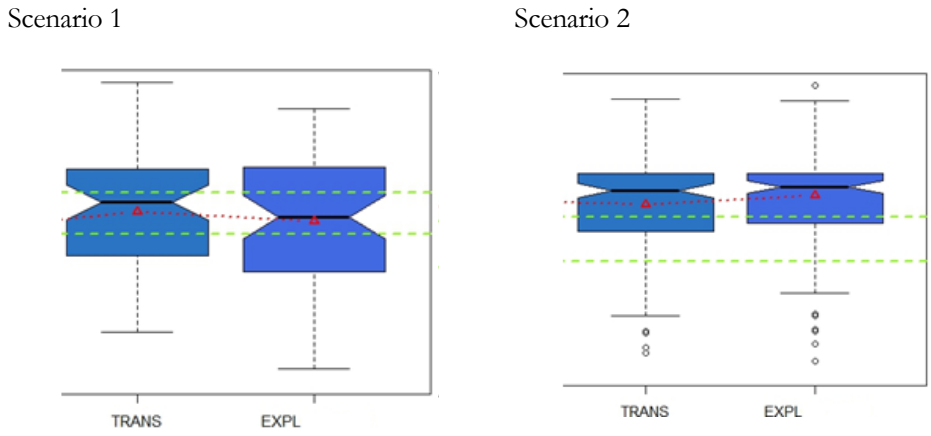


Figure 4. Summary of transformation and exploitation processes in the two scenarios' enterprise

5.1.4. Realized Absorptive Capacity Analysis: Transformation and Exploitation

Figure 5 shows the average results obtained in the transformation process (3.26) and in the exploitation one (3.15) for Scenario 1's enterprise; the correlation result between the two processes is 0.75, and the sum of the averages for absorptive capacity was 6.41.

Results in Scenario 2's enterprises, presented in Figure 5, show transformation at 3.64, exploitation at 3.31, and a correlation of 0.55 between the two processes, while the averages' sum of the realized absorptive capacity was 6.95. It suggests that, according to Zahra and George (2002), both scenarios' enterprises have the facility to achieve a competitive advantage through the development of new products and processes.

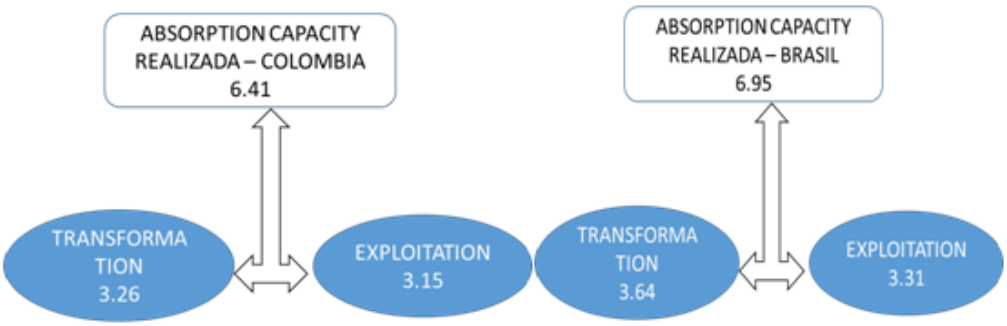


Figure 5. Realized absorptive capacity measurement's results in Medellín and Minas Gerais' innovative enterprises

It can be recommended to enterprises in both scenarios, based on the results, that it's necessary developing strategies to strengthen socialization capacities, since they help to strengthen, mainly, the absorptive capacity (Jansen et al., 2005), thus achieving that companies have the possibility of acquiring and assimilating new knowledge that comes from abroad, to later transform and take them to their portfolio of services.

Finally, it is worth mentioning that the two analyzed scenario's enterprises, especially those of Scenario 1, should direct their efforts towards actions that allow development of realized absorptive capacity, since if it is strengthened, it will favor the creation of new businesses and the enterprises' ability to start new corporative projects (Jiménez-Barrionuevo et al., 2011). In addition, the realized absorptive capacity favors self-renewal of enterprises and influences the achievement and maintenance of competitive advantages (Lane & Lubatkin, 1998; Todorova & Durisin, 2007).

6. Conclusions

According to obtained results, it can be stated that Scenario 2's enterprises have a higher level in the transformation of knowledge process, which seems to indicate that a better knowledge dissemination process is carried out in them, at organizational level.

Another important aspect to highlight, with regard to knowledge transformation, is that 62% of Scenario 2's enterprises show that, most of the time, they are able to link knowledge that employees have inside the enterprise with innovations produced in the Market, which may favor the enterprise in keeping updated about the sector's innovations, while, as for Scenario 1's enterprises, it is said that they seldom manage to link knowledge that employees have inside the enterprise with innovations coming from the Market, and very few of them manage to link the enterprise's technology with the one that comes from the external environment.

In Scenario 2, in relation to knowledge exploitation, about 83% of enterprises use external knowledge to improve their products, while there are few enterprises in Scenario 1 that use the environment's knowledge to improve their products or services, to expand their portfolio, to make some adjustments of technologies they have or to improve existing processes or methodologies.

For both scenarios, the results present the positive linear correlation between the variables transformation capacity and knowledge exploitation capacity, which shows interdependence between these two dimensions that make up the realized absorptive capacity. In addition, from all that it can be inferred that there is a greater tendency in Scenario 2's enterprises to link, integrate and reconfigure environment's knowledge with internal knowledge, and their subsequent application in the workplaces, with the existing possibility that this knowledge be exploited in new products or services for the enterprise.

From the test of significance it was possible to verify that transformation is very significant for exploitation of knowledge in the proposed model, and that for both scenarios H_1 is rejected, concluding that transformation (TRANS.) has a significant influence on the Enterprise's "exploitation of knowledge" dimension.

One of this research's contributions is the need of measuring the realized absorptive capacity as a multilevel construct in two different scenarios, Medellín's SMEs and Minas Gerais' SMEs, based on the dimensions that make up realized absorptive capacity (transformation and exploitation), using a linear regression model to support the conceptual development and to confirm what was presented by recent work by other authors in the world, especially in more developed countries.

The article verifies the fulfillment of the proposed objective of analyzing the realized absorptive capacity, in two scenarios, is evaluated, and the hypothesis which states that **a high level of development of the capacity of knowledge transformation leads to a high level of organizational knowledge exploitation** is verified.

This allows us to conclude that the higher the level of development of the absorptive capacity, the better the application of external knowledge will be in the products, processes or internal methodologies.

It is possible to conclude that, both in Medellín and Minas Gerais, it is necessary to strengthen the knowledge absorptive capacity as a dynamic one, particularly in the sectors analyzed in this research, because, although measurement shows a positive correlation between transformation and exploitation of external knowledge, these dimensions must work together to obtain innovative results, and, additionally, it is not considered its functionality for the development of skills that allow enterprises creating new skills that lead to competitive advantages. If the transformation process does not lead to knowledge being applied to the Enterprise's products, it can not be concluded that there is a "dynamic capacity" of knowledge absorption in the analyzed sectors.

It is necessary to clarify that this research's results are not generalizable, given that they are presented in the two studied scenarios' SMEs context, which may present some differences with other countries.

Future researches can continue this line of work and even extend the study. For example, it would be possible to expand the sample of enterprises and carry out the study in several cities of other countries, so that differences existence between them can be verified. It would also be desirable for the questionnaire to be answered by several

managers of each enterprise. In addition, future research lines will be able to test the measurement instrument in sectors other than those we have discussed here.

Measurement of the variables associated to the studied dimensions of the realized absorptive capacity was made also, in this case, taking into account the theoretical revision of literature, which may require a higher level of study. So, for future research, it is suggested to deepen the analysis of the dimensions for their subsequent measurement.

Declaration of Conflicting Interests

The authors propose not to have conflicts of interest with the investigation, the authorship and the publication of the article.

Funding

The authors declare that they have not received any financial support, nor any type of assistance for the publication of this article.

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