



The Determinants of the Individual Absorptive Capacity in the Context of the SME: The Case of Tourism Small or Medium-sized Enterprises in the City of Agadir

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Abstract

Individual absorptive capacity is the individual's ability to innovate in his or her work. It is determined by the individual's ability to acquire, assimilate, transform and exploit information into knowledge and applicable skills. This work proposes to study the contribution of each of these dimensions to absorption capacity. From a sample of 37 tourism SMEs in the city of Agadir, and by controlling the different associations between the dimensions as well as the endogeneity of these dimensions concerning the absorptive capacity, our results show that the innovation of the individual in his work depends essentially on his ability to turn the information received into knowledge and to make it applicable knowledge. As both dimensions are essentially based on training and experience, this suggests the importance of specific professional training and experience in the company's innovation. Moreover, the exercise of an evolving job, characterized by non-repetitive tasks, reinforces the individual's knowledge and makes him more capable of innovating in his work.

1. Introduction

The pursuit of information has become a critical factor in the competitiveness of SMEs Small or Medium-sized Enterprise. Indeed, this process allows the company to detect market opportunities, face threats and facilitate relations with partners and especially develop a capacity for innovation (Julien, 2005). It is a matter of the manager seeking, processing and distributing information that will serve as the basis for all decisions within the company. These individual faculties, solicited in this actor, determine his absorptive capacity (Lane, Koka, & Pathak, 2006). Defined as the capacity of the individual to identify, assimilate and exploit the knowledge present in his environment and thus transform the knowledge in the company (Julien, Lachance, & Morin, 2004), it is seminal to determine the share of each of its dimensions in the determination of the absorptive capacity. Clarifying the causes that determine each of the dimensions, as previously mentioned, is essential, but conceptualization and operationalization work are also essential to reaching this goal.

To do this, several research studies have highlighted the importance of factors such as the individual's level of training, his professional experience, the extent of his contacts with the various stakeholders in the company, and the nature of the training he has acquired (Noblet & Simon, 2010). Other studies have highlighted factors such as the nature of the position held within the company, the latitude that the individual has to implement his or her new ideas, and the personal and professional qualities of his or her collaborators within the company.

However, the results of his various studies are sometimes divergent and differ according to the company's sector of activity, the country, and the methodology adopted to operationalize the different factors.

This ambiguity of result does not allow to transpose directly and in an unthinking way the measures and factors used by its studies to appreciate the extent of the absorptive capacity construct in the framework of a new country such as Morocco. It is in this vein that this research proposes to study the contribution of each of the following dimensions: acquisition, assimilation, transformation and exploitation to individual absorptive capacity in the context of Moroccan SMEs. From a sample of 37 tourism SMEs in the city of Agadir and using the different measures used by the central studies in this field, we have tried to determine, in the context of an emerging country, the factors underlying each of the dimensions as well as their contribution to the explanation of the phenomenon of individual absorptive capacity.

Information acquisition is understood through the individual's ability to evaluate and use external knowledge, which is intrinsically linked to factors such as prior knowledge (Zahra & George, 2002). The assimilation of information by the individual is studied by referring to his capacity for analysis, interpretation and comprehension of knowledge coming from outside (Kim, 1998; Szulanski, 1996; Zahra & George, 2002).

To operationalize this dimension, certain factors were studied, such as the number of years of study of the individual or the nature of these (purely theoretical studies or combining theoretical and practical aspects (Szulanski, 1996).

The transformation of the information acquired by an individual requires its assimilation and routing by the cognitive model of the latter. The cognitive model is defined by evolutionary theory as the set of perceptions of the individual that determines how the latter translates the information into transmittable and applicable knowledge (Nelson & Winter, 1982). Conventionally, the individual's capacity to transform the acquired and assimilated information will depend on the quality of his cognitive model, which his training and experiences can partially explain.

Finally, the exploitation of information by the individual relates to his capacity to apply the knowledge developed for essentially commercial purposes (Cohen & Levinthal, 1990). The application of the developed knowledge depends partly on the individual latitude in the organization but also the initiative of the latter determined by his personal qualities.

The results of our study make it possible to validate and reject the proven effect of each of the dimensions of absorptive capacity in the context of tourism SMEs in Morocco. However, they are an essential contribution to new research on absorptive capacity in Morocco since they highlight the explanatory factors of the different dimensions of absorptive capacity, thus offering researchers in the field a powerful operationalization tool.

In its theoretical part, this research attempts to circumscribe the movement of the notion of absorptive capacity and its dimensions. The objective of this part is to try to propose several factors that can accurately reflect each of the components of the construct.

The second part constitutes the practical part of this work, in which the contribution of the dimensions of the individual absorptive capacity in the context of Moroccan SMEs operating in the tourism field is tested. To achieve this, the tool of factorial correspondence analysis and simultaneous equation modelling was applied to the components of the construct after their operationalization.

2. The Dimensions of Individual Absorptive Capacity: Attempts at Definition, Characterization and Operationalization

This section will be devoted to the definition and characteristics of individual absorptive capacity and its dimensions. From a brief but dense review of the literature of the different theoretical and empirical researches (if necessary, we will focus on the means of operationalization), we will propose a synthesis of the different factors mobilized by the different studies to capture the extent of each component of the construct.

2.1. The Dimensions of Absorptive Capacity: Definition and Characteristics

Since the seminal article by Cohen and Levinthal (1990), absorptive capacity has been highly valued by researchers in management science and economics to understand certain economic and managerial phenomena. The absorptive capacity is presented as one of the most important concepts in the last two decades (Camisón & Forés, 2010). It has been studied from different theoretical and empirical contributions (Volberda, Foss, & Lyles, 2010). This concept has generated a real craze among the scientific community and among professionals. It has emerged as a fundamental theme in management science and economics and has been used to explain various organizational phenomena such as strategic alliances, organizational learning, knowledge acquisition and transfer, and firm performance (Lane et al., 2006). This makes the concept multidisciplinary (Van den Bosch, Volberda, & De Boer, 1999).

This growing interest is due, in part, to the innovative nature of absorptive capacity in its response to a clear collective and individual need.

Developing and maintaining the level of absorptive capacity of a firm is the guarantee of its survival and organizational success, as it allows it to strengthen, complete or reorient its knowledge base (Lane et al., 2006).

Absorptive capacity is one of the fundamental learning processes of an organization. Nevertheless, it is regrettable that there is no unifying paradigm in the field of absorptive capacity -absorptive capacity is still a

theory under construction- which has led to a proliferation of definitions. However, it is unanimous that the components of the definition given by the founders and parents of this new research stream, [Cohen and Levinthal \(1990\)](#), remain the backbone of any definition.

2.1.1. The Individual Absorptive Capacity

One thing is sure through the different definitions proposed to define the notion of absorptive capacity: the idea has a predominant semantic charge ([Soussi & Mekkaoui, 2014](#)). We present one of the first but most insightful definitions of absorptive capacity, which defines it as: "the ability to value new external information, to assimilate it and to apply it for business purposes" ([Cohen & Levinthal, 1990](#); [Jansen, Van Den Bosch, & Volberda, 2005](#)). From then on, three dimensions of the notion emerge: valorization of information resources, assimilation of these resources, and application. The definition of [Zahra and George \(2002\)](#), which emerges from that of [Cohen and Levinthal \(1990\)](#), makes it possible to underline a fourth dimension of the individual absorptive capacity by defining it as the capacity to acquire, assimilate, transform and exploit external information. Hence, absorptive capacity has four dimensions: the acquisition, assimilation, transformation, and exploitation of information.

2.1.2. The Dimensions of Individual Absorptive Capacity

Suppose today, the cognitivist approach to the organization is increasingly defended, particularly following the mixed results of studies that have favored the contractual process. In that case, it is possible to think that it is one of the rare alternatives that focus on individual and organizational learning considered as the outcome for the subsistence of the organization through innovation. The cognitivist trend can be traced back to the work of Herbert Simon and long before that of David Ricardo and finds its culmination in the evolutionary theory of Nelson and Winter and, more recently, in the trend of resources and skills with authors such as Prahalad.

The various theories that fall under the aegis of this current have attempted to develop the notion of organizational learning as the ultimate means of innovation. For this exact purpose, researchers are working on the subject of absorptive capacity as one of the phenomena that can explain organizational learning in greater depth.

- *Information Acquisition*

This is the individual's ability to make the most of the company's knowledge by having the ability and commitment to seek out or at least capture the information transmitted by the company's internal and external actors ([Cohen & Levinthal, 1990](#)). This dimension seems to depend on innate characteristics of the individual (such as commitment, risk aversion, and curiosity) as well as others that are acquired (such as values and training) [Cohen and Levinthal \(1990\)](#) and [Dyer and Singh \(1998\)](#).

- *The Assimilation of Information*

The assimilation of information relates to the different manipulations of information by the cognitive model of each individual in the organization. A mental model is a stage through which information takes the form of knowledge whose characteristics (precision, ease of application, usefulness for the organization, ease of transmission and comprehension, etc.) depend in part on those of the individual (training, experience, etc.) and their environment (internal: collaborators, colleagues, etc., and external: customers, friends, family, etc.). The knowledge resulting from the individual cognitive model, entitled, if necessary, the capacity of assimilation, is exploitable only if it is shared by all the organization's individuals ([Cyert & G., 1963](#)). Indeed, it is pretty obvious to think that knowledge emanating from an individual (at least if it is not a micro-enterprise where the author of the ability is the decision-maker and possibly the only operator) can only be translated into actual application if it is assimilated by the other individuals who contribute to the realization of the enterprise's mission.

- *The Transformation of Knowledge into Knowledge*

If the assimilation of information means its translation into knowledge via the cognitive model of the individual acquiring it, the transformation of the received and assimilated information implies the emergence of knowledge ([Zahra & George, 2002](#)). Knowledge is information translated by the individual's cognitive model into knowledge, and knowledge arises when this knowledge acquires a form that can be applied in the company for commercial purposes. This knowledge, as long as it is monopolized by a single individual, in this case, its creator, remains within the framework of individual absorptive capacity. Nevertheless, when it is transmitted and shared by all the company's individuals, it becomes a dimension of the company's absorptive capacity.

- *The Exploitation of Information*

The authors [Cohen and Levinthal \(1990\)](#) consider that the whole process characterizing the individual absorptive capacity is unfinished if the knowledge created is not concretized by an achievement improving the commercial profitability of the company. Thus, the individual who has developed knowledge must be able to apply it in his company. In this case, the premises of factors that can be at the origin of this last dimension of the capacity of absorption appear and can be linked to the individual and the company where he works. We refer,

for example, to the initiative, as a factor related to the individual, or the employees' room for maneuver within their company, as an example of an element corresponding to the entity.

2.1.3. Operationalizing the Dimensions of Absorptive Capacity: An Exercise in Researching the Factors Behind Them

To operationalize the different dimensions of absorptive capacity, we will attempt to unpack the factors that can explain the acquisition of information, its assimilation, its transformation into knowledge, and its exploitation.

- *Ways to Operationalize Information Acquisition*

The definition of the acquisition of information by the individual proposed by [Cohen and Levinthal \(1990\)](#); [Dyer and Singh \(1998\)](#) contains some allusions relating to the factors which can be at the origin of the acquisition of information by an individual. Indeed, this behavior depends on the individual's ability and commitment.

The acquisition of information may depend on four factors: the individual's prior investments, prior knowledge, willingness to learn, and the direction of understanding. The previous investments made by the individual within the firm are dependent on the individual's degree of risk aversion, support from supervisors, training, and the importance placed by the firm on research and development ([Chauvet, 2004](#)).

- *The Ways of Operationalizing Information Assimilation*

The assimilation of information depends on the cognitive model of the assimilator, in this case, the individual. This faculty depends on factors that can influence this model, such as the duration of the training and its nature or the professional experiences and their nature.

The duration of the training is often used as a proxy for its specificity and thus for the capacity of the holder to assimilate the acquired information quickly and extensively. On the other hand, the nature of the training, in terms of its empirical or practical tendency, can be one of the determinants of the quality of assimilation. The individual's experiences can be studied from the point of view of their duration or multidisciplinary. For a long experience, the individual may develop an ability to assimilate information quickly. However, the nature of the incident does not emanate from a consensus. In this sense, long experience in a single field of activity can provide the individual with an in-depth knowledge of the protocols characterizing that field. It will be a springboard for rapid and extensive assimilation of the corresponding information. However, the authors of the individual and organizational learning current advocate the multiplication of experiences in different fields of activity to enrich and extend the individual's knowledge.

- *The Ways of Operationalizing Information Transformation*

The transformation of information relates to the creation of knowledge by the individual and his willingness to apply it to improve his work and thus benefit his company.

The emergence of knowledge depends on how the individual uses the knowledge developed due to assimilating the information. It is the transformation of knowledge into a routine and then into knowledge. The excellent progress of this process also depends on the training of the individual (generalist/specialist, duration of the movement, nature of the activity: practical/theoretical) and his experience.

- *Ways of Operationalizing Information Exploitation*

Exploiting information materializes the individual's ability to apply the knowledge that comes from it in executing his mission. This dimension of individual absorptive capacity depends on the individual's power, commitment, and predisposition to apply the knowledge acquired. These factors may depend on the individual's values and the values shared by all employees in the company, such as the company culture.

- *Ways of Operationalizing Absorptive Capacity*

The change in how the individual carries out a given task, in this case, saving time, energy, greater precision, etc., are all factors that can materialize the emergence of personal knowledge. Thus, the detection of any change or favorable modification in the way tasks are performed (for a simple employee) or in the way, decisions are made, ordered, and managed (for a manager), is a materialization of the individual's capacity for absorption. This behavior means that the individual can effectively exploit the acquired information.

In what follows, we will attempt, in the light of theoretical approaches to absorptive capacity and its dimensions, to measure the contribution of each to the individual's absorptive capacity.

3. Dimensions of Individual Absorptive Capacity: The Case of Tourism SME Managers in the City of Agadir

To test the contribution of each of the dimensions to the absorptive capacity and to validate our different measures based on the factors supposed to influence its dimensions, we conducted an empirical study based on a sample of 37 small and medium-sized enterprises in the city of Agadir. The survey data are collected using a questionnaire whose number of parts corresponds to that of the absorptive capacity and its dimensions. The data were then subjected to a descriptive, univariate, and multi-variate study. Where appropriate, we will first

estimate the impact of each size on absorptive capacity and then evaluate the exact effect while controlling for the endogeneity of each dimension.

3.1. Research Hypotheses

3.1.1. The Impact of Dimensions on Absorptive Capacity

Individual absorptive capacity is characterized by a positive and significant change in individual behavior in executing his tasks (Todorova & Durisin, 2007). Its acquisition of information, its assimilation, its transformation, and its exploitation determine the extent of its absorptive capacity, hence the first obvious hypothesis in this work:

H1: each of the dimensions improves the individual's absorptive capacity.

However, there is reason to question the contribution of each dimension taken in isolation from the others. In this sense, the individual learning current considers that the emergence of applicable knowledge results from a process whose focal point is the individual's cognitive model. In the light of this argument, it is quite feasible to assume that among the four dimensions of absorptive capacity, the transformation of information is the dimension that contributes most to the individual's absorptive capacity, followed by the dimension of its assimilation. These two dimensions depend on the individual's cognitive model but to a lesser extent on the assimilation of information. Thus, we can formulate the second hypothesis of this work:

H2: Among the dimensions of absorptive capacity, the transformation of information followed by its assimilation is the most contributory to the individual's absorptive capacity.

3.1.2. The Interconnections Between the Dimensions of Absorptive Capacity

The review of the literature on the definition of the dimensions of individual absorptive capacity and the factors at their origin highlights two groups of factors, in this case, factors linked to the individual and others intrinsic to his or her internal environment (the company) and external environment (contacts, acquaintances, entourage...). Its internal and external factors influence all the dimensions of absorptive capacity. Knowing that, for example, the assimilation and transformation of information are linked to the individual's cognitive model, which is determined by his or her prior knowledge, it is obvious to assume the existence of a positive association between the two dimensions. The generalization of this reasoning to the four dimensions of absorptive capacity leads us to the third hypothesis of this work:

H3: Positive associations and interconnections exist between the different absorptive capacity dimensions.

3.1.3. The Endogenous Nature of the Impact of Dimensions on Individual Absorptive Capacity

Individual absorptive capacity takes the form of a positive change in the individual's behavior within the company by improving how he or she does his or her work. It can even lead to innovation in the individual's work that benefits the company. This evolution of the individual's work enriches his or her experience, which is one of the explanatory factors of the dimensions of acquisition, assimilation, and transformation. In light of this reasoning, we can formulate the following hypothesis:

H4: The dimensions of acquisition, assimilation, transformation, and exploitation are endogenously determined by the capacity to absorb.

3.2. Methodology

In this section, we highlight how the sample elements were constituted, the variables studied, the method adopted to measure them, the data collection procedure, and the econometric methodology used to test our various hypotheses and address our problem.

3.2.1. Sample and Data Collection

The research model was tested with a sample of tourism SMEs (accommodation, catering, travel agencies) in the city of Agadir. The choice of econometric modeling in general requires a probabilistic sample. An exhaustive list of tourism SMEs identified by the regional council of tourism of Agadir is used.

Our sample consists of 37 Moroccan firms in the city of Agadir operating in the tourism sector. We are interested in the manager of each firm in our model, who may be the owner-manager or a representative manager. The initial sample was 60 tourism companies. However, after returning the questionnaires that had already been distributed, it turned out that some of them contained a significant amount of missing data. In contrast, despite our insistence, others were filled out by employees who did not have a position that allowed them to influence the business in any way. The last two categories of questionnaires containing 23 observations were discarded, thus bringing the sample size to 37 company individuals.

The amount of data that this sample would allow makes parametric econometrics unfeasible and leads to the calculation of causal links by non-parametric methods (Phelizon, 1998).

3.2.2. Study Variables and Their Measurement

The study of the impact of the dimensions of absorptive capacity and their contribution to the explanation of this phenomenon leads us to choose 5 variables in the form of groups of sub-variables (Vermette, 1991). Indeed,

each dimension is assessed through its explanatory factors, which constitute Items. Each Item is a continuous quantitative sub-variable on an interval whose extent depends on the chosen measurement scale. The Table summarizes the study's variables and the Items used to measure them.

Table 1 this table summarizes variables and items used in the research model.

Table 1. The study's variables and the Items used.

Study Variables	Items
individual absorptive capacity (AC)	<ol style="list-style-type: none"> 1. The way you perform your tasks is getting faster and faster 2. The way you do your work is becoming more precise 3. You make less and less effort to do your work in the same way as before 4. Your work is increasingly generating wealth for your company 5. Your work allows you to improve your situation in the company more and more.
Acquisition of information (AqI)	<ol style="list-style-type: none"> 1. Do you consider your training to be very advanced in the field of tourism 2. Curiosity is an essential quality of an employee 3. Do you feel a constant need to learn about your business? 4. You are interested in information that can improve the conditions of your work 5. Your contacts with the different stakeholders of the company (employees, customers, suppliers)
Assimilation of information (AssI)	<ol style="list-style-type: none"> 1. What is your level of education 2. What is your educational institution 3. What is the number of years of experience you have in the tourism industry 4. Your experience is limited to the tourism sector 5. Would you consider your education to be diversified
Information transformation (IT)	<ol style="list-style-type: none"> 1. You seek to make acquired knowledge usable by all employees 2. You seek to make knowledge developed in your work operational 3. For you, new knowledge has no value if it cannot be applied in all your tasks 4. You use your theoretical knowledge to transform information into easily exploitable work methods 5. You use your experience to transform the information into workable methods
The exploitation of information (EI)	<ol style="list-style-type: none"> 1. The development of a new working method pushes you to implement it 2. When you develop knowledge you look for it to be beneficial in your work 3. Do you feel inhibited or reluctant to make changes in your work? 4. Do you want your work to be more and more precise and efficient? 5. You want to develop new skills to improve your company's situation

3.2.3. Econometric Methodology

For the purposes of this research, we used the Partial Least Square (PLS) method, known by the acronym PLS. The PLS method calculates causal relationships on standardized variables. This method consists of transforming each variable by eliminating its mean and dividing it by the value of its standard deviation. It thus puts them on an equal footing and allows comparisons to be made about their influence on the endogenous variable. The second advantage of the PLS method comes in part from its transformation of the variables. Transformed in this way, the variables will be less affected by extreme values and will tend towards the shape of a normal distribution. The PLS method does not require this condition because the estimation is focused on a variant of ordinary least squares. This type of estimator gives results that converge to the results that would be observed in different samples, provided that the sample size used is large. But this condition fails in this research. It is possible to remedy this by resampling or bootstrapping. Using the PLS method in particular, and estimation on a system of factorial variable equations in general, will require a strategy of validity and reliability. However, a distinction must be made between the situation where the constructs are reflective and the situation where they are formative. The latter case arises in this research and requires the validity and reliability procedure to be conducted on the basis of the statistical significance of each dimension in explaining the construct and the low collinearity of the other dimensions. The convergent validity of the construct will be observed if each of its dimensions contributes significantly to its explanation (at least within a 10% risk of error) and if its dimensions are independent of each other (at most the index of the variance inflation factor is less than or equal to 2: this implies that no dimension is related to the other by more than 50%). This last condition will be examined initially, as the lack of significant relationship could be due to strong collinearity. In the absence of this, the dimensions that do not significantly explain the construct will be eliminated.

First, we will perform univariate tests comparing means and simple and partial correlations between the dimensions of absorptive capacity. The objective is to determine which sizes are strongly associated with absorptive capacity. Moreover, these associations allow us to know the different linear models composing our system of simultaneous equations.

At this stage, the system of simultaneous equations translating the impact of the dimensions of the absorptive capacity on this one and the endogeneity of these relations resulting from the following conceptual model:

$$\left\{ \begin{array}{l} AC_i = \beta_0 + \beta_1 Acqli + \beta_2 Assli + \beta_3 ITi + \beta_4 Eli + \epsilon_i \\ Acqli = \partial_0 + \partial_1 AC_i + \partial_2 Assli + \partial_3 ITi + \partial_4 Eli + \epsilon_i \\ Assli = \wp_0 + \wp_1 AC_i + \wp_2 Acqli + \wp_3 ITi + \wp_4 Eli + \epsilon_i \\ ITi = \alpha_0 + \alpha_1 AC_i + \alpha_2 Acqli + \alpha_3 Assli + \alpha_4 Eli + \epsilon_i \\ Eli = \delta_0 + \delta_1 AC_i + \delta_2 Acqli + \delta_3 Assli + \delta_4 ITi + \epsilon_i \end{array} \right.$$

4. Analysis of the Results and Conclusions

The research model is tested by the PLS method, which will give a more detailed idea of the causal links by determining which dimensions contribute significantly to explaining the scores.

4.1. Determination of the Different Dimensions of the Individual Absorptive Capacity Construct

Before the tests of comparison of the means, we proceeded to the factorial analysis of the correspondences to appreciate each item's contribution to the constitution of the factorial axes and to quantify the dimensions of the construct.

First, we assessed the internal validity of each of our constructs using Cronbach's Alfa. External validity is measured by Pearson's correlation coefficients between all items.

The matrix of simple correlations between the items of the different dimensions shows high correlation coefficients exceeding 60% in most associations, hence an excellent external validity. Moreover, the value of Cronbach's alpha is 0.7, indicating a perfect internal convergence of the items of each dimension.

The factorial rotation, in this case, the Varimax rotation, allows limiting the number of explanatory items of each dimension to keep only the items whose contribution to the inertia of each axis exceeds 80%. In addition, the Kaiser-Mayer-Olkin (KMO) test allows us to assess the partial correlation between the items of each dimension and constitutes a second, more powerful factor in evaluating the internal validity of the items of each size. This index shows high values exceeding 80% and is significant at the 1% threshold, thus materializing a high internal validity.

Table 2 this table presents different dimensions of the individual absorptive capacity construct.

Table 2. Different dimensions of the individual absorptive capacity construct.

Dimension	Number of Items	Alpha Cronbach	Indice KMO	Number of factors	P-value
Absorptive capacity	5	0.864	0.84	1	0.000
Acquisition of information	5	0.918	0.806***	1	0.000
Assimilation of information	5	0.838	0.739***	1	0.000
Transformation of information	5	0.91	0.807***	1	0.000
Exploitation of information	5	0.898	0.803***	1	0.000

Note: ***: significant at the 1%.

4.2. Bi-Varied Tests of Comparison of Means and Simple and Partial Correlations

4.2.1. Tests of Comparison of Means

We compare, if necessary, the mean of the variable: individual absorptive capacity, on two independent sub-samples constituted from the sample of 37 individuals. The two sub-samples are included based on the median value of each of the dimensions of the absorptive capacity.

Table 3 this table presents results of Bi-varied tests of comparison of means and simple and partial correlations.

Table 3. Bi-varied tests of comparison of means and simple and partial correlations.

Dimension	Average of the variable: individual absorption capacity		H0: Difference of the mean of the absorption capacity on the two subsamples is zero	
	Subsample 1 Di < median	Subsample 2 Di ≥ median	Fisher	Student
Acquisition	-0.47	0.58	8.43***	5.62***
Assimilation	-0.59	0.62	10.93***	4.66***
Transformation	-0.77	0.72	7.61***	6.92***
Exploitation	-0.68	0.92	8.13***	5.47***
P-value	0.00	0.00	0.00	0.00

Note: ***: significant at the 1%.

The average of the absorptive capacity in the sub-sample of individuals having a value lower than the median is significantly lower than its average in the sub-sample of individuals having a value equal value for one of these dimensions to or higher than the median. In fact, for all the Fisher and Student tests, the empirical value essentially exceeds the one read on the table relating to the statistic.

At this analysis stage, we can say that the dimensions of acquisition, assimilation, transformation, and exploitation positively impact absorptive capacity.

4.2.2. Simple and Partial Correlation Matrices

To complete the two-variate tests of comparison of means, we will first proceed to the matrix of simple Pearson correlations between the 4 dimensions and the absorptive capacity.

Table 4 this table sets the matrix of simple pearson correlations.

Table 4. Matrix of simple pearson correlations.

	cai	acqi	assi	ti	ei
cai	1.00 35				
acqi	0.83* 0.00 35	1.00 35			
assi	0.78* 0.00 35	0.76* 0.00 35	1.00 35		
ti	0.75* 0.00 35	0.77* 0.00 35	0.79* 0.00 35	1.00 35	
Ei	0.73* 0.00 35	0.66* 0.00 35	0.66* 0.00 35	0.64* 0.00 35	1.00 35

Note: *: Significant at the 5%.

We find positive and significant linear associations between the dimensions: assimilation, transformation, and exploitation, on the one hand, and individual absorptive capacity, on the other. Thus, the individual's capacity to acquire, assimilate, transform, and exploit information can be explanatory factors of his capacity to innovate in his work. Moreover, it is also possible to suppose that the ability of the individual to continuously improve the way of exercising his work allows him to enhance his acquisition of information, its assimilation, its transformation, and its exploitation.

It is necessary to draw attention to the existence of a positive and significant linear association between the dimensions of absorptive capacity. This result can be easily observed in light of the coefficients of simple correlations between these dimensions, which exceed the value of 60% for their great majority and are significant at the threshold of 1%.

This last result can be explained by the complementarity of the dimensions of the absorptive capacity. Indeed, it is possible to stipulate that an individual with a remarkable ability to acquire information will also have the capacity to assimilate and understand it, erect it into knowledge, and try to make it operational in his work. The direction of this causality can be reversed by stating that an individual who continuously seeks to improve his or her work will be more attentive to his or her environment and seek to develop new knowledge and applicable skills.

The solid linear association between the dimensions of absorptive capacity indicates possible multi-collinearity problems if we regress absorptive capacity on them. Furthermore, it shows the validity of using simultaneous equation modeling.

Table 5 this table shows the matrix of partial correlations.

Table 5. The matrix of partial correlations.

Variables	Partial corr.	Semipartial Corr.	Partial Corr.^2	Semipartial Corr.^2	Significance value
Acqi	0.48	0.25	0.23	0.06	0.00
assi	0.26	0.12	0.06	0.01	0.14
ti	0.06	0.02	0.00	0.00	0.73
ei	0.34	0.17	0.12	0.03	0.05

The limit of the Pearson correlation (simple correlations) pushes us to use the matrix of partial correlations.

The related matrix highlights a positive association between the absorptive capacity on the one hand and each of its dimensions on the other. However, only the coefficients associating the dimensions of information acquisition and exploitation to the absorptive capacity are significant. Thus, by removing the impact of the other sizes, the acquisition of information by the individual and its exploitation makes it possible to determine the innovation in his work. The assimilation of information and its transformation may not influence the absorptive capacity without the ability to capture information and to want to build practical knowledge.

In the light of the different bi-variate tests, it emerges that the absorptive capacity of the individual depends on his faculties of acquisition of information, its assimilation, its transformation into knowledge, and his will to create helpful knowledge in work and the tasks which he carries out.

However, the most influential dimensions of this innovation capacity are those related to the ability to capture information and the corresponding ability to transform it into practical knowledge. Knowing that these two dimensions depend in part on the individual's willingness to evolve in their work and on the level of risk they feel towards innovation, it is possible to say that it is the factors innate in the individual's personality that contribute the most to the explanation of innovation in their work.

We will finally proceed to the simultaneous equation regression to test our hypotheses and confirm the results put forward at the descriptive stage.

Table 6 this table highlights Results of the different specifications.

4.2.3. Specification of the Different Relations Between the Dimensions of the Construct Via a System of Simultaneous Equations

The estimation of a system of simultaneous equations requires the verification of certain identification conditions. Indeed, it is necessary to have an identifiable or over-identified model.

Let g : the number of endogenous variables of the system, g' : the number of endogenous variables appearing as exogenous variables in the models of the system, k : the number of exogenous variables, and k' : the number of exogenous variables appearing as endogenous variables in the system equations.

According to the conceptual model of our work, we have constructed a system of simultaneous equations. However, this model is not testable.

We adopt a set of models for which we have verified that their equations are identifiable while trying to integrate a number of them, allowing us to capture the different interconnections between the studied dimensions and to respect, for a while, our conceptual model.

$$\left\{ \begin{array}{l} AC_i = \alpha_0 + \alpha_1 AcqLi + \alpha_2 Eli + \epsilon_i \\ AC_i = \beta_0 + \beta_2 AssLi + \beta_3 Tli + \epsilon_i \\ AcqLi = \partial_0 + \partial_1 AC_i + \epsilon_i \end{array} \right. \left\{ \begin{array}{l} AC_i = \omega_0 + \omega_1 AcqLi + \omega_2 AssLi + \epsilon_i \\ AC_i = \mu_0 + \mu_1 Tli + \mu_2 Eli + \epsilon_i \\ AssLi = \partial_0 + \partial_1 AC_i + \epsilon_i \\ AC_i = \vartheta_0 + \vartheta_1 AcqLi + \vartheta_2 Tli + \epsilon_i \\ AC_i = \rho_0 + \rho_1 AssLi + Eli + \epsilon_i \\ Tli = \varphi_0 + \varphi_1 AC_i + \epsilon_i \end{array} \right.$$

The results of the different specifications are summarized in the following table:

Table 6. Results of the different specifications.

Variables	Model 1			Model 1			Model 1			Model 1		
	Eq1	Eq2	Eq3	Eq1	Eq2	Eq3	Eq1	Eq2	Eq3	Eq1	Eq2	Eq3
C	-0.01	-0.01	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.01	-0.01	-0.00	0.00
AC			1.00***			1.01***			1.05***			0.91***
AcqI	1.0***				0.48***		0.03			0.04		
AssI		0.43***			0.42***		0.98***					
IT		0.41***		0.99***				0.56***		1.03***	1.08***	
EI	0.01			0.00				0.31***			0.01	
R ²												
R ² ajust	0.66	0.65	0.66	0.50	0.74	0.49	0.56	0.66	0.55	0.41	0.44	0.53
Chi2	117.3***	69.87***	90.26***	108.58***	106.9***	84.39***	107.3***	74.31***	85.82***	41.79***	76.41***	47.8***
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: ***: significant at the 1%.

Controlling for endogenous relationships between the different dimensions of the absorptive capacity construct, we reach the following conclusions:

In all regressions, information assimilation and transformation have a positive and significant impact on individual absorptive capacity at the 1% threshold.

The acquisition of information has a positive and significant impact on the absorptive capacity, but controlling for its endogeneity concerning the transformation of information and its exploitation, makes it insignificant.

Exploiting information seems to be the dimension that contributes least to the absorptive capacity in view of its non-significant coefficient in most specifications.

This first result shows that the assimilation of information and its transformation is the most elementary dimension in determining individual absorptive capacity. Thus, it is true that an individual can have several contacts that allow him to occupy a privileged position to access information. Still, without specialized training, a long allene, a convincing experience, and a real willingness to create his knowledge, the individual will be unfit to innovate in his work. If necessary, we conceive the preponderance of each individual's cognitive model in explaining the phenomenon of absorptive capacity.

In the light of this result, we can confirm the first and second hypotheses.

Moreover, the fading of the impact of the dimensions of information acquisition and exploitation following the control of the effect of the other sizes highlights the existence of interconnections between the different dimensions, thus confirming the third hypothesis of this work.

The most robust result of this work is the impact of absorptive capacity on the four dimensions. Indeed, when controlling for the effects of each dimension on absorptive capacity, it turns out that the latter has a positive and significant influence on it. Thus, and as it was assumed, the individual's innovation in his work allows him to enrich his knowledge, skills, and experience, increasing his capacity for assimilation and transformation of the information into knowledge and thus into practical knowledge. Moreover, innovation in work makes the individual important within his company, allowing him to access hierarchical levels that give him more contact with the different stakeholders and increase his latitude and room for maneuver. Thus, we also confirm the 4th hypothesis.

5. Conclusion

Individual absorptive capacity is a complex construct to study because of the interrelationships linking its different dimensions. Therefore, a quantitative study that does not consider its multiple, often buried, and underlying associations make understanding this phenomenon's reality like a vision through a prism.

This work is in line with this approach, trying to unravel the hidden side of this iceberg, starting from the contributions of the primary studies on the subject and trying to adopt a quantitative methodology to capture, for a while, the main facets of this complex reality. Starting from the problem of determining the contribution of the dimensions of information acquisition, assimilation, transformation, and exploitation to the absorptive capacity, we have concluded that it is mainly the "creative knowledge" dimensions on which the individual absorptive capacity depends. These two dimensions are so called because it is thanks to them that information takes the form of knowledge and then of knowing. We believe our results are pretty robust after using a simultaneous equation modeling that considers the possible endogeneity of the estimated relationships. Indeed, the results confirmed our doubts about the possible reciprocity of the relationship between absorptive capacity and its dimensions and justified the choice of our econometric methodology. In this sense, absorptive capacity emerges as a determinant of the individual's ability to capture, assimilate, transform and exploit information.

The results of our study emphasize the importance of training, convincing professional experience, and motivation for hierarchical or commercial evolution in individual innovation and the development of the company's business.

Moreover, we believe that the main result of this work consists in its revelation of the importance of the evolution and the diversification of the tasks carried out by an individual to enrich his knowledge and experiences, even to make him a person motivated to create, to innovate, more participative and active.

There are some limitations to the results of this work, namely the small sample size and the limit to the tourism sector. It is likely that a better understanding of the absorptive capacity construct would be to study it from a representative number of companies and by controlling for other factors related to the individual's environment (such as the sector of activity, the nature of the company, the distribution of power) or their personality (altruism, curiosity, age, religion).

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