

Capacity and capability. Consequences on market performance of companies in Romania

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Abstract: *Our goal is to increase the Romanian economy's competitiveness through innovation. This research investigates the relationship between absorptive capacity, innovation capability and the performance of firms in Romania. The sample includes data collected from 290 companies operating on the Romanian market in trade, IT&C, construction, manufacturing, transport and storage, financial services and others. Our endeavor demonstrates the hypothesis that the absorptive capacity per se does not have a direct and positive influence on the performance of organizations, but depends on the development of their innovation capabilities, as an important mediating factor of this relationship.*

Keywords: *innovation, absorptive capacity, innovation capability, innovation in Romania, the performance of companies*

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Introduction

Every day, Romania's economy resembles more and more the typical profile of dependent market economies by having an ultra-low quantum of public and private investments in research and development. Apart from a few niche industrial areas in which it excels (IT and automotive), Romania remains, in general, an economy of assembling innovations developed elsewhere. Although Romanian exports have become more complex and diversified, internally it has little to do with research and development. As with other dependent market economies, foreign direct investments have focused on using local labor and incentives offered by governments and neglecting research and development.

1. Absorption Capacity

Absorption capacity is one of the most important research topics in the field of organizational innovation in the past decades (Lane *et. al.*, 2006).

Cohen and Levinthal (1990) define absorption capacity as "companies' ability to recognize the value of new information, assimilate and apply them for commercial purposes." They assume that, like individuals, the absorption capacity tends to grow cumulatively, is dependent on a certain organizational direction and capitalises on the organizational knowledge already present within companies. The researchers believe that the absorption capacity of an organization does not simply depend on the organization - external environment interface, but also on the transfer of knowledge within and between the departments of an organization. The authors argue that the desire of companies to invest in building the capacity of absorption is influenced by the perceived incentives for learning within the environment in which they operate. Cohen and Levinthal suggest that the purpose of technological opportunity varies depending on the amount and the value of knowledge available in the external environment. The more knowledge available and capable to improve the performance of existing technologies, the more companies are encouraged to invest in R&D.

However, recent approaches tend to reduce the focus on R&D and redirect it towards a broader perspective on the dynamic capabilities of firms (eg. internal knowledge transfer, interdepartment collaboration, collaboration between organizations and networks of interaction etc.). With this in mind, Lane *et. al.*, (2006) define absorptive capacity as the ability of a firm for external knowledge obtained through three sequential processes:

1. Recognizing and understanding relevant and quality knowledge available outside the company through explorative learning;

2. Knowledge assimilation through transformative learning;
3. Using assimilated knowledge for creating new knowledge and business results, through exploitative learning.

Lio *et al.*, (2007) have reviewed the literature concerning absorptive capacity and concluded that studies on this concept, which have as starting point the conceptualization of Cohen and Levinthal (1990), can be divided into three main categories:

1. Reconceptualization of absorptive capacity;
2. Development and history of absorptive capacity;
3. The relationship between absorptive capacity and other concepts.

These categories do not have a temporal character, because even nowadays there still are scientific concerns for each level presented. Concerning reconceptualization, Zahra and George (2002) suggest that it should be considered as potential absorptive capacity (acquisition and assimilation of knowledge) and achieved absorptive capacity (transformation and exploitation). Addressing a process type perspective like the one of Zahra and George (2002) requires integration and an efficient exchange of information within organizations as a critical component of this capacity. They are among the first to suggest the dynamic capability approach which consists of a set of routines and organizational processes by which firms acquire, assimilate, transform and exploit knowledge. Similarly, Minbaeva *et al.*, (2003) examine the ability of organizations to use and exploit previously gained knowledge.

Concerning the development of absorptive capacity, Minbaeva *et al.* (2003) also demonstrated empirically that certain specific activities in the field of human resource management have a positive effect on the absorptive capacity of organizations. Furthermore, the study of Lenox and King (2004) explores the role of managers on the development of absorptive capacity by administering a constant flow of information within the organization. The authors demonstrate empirically that managers can positively influence this capacity by provisioning internal information in the sense of specific practical information transfer (*e.g.* within the R&D department) by agents of the firm representing decision makers in adopting new technologies.

2. Innovation Capability

In order to exist and develop, any organization needs a certain set of capabilities (organizational, technological, marketing, etc). But there is no agreement on which of these capabilities ensure the survival and superior performance of companies (Zawislak, 2012). However, in recent years, there is an opinion which tends toward broad

acceptance, that innovation is a critical step for the survival of organizations and has a positive effect on performance.

Samson (1991) classifies innovation in three categories:

1. Product innovation;
2. Process innovation;
3. Managerial and system innovation.

On the basis of the Samson's categories (1991), Tsai *et al.*, (2001) define innovation capability of a firm as to include product innovation, process innovation and management innovation. According to these authors, product innovation means that an organization has the ability to launch new or enhanced products in a given market gaining increased satisfaction from its customers. According to this conceptualization, product improvement and development of new products which improve customer satisfaction is the foundation of product innovation. On the other hand, process innovation is the process by which a company can improve its mode of operation to increase performance (including reduced costs, increased production capacity, etc). Managerial innovation implies the capability of an organization to increase performance through the implementation of new strategies, systems, management methods etc.

3. Research hypotheses

- H1:** There is a direct and significant connection between absorptive capacity and the performance of organizations.
- H2:** There is a direct and significant connection between absorptive capacity and innovation capabilities.
- H3:** There is a direct and significant connection between innovation capabilities and the performance of organizations.
- H4:** Innovation capability mediates the relationship between absorptive capacity and the performance of organizations.

4. Research methodology

As a first phase, we defined the statistical population under investigation. Given the strategic nature of the questions, we have decided that the statistical population included in the survey should be represented only by C-level executives of companies in Romania. The sampling frame was represented by a personally prepared database containing the identification data for 2,000 managers of companies in Romania. Out of the 2,000 people contacted, 290 responded favorably to the request of answering the

questionnaire, representing a response rate of 14.5%, which we appreciate as very good considering the online nature of the survey.

4.1. Scales

For measuring the concepts included in the survey, we used 5 point Likert scales, used by Flatten et. al (2011) for absorptive capacity and Liao and Chen (2006) for innovation capabilities. The scale proposed by McDougall et al. (1994) was used to measure the performance.

4.2. Data analysis plan

When analyzing the statistical data, the main objective was testing the research hypotheses and validating the proposed conceptual model. In order to do the analysis of statistical data, we have followed the steps below:

1. Descriptive univariate and bivariate data analysis.
2. Testing the normality of values distribution of variables - Kurtosis and Skewness indicators were used.
3. Measuring the reliability of scales used - Cronbach alpha coefficient was determined (α).
4. Determination of the factor scores – we verified the possibility of using factor analysis with the help of the KMO indicator (Kaiser-Meyer-Olkin) and the Bartlett test of sphericity. Then, we conducted an exploratory factor analysis for the four scales used to measure the constructs proposed in the conceptual model.
5. Testing validity of constructs included in the research model - validity testing was performed in two ways: convergent validity and discriminant validity (using Pearson correlation coefficient).
6. Research Hypotheses testing - was achieved through structural equation modeling (SEM) using AMOS software program.

4.3. Sample structure

After we have completed the steps related to the validation, compilation and systematization of the questionnaires received, the final size of the sample was 290 respondents, consisting of 53.1% top management executives (eg CEO, Director), 31% middle management (eg Manager) and 15.9% persons occupying another position in the company. Most respondents (42.1%) come from large firms with over 249 employees, 29.7% from medium-sized companies (50-249 employees), 20.7% from small businesses (0-49 employees) and 7.6% from micro-enterprises. Regarding the respondents companies' field of activity, the most common (31.4%) is "other activities

and/or services", 20.3% come from companies which are in the field of commerce and 22.8% come from manufacturing (production). The majority of respondents' companies activate in Romania (57.9%), 31.7% are present both in Romania and in foreign markets, while only 10.3% work mostly on foreign markets, as can be seen in Table 1.

Table 1. The structure of the research sample

Occupied Position	%	Size of Company	%	Field of Activity	%	Operating Market of Company	%
Top management executive (eg CEO, Director)	53.1%	Big enterprise (> 249 employees)	42.1%	Commerce	20.3%	The company operates both in Romania and foreign markets	31.7%
Middle management (e.g. Manager)	31.0%	Medium-sized enterprise (50-249 employees)	29.7%	IT&C	6.9%	The company operates mostly in Romania	57.9%
Another position	15.9%	Small enterprise (0-49 employees)	20.7%	Construction	10.3%	The company operates mostly on foreign markets	10.3%
		Micro-enterprise (0-9 employees)	7.6%	Manufacturing (Production)	22.8%		
				Transport and Storage	1.0%		
				Financial Services	7.2%		
				Other activities and/or services	31.4%		

4.4. Testing the normality of values distribution of the variables

Testing the normality of values distribution was conducted using Skewness and Kurtosis coefficients. Skewness (asymmetry) is the indicator used in the distribution analysis of a series of data to indicate empirical distribution deviation in relation to a symmetrical distribution around the mean, and kurtosis (vaulting) is the indicator used to indicate the degree of flattening or sharpening of a distribution.

The analysis of the results shows that none of the items analyzed or the constructs included in the research model comply with the normal distribution law. Skewness recorded values between -1.17 (<0; distribution is skewed to the right, with more extreme values to the left) and 0.72 (> 0; distribution is skewed to the left, with more extreme values to the right) and Kurtosis recorded values between -1.61 and 0.92 (<3; platikurtic distribution, a distribution flatter than normal, with values dispersed over a longer interval around the mean. The likelihood of extreme values is lower than in a normal distribution).

Since the normal distribution of values is all the more important as the sample size is smaller and it is less important for samples that are approaching or exceeding 100 subjects (condition fulfilled in our case, given the fact that we have a sample of 290 subjects), we considered that the non-normal distribution of data is not a significant impediment to future statistical analyzes.

4.5. Measuring the reliability of scales used with the help of Cronbach Alpha coefficient (α)

For each construct, we demonstrated that the measurement scales used are reliable (Cronbach alpha coefficients for all constructs had values above the 0.7 limit).

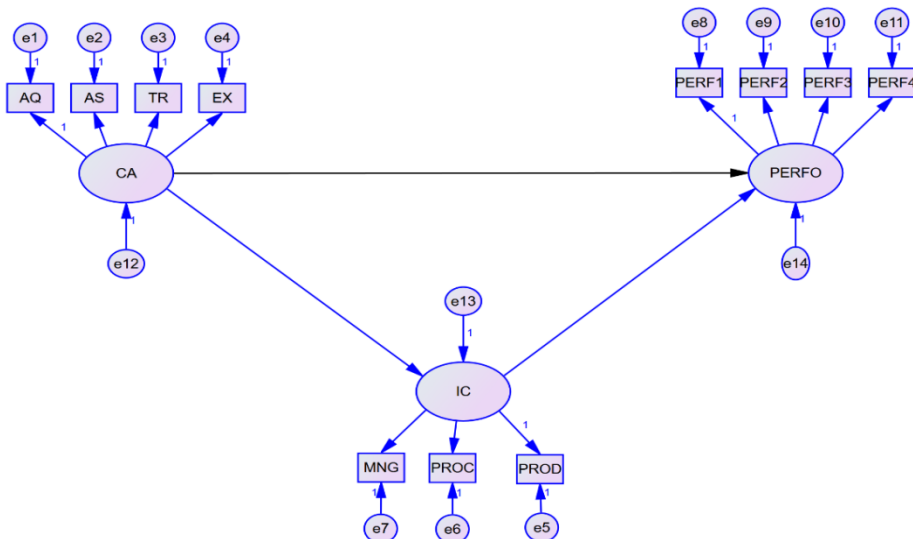
4.6. Discriminant validity testing using Pearson correlation coefficient

Pearson correlation coefficients analysis for each pair variable-construct, points out that in every case they have the maximum value for the correlation between the analyzed variable and the construct it is part of, these correlations also being statistically significant ($p = 0.000$).

Therefore, we can conclude that all research constructs included in the model have a high discriminant validity, being overall valid (have both convergent and discriminant validity).

4.7. The research model

Figure 1. Research model



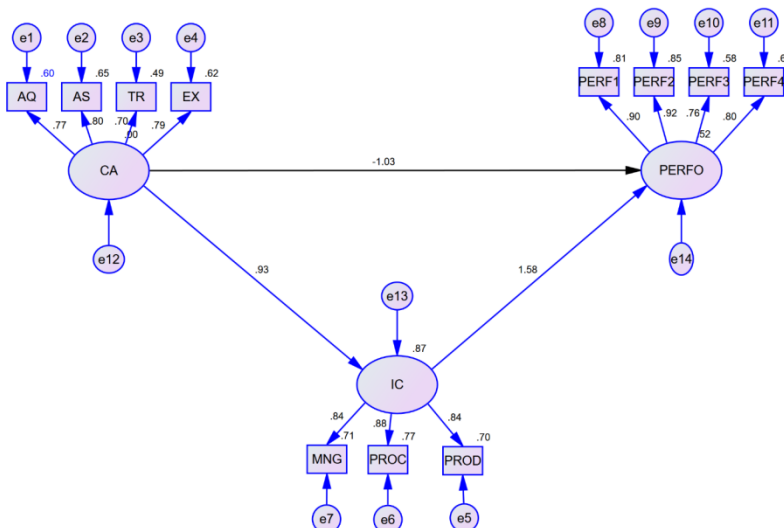
Tabel 2. Items description

Construct/Dimension	Abbreviation
Absorption Capacity	CA
Acquisition	AQ
Assimilation	AS
Transformation	TR
Exploitation	EX
Innovation Capability	IC
Product	PROD
Process	PROC
Management	MNG
Performance	PERFO
Sales	PERF1
Market Share	PERF2
Gross Profit	PERF3
Total Performance	PERF 4

4.8. Model adequacy and standardized coefficients

Analyzing the model in order to establish consistency between it and the observed data, we conclude that the research model can be accepted. Descriptive evaluation indicators for the model have values which indicate an acceptable adequacy thereof: RMSEA = 0.1; CFI = 0.93; IFI = 0.93; NFI = 0.92; TLI = 0.91. Therefore, the research model is consistent with the observed empirical data.

Figure 2. Research model – Standardized coefficients



Conclusions

H1: There is a direct and significant connection between absorptive capacity and organizations performance.

The analysis of standardized coefficients of the direct effect indicate the lack of a direct connection between positive absorptive capacity and the performance of organizations (-1.033). The effect appears to be negative. So, the hypothesis H1 is rejected.

H2: There is a direct and significant connection between absorptive capacity and innovation capabilities.

The analysis of standardized coefficients of the direct effect indicate a significant and strong connection (.93, $p = 0.000$) between absorptive capacity and innovation capability of organizations.

H3: There is a direct and significant connection between innovation capabilities and performance of organizations.

The analysis of standardized coefficients of the direct effect indicate a significant and strong connection (1.58, $p = 0.000$) between innovation capability and performance of companies.

H4: Innovation capability mediates the relationship between absorptive capacity and the performance of organizations.

Although the direct effect between absorptive capacity and the performance of companies indicated the existence of a negative relation between the two constructs, analyzing the indirect effect shows that absorptive capacity has a positive effect on the performance of companies only if this relationship is mediated by the capabilities of innovation. In this case, the effect on performance is high (1.475).

Evaluating the results is essential for drawing some conclusions about absorptive capacity. First, the sample of companies under investigation, has not outlined a positive direct link between absorptive capacity and the performance of companies. For the positive effect to exist, the organization needs to develop innovation capabilities through which the effects and benefits of absorptive capacity to be embodied in products, processes and innovative management strategies which contribute to increasing

organization' performances. Only investing in absorptive capacity without the development of innovation capabilities can have, as our results show, even negative effects.

Research limitations

Although due to the sampling method the result of this research can not be considered representative for all companies in Romania, the survey findings are an important starting point for further research and a strategic source of information for companies and government institutions involved in policies on innovation.

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