The effect of absorptive capacity on business performance with the mediating role of innovation capability and marketing agility

Alireza Omidi[1]

ABSTRACT

In dynamic business environments, companies are constantly faced with the challenges of changing customer demand, intense competition, and technological advances. Today, with the formation of complex competitive environments, only organizations that strengthen their performance in important organizational capabilities such as innovation and agility can continue to operate. The main objective of this study is to investigate the effect of absorptive capacity on business performance with the mediating role of innovation capability and marketing agility. This study is applied in terms of classification based on purpose and is descriptive survey-type research in terms of classification based on method. The statistical population of this study includes senior, middle, and operational managers of Iran Khodro Company, numbering 95 people. The data collection tool in this study was standard questionnaires, whose validity was confirmed through face and content validity and their reliability was confirmed through Cronbach's alpha coefficient and composite reliability. The collected data were analyzed using SPSS and Smart-PLS software and the research hypotheses were examined with the help of structural equation modeling. The results of the research showed that absorptive capacity has a significant effect on marketing agility and business performance.

Keywords: absorptive capacity, business performance, innovation capability, marketing agility

1. INTRODUCTION

Although studies such as the tourism literature have addressed the issue of absorptive capacity, few studies have examined absorptive capacity in detail. The concept of absorptive capacity was introduced by Cohen and Levinthal (1990), who stated that R&D centers improve the firm's capacity to identify, absorb, and exploit new knowledge that it gathers from its environment. Researchers consider agility to be an important dynamic capability (Zahra and George, 2002; Salehi, 2022). This is because they consider it to be a higher-order capability that enables firms to acquire, integrate, and dynamically compete with resources (Cohen and Levinthal, 1990). Absorptive capacity enables firms to identify, collect, analyze, understand, and creatively use external information (Lane et al., 2006) and helps management in building customer loyalty and satisfaction. When the impact of absorptive capacity on production, finance, marketing, customer relations, etc., the overall performance of the listed company is understood, interest in absorptive capacity will be affected. Absorptive capacity refers to the ability of a company to recognize the value of new external knowledge as well as to absorb and commercialize it (Camisón and Forés, 2010).

Marketing agility is defined as the ability of a company to actively anticipate and understand marketing opportunities and to respond quickly and flexibly to these opportunities in order to meet customer needs. (Sharma and Gadenne,

2007) state that the main characteristics of agility are flexibility, responsiveness, speed, culture of change, integration and complexity. There is little study that has addressed the impact of absorptive capacity on the overall performance of the organization. Both absorptive capacity and marketing agility are considered important and vital sources of superior performance of the company in a competitive market (Swafford et al., 2008).

Innovation capability is considered as a common capability. Camisón and Forés (2010) argue that the term "dynamic" distinguishes between conventional capabilities (e.g., the ability to produce new products) and dynamic capabilities (e.g., the ability to modify the way in which a firm develops new products). In this view, innovation capabilities are conventional capabilities because they create value directly by producing new products or services and by changing marketing activities to match the competition. Camisón and Forés (2010) also argue that the resource base (including conventional capabilities) is directly related to revenue/profit, but "dynamic capabilities go one (or two) steps beyond these revenue-generating activities." Similarly, Camisón and Forés (2010) argue that technological innovation capabilities are "the ability to perform any technical function or activity within the firm, including the ability to develop new products and processes and to deploy capabilities effectively and efficiently."

2. LITERATURE REVIEW

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Marketing agility is defined as the firm's ability to proactively anticipate and understand marketing opportunities and to respond quickly and flexibly to these opportunities in order to meet customer needs. Sharma and Gadenne (2007) state that the key characteristics of agility are flexibility, responsiveness, speed, culture of change, integration and complexity. There is little research that has examined the impact of absorptive capacity on overall organizational performance. Both absorptive capacity and marketing agility are considered important and critical sources of superior firm performance in a competitive market (Swafford et al., 2008).

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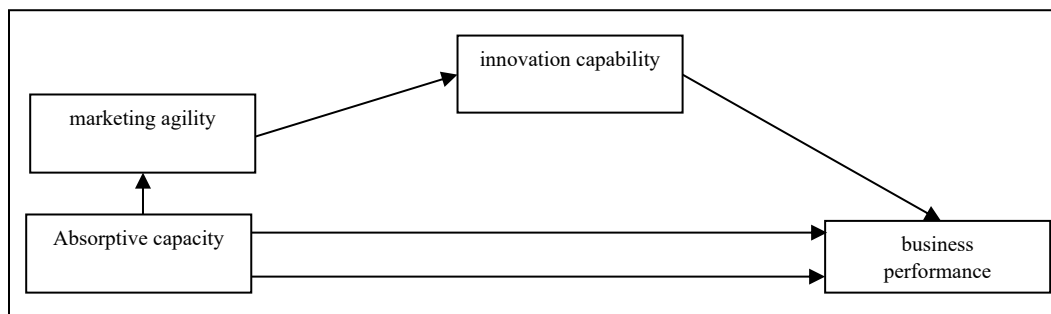

Figure (1): Conceptual model

3. RESEARCH METHODOLOGY

The present study is a descriptive-survey type of research. This study is considered applied research in terms of its purpose. The statistical population of this study includes senior, middle, and operational managers of an automotive company, numbering 95 people. The sampling method in this study was a census, and a questionnaire was distributed and collected among all managers in the statistical population.

The analysis method in this study is descriptive and inferential statistics. Descriptive statistics were used to describe the statistical sample and the status of the research variables in the statistical population. Inferential statistics were used to generalize the research results. The tests used in inferential statistics are: Partial least squares method (implementation of the measurement model and structural model). Smart PLS and SPSS software were used to analyze the data in this study.

In order to verify the reliability of the questionnaire, the Likert scale questionnaire was first distributed among 30 respondents and the Cronbach's alpha coefficient of this experimental stage was acceptable on average for all questionnaires. Using SPSS software, the Cronbach's alpha coefficient was calculated on average for each set of questions related to each research variable and the results are presented in Table (1).

Table (1) Cronbach's alpha coefficients

Variable	Cronbach's alpha coefficient
Absorptive capacity	0.734
Innovative capability	0.709
Business performance	0.783
Marketing agility	0.714

4. FINDINGS

Descriptive Statistics
This section presents the mean and standard deviation of the research variables. The relevant information in the sample under study is shown in Table (2).

Table (2) Mean and standard deviation of research variables

Variables	Minimum	Maximum	Average	Standard Deviation
Absorptive capacity	1.12	5	3124	0.965
Innovative capability	1	4.89	3.259	0.803
Business performance	1	5	3.167	0.790
Marketing agility	1	5	3.288	1.053

Inferential Statistics
Confirmatory Factor Analysis
The measurement models indicate the factor loadings of the observed variables for each latent variable and have been examined through confirmatory factor analysis, which is given in Table (3).

Table (3) Factor loadings of questionnaire questions

Indicators	Absorptive capacity	Innovative capability	Business performance	Marketing agility
Daily search for industry and business information	0.719			
Enhance the use of industry information sources	0.792			
Expect to deal with information beyond the industry	0.823			
Communication of ideas and concepts in a reciprocal manner	0.802			
Emphasis on mutual support of departments to solve problems	0.769			
Regular review of new technologies in accordance with new knowledge	0.697			
Efficient ability to adopt new technologies	0.475			
Rapid flow of information	0.768			
Transferring important information acquired to other units and branches	0.675			
Holding meetings to exchange knowledge of new developments and problems	0.473			
Availability of employees to absorb new knowledge and achieve goals	0.721			
Ability to use and exploit new knowledge	0.589			
Communicate new insights and knowledge successfully	0.803			
Ability to apply new knowledge to new products and services	0.833			
Support the development of prototypes	0.811			

Indicators	Absorptive capacity	Innovative capability	Business performance	Marketing agility
Develop new ideas to help customers		0.845		
Provide new offerings to customers		0.833		
Manage processes to reduce costs		0.825		
Provide solutions to solve customer problems		0.788		
Greater profitability than competitors			0.904	
Higher return on investment than competitors			0.885	
Greater ability to achieve financial goals than competitors			0.815	
Higher sales revenue than competitors			0.792	
Better new customer acquisition than competitors			0.809	
Greater market share than competitors			0.901	
Increase sales to customers compared to competitors			0.881	
Identify early indicators of new market threats				0.747
Be the first to adopt new market opportunities				0.942
Anticipate new opportunities for market growth				0.847
Create new preferences for customers by informing them about new product benefits				0.932

Figure (2) shows the implementation of the research model. This model is used to test the research hypotheses.
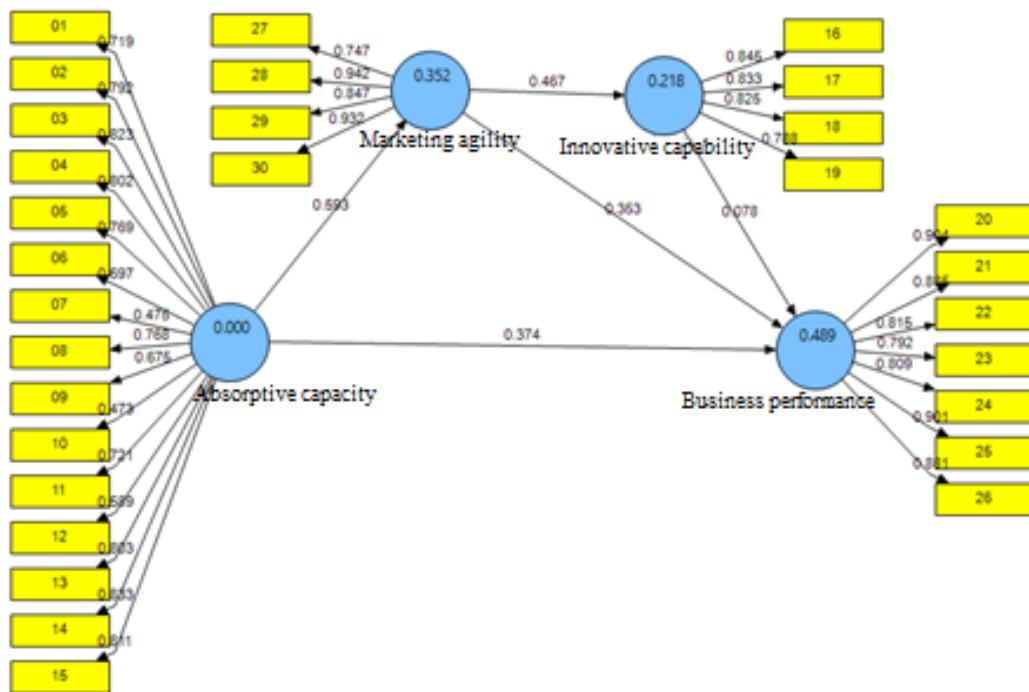

Figure (2) Impact coefficients

Figure (3) shows the significance of the impact coefficients of the research model.
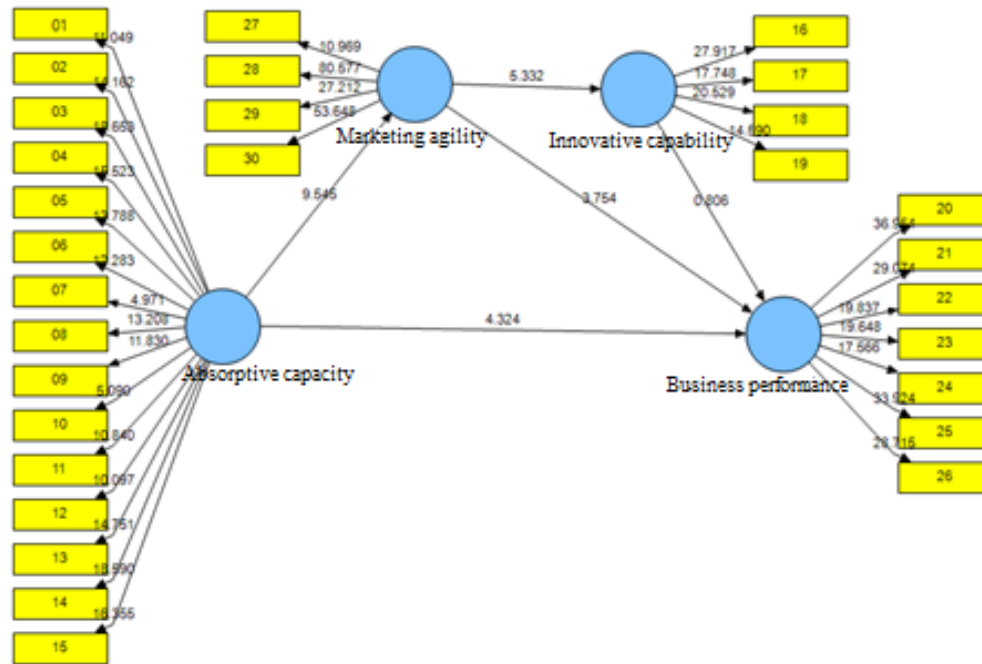
Figure (3) Significance of Effect Coefficients

Fit of Measurement Models
Measurement models indicate the factor loadings of the observed variables for each latent variable and are tested through confirmatory factor analysis. This is done through first and second order factor analysis. Measurement models determine the relationships between observed (measured) variables and latent (hidden) variables. By performing factor analysis, factor loadings are obtained for each latent and observed variable. In this section, the reliability indices of Cronbach's alpha coefficient, composite reliability, convergent validity, and divergent validity are used. Table (4) lists the aforementioned indices.

Table (4) Cronbach's alpha coefficients and composite reliability

Variables	AVE	Cronbach's alpha coefficient	Composite reliability coefficient
Absorptive capacity	0.527	0.936	0.942
Innovation capability	0.678	0.843	0.894
Business performance	0.733	0.939	0.951
Marketing agility	0.758	0.890	0.925

The above table also shows the validity and reliability indices for all latent variables of the study. In this study, the reliability of the measurement models was measured in three ways: factor loadings, composite reliability and Cronbach's alpha. The obtained factor loadings show that all factor loadings are higher than 0.40 and are significant at a significance level of 95%. Composite reliability indices and Cronbach's alpha are used to examine the reliability of the questionnaire, and the requirement for confirming the reliability of these indices is that they are higher than 0.6. All these coefficients are higher than 0.6 and indicate the reliability of the measurement tool. After fitting the measurement models, it is time to examine the structural or internal model of the research.

General Model Fit
There is only one criterion for the fit and validation of the general model, called goodness of fit. The goodness of fit index is between zero and one, and values close to one indicate the appropriate quality of the model. Of course, it should be noted that these indices indicate the ability of the model to predict dependent variables. Values higher than 0.33 are considered moderate fit. This criterion is calculated using the following formula.

$$GOF = \sqrt{Communalities \times \overline{R^2}}$$

Communalities are the common values reported in the software output. According to the software output, the average of the common values (related to the first-order latent variables) is 0.674 and the average of the coefficient of determination of the variables (all endogenous latent variables of the model, both first and second order) is 0.353. Based on this, GOF is calculated as follows.

$$GOF = \sqrt{0.674 \times 0.353} = \sqrt{0.238} = 0.488$$

As can be seen, the overall fit of the model is in good condition.

Investigating the effects of mediating variables

A mediating variable is a variable that acts as an independent variable (exogenous) in one equation and as a dependent variable (endogenous) in another equation. In examining the relationships between variables with the role of a mediating variable, direct, indirect, and total effects should be examined. In this study, we use the Sobel test to examine the significance of the effect of the mediating variable. In the Sobel test, the value of the test statistic is calculated using the following formula, and if the absolute value of this value is greater than 1.96, the significance of the mediating effect of a variable can be confirmed at a 95% confidence level. In fact, the Sobel test examines the indirect effect of the independent variable on the dependent variable.

$$z - Value = \frac{a \times b}{\sqrt{(b^2 \times s_a^2) + (a^2 \times s_b^2) + (s_a^2 \times s_b^2)}}$$

To determine the intensity of the indirect effect through the mediating variable, a statistic called VAF is used, which takes a value between zero and one, and the closer the value is to one, the stronger the effect of the mediating variable. In fact, this value measures the ratio of the indirect effect to the total effect. The desired statistic value is calculated as follows:

$$VAF = \frac{a \times b}{(a \times b) + c}$$

The assumptions of the above formulas are:
a: The value of the path coefficient between the independent variable and the mediator
b: The value of the path coefficient between the mediator and the dependent variable
c: The value of the path coefficient between the independent and the dependent variable
Sa: The standard error related to the path between the independent variable and the mediator
Sb: The standard error related to the path between the mediator and the dependent variable
According to the above, the following table can be set.

Table (5) Investigating the role of the mediator of the research variables

Hypothesis	c	a	b	sa	sb	Sobel	VAF	Indirect	Total effect
Marketing agility => Innovation capability => Business performance	0.353	0.467	0.078	0.088	0.097	0.784	0.094	0.036	0.389
Absorptive capacity => Marketing agility => Business performance	0.374	0.593	0.353	0.062	0.094	3.477	0.359	0.209	0.583

Hypothesis Testing
Table (6) shows the results of testing the research hypotheses.

Table (6) Results of Testing the Research Hypothesis

Hypothesis	t-statistic	coefficient	Results
Absorptive capacity has a significant impact on marketing agility.	9.545	0.593	Accept
Absorptive capacity has a significant impact on business performance	4.324	0.374	Accept
Marketing agility has a significant impact on innovation capability.	5.332	0.467	Accept
Marketing agility has a significant impact on business performance	3.754	0.353	Accept
Innovation capability has a significant impact on business performance	0.806	0.078	Reject
Innovation capability mediates the effect of marketing agility on business performance.	0.784	0.036	Reject
Marketing agility mediates the effect of absorptive capacity and business performance.	3.477	0.209	Accept

5. CONCLUSIONS

The purpose of this study is to investigate the effect of absorptive capacity on business performance with the mediating role of innovation capability and marketing agility. In dynamic business environments, companies are constantly faced with the challenges of changing customer demand, fierce competition, and technological advances. Today, with the formation of complex competitive environments, only organizations that strengthen their performance in important organizational capabilities such as innovation can continue to operate. Carrying out innovative activities provides an inexhaustible source of competitive advantage. Innovative performance is achieved by creating the knowledge needed to develop new products and production processes, or improve existing processes. Organizations rely on innovation to increase productivity and improve their economic situation. Innovation is a complex activity that applies new knowledge for business purposes. Part of this knowledge is obtained from external sources, therefore the ability to exploit external knowledge is a critical factor for innovative capabilities. Knowledge absorption capacity is closely related to dynamic capabilities. This concept refers to a macro perspective that considers the ability of the economy to utilize and absorb external information and resources. In 1991, this macroeconomic concept entered the field of organizational theories and considered absorptive capacity as the ability of an organization to recognize the value of new information from external sources, simulate it, and apply it for business purposes.

Searching for information related to the automotive industry and trade by managers and the research department on a daily basis, and updating all information, this can be taught to employees and managers in briefing sessions so that at the beginning of each day they receive new information related to their department through the Internet and other news tools of the world's automotive companies and, if necessary, share it with other departments or raise it in meetings with managers. Creating a rapid flow of information for this purpose, it is recommended to create internet portals.

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