

## The role of realized absorptive capacity in potential absorptive capacity and business model innovation

### Abstract

Knowledge absorptive capacity can be regarded as an important factor in business model innovation. The objective of the present study was to explore the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation. This is an applied descriptive survey. The population included auto parts manufacturing companies and assemblies of Iran Khodro Company (IKCO). Based on the statistics, about 500 companies currently supply auto parts and assemblies needed for IKCO. Krejcie and Morgan's table was used to determine the sample size in the present study; simple random sampling was adopted due to the limited population. The sample size was estimated at 229. Respondents to the questionnaires of this study included strategy managers concerning the constructs of realized and potential absorptive capacity and engineering managers concerning the construct of business innovation. The standard questionnaire of Miroshnychenko et al. (2020) with a seven-option Likert scale was used for data collection. Partial least squares structural equation modeling was used for data analysis. The results indicated that there is a positive relationship between potential absorptive capacity and realized absorptive capacity. Furthermore, there is a positive relationship between realized absorptive capacity and business model innovation. Besides, realized absorptive capacity plays a mediating role in the relationship between potential absorptive capacity and business model innovation.

**Keywords:** *Potential absorptive capacity, Realized absorptive capacity, Business model innovation, Auto parts manufacturer of IKCO*

**Ali Akbar Salehi,  
Mohammad Sadra  
Damirchi, Nasim  
Darvishvand ,  
Hojjatollah Mousapour,  
Amir Mohammad  
Menhaj**

Department of Business Management,  
Faculty of Management, North Tehran  
Branch, Islamic Azad University,  
Tehran, Iran

Corresponding author :  
[salehi.aliakbar@gmail.com](mailto:salehi.aliakbar@gmail.com)

### Introduction

Digital challenges have forced many companies to adopt more flexible and innovative strategies in their business (Nylén and Holmström, 2019). Companies are willing to obtain business model innovation, which is mainly defined as a change in the architecture of organizational value creation (Brenk, 2020). A comprehensive examination of the chief executive officers shows that business model innovation is considered a fixed source of value creation for companies around the world (Lehtimäki et al., 2019). Accordingly, the leading managers and innovation consulting firms emphasize that business model innovation can make continuous changes to a more sustainable competitive advantage (Clauss, 2018). Therefore, to achieve business model innovation, senior management teams seek organizational resources and capabilities and make use of them efficiently.

The concept of business model innovation is of great importance in universities, too; especially in management research (Hock-Doepgen, 2020). Efforts have been done to understand business model innovation as a process (Schaller and Vatananan-Thesenvitz, 2019) and its relationship with the strategy for advances in business model innovation typologies as well as resolving the consequences of business model innovation performance. However, reviewing the first systematic studies that cover two decades of business model innovation research indicates that they emphasize the available studies have mostly ignored the internal business model innovation factors (Parida et al., 2019). Especially, few studies

have been conducted on whether absorptive capacity and strategic flexibility of a company affect the adoption of business model innovation or not; how?

Absorptive capacity is an important variable affecting strategic flexibility and different forms of innovation. It is vital for the ability of a company to identify, perceive, and use valuable, new, and external information for innovative capabilities (Wang, 2020). Results show that the absorptive capacity of a firm affects its innovation and performance. Absorptive capacity is considered an important predictor constructs for revitalizing the knowledge base of the firm (Yaseen, 2019). The present study believes that firms need to develop their potential and realized absorptive capacity to increase business model innovation.

In the past decade, Iran's automotive industry has faced many problems, some of the most important ones include the loss of the road transport vehicle market including buses, trucks, and vans (ISNA, news code: 96122111546) which led to an increase in accumulated losses of Saipa Diesel, Iran Khodro Diesel, and Zamyad companies and threatened this industry by the risk of bankruptcy (Tabnak, news code: 775425). Besides, regarding the passenger car sector, foreign competitors are slowly increasing their market share over the past several years; If car import tariffs are reduced, car manufacturing companies in Iran will undoubtedly lose a large share of their market, both in the field of work vehicles (buses, trucks, and vans) and in the passenger car sector (GSM site, news code: 36097). Automotive experts believe that not using knowledge

management systems to increase organizational absorptive capacity and not benefiting from product innovation as well as production processes are the main reasons for the poor performance of automotive companies in Iran (Mahmoudzadeh and Boroumand Alipour, 2020). Furthermore, a deep examination of the lack of innovation in Iran's automotive industry indicates that these companies pay less attention to the (potential and realized) absorptive capacity. Reviewing the studies of previous researchers shows that fewer studies have explored the relationship between potential absorptive capacity and business model innovation through the mediating variable of realized absorptive capacity. Hence, the objective of the present study was to explore the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation.

### **Theoretical backgrounds**

#### **Realized absorptive capacity**

The concept of absorptive capacity has originated from macroeconomics and refers to the ability of an economy to use and absorb information from external sources. Levinthal and Cohen (2010) used this concept of macroeconomics in the organization. Absorptive capacity is introduced in the context of dynamic capabilities, which originates from the evolutionary theory of the firms. This capability enables the firms to respond to changes in the business environment. Some researchers believe that absorptive capacity has become one of the most important constructs during the last twenty years because the external sources of knowledge have been greatly taken into consideration. In another similar study, it is mentioned that absorptive capacity is considered a key dynamic capability in knowledge-based competitiveness. The external sources of knowledge are more accessible in modern economies and the dynamic capability that affects firms' ability to target, attract, and expand external knowledge is essential to the firm's internal innovation process and is a key source of competitive advantage. In other words, the firms with a high absorptive capacity are expected to have a better performance compared to their competitors. Various definitions have been presented for absorptive capacity, most of which have described it at the level of the firm. Levinthal and Cohen (1990) define absorptive capacity as the capacity of a firm to value, adapt, and use knowledge from external sources for commercial ends. The approach to absorptive capacity considers it a by-product not only of research and development activities, but also of the breadth and diversity of the organizational knowledge base, its learning experience, common language, the existence of interoperable mediators, and mental models, and the problem-solving capacity of organizational members.

Recently, absorptive capacity has been defined as a vital dynamic capability in knowledge-based competitiveness and many researchers have identified its various dimensions. Prodan and Murovec (2009) conducted a study concerning two different kinds of innovation and introduced two kinds of science-push and demand-pull absorptive capacity. Science-push absorptive capacity is based on scientific information (such as universities, non-profit research institutes, and business research and development institutions) and demand-pull absorptive capacity is based on the market information (such as customers, suppliers, competitors, and professional conferences). Many of the studies in this area agree that absorptive capacity is a multidimensional construct, but they have considered different dimensions for that. Levinthal and Cohen (1990) introduced three dimensions for absorptive capacity in the form of three capabilities. The first dimension is the ability to recognize the value of the new external knowledge. The second dimension is that the firm must be able to adapt to the new external knowledge. It will be easy for an enterprise to adopt new knowledge when the knowledge processing system of both firms is the same. The third dimension is that the firm must be able to commercialize the new external knowledge. Another research used Levinthal and Cohen's definition for absorptive capacity and regarded the same three dimensions proposed by them. However, they emphasized that the first dimension is similar to scientific, technical, or academic knowledge, and is the whatness knowledge section of the knowledge base of the firm. The second dimension is the howness knowledge section of the firm's knowledge base. The third dimension, which focuses on the similarities of firms' business goals, is the whyness knowledge section of the firm's knowledge base. Comison and Fores (2010) specified different dimensions of absorptive capacity and defined each of them. They believed that acquiring the potential absorptive capacity is one of the dimensions of absorptive capacity which refers to the ability of a firm to locate, identify, value, and acquire the external knowledge necessary for its operations and processes.

#### **Business model innovation**

As one of the main advantages for the survival of the corporate market, innovation decreased; the value curve map showed a weakening of their key business distinctions, their activity did not grow enough, the needs of key customers were not met, it was not easy to identify opportunities to reduce costs and make the best use of resources, and things like that, all of which were beyond the ability to focus solely on the types of innovations mentioned (Scott-Kemmis, 2012). Since the business model is a framework for determining the type of activity and how and when to implement it according to the resources and capabilities of the company, it can be used to create value in the form of customer service that can cover all failures.

Moreover, Amit and Zott (2011) found that compared to other kinds of innovation, business model innovation is less expensive, more efficient, and more appropriate in times of capital shortages, for example in times of economic depression. The international studies of International Business Machines Corporation (IBM) in 2006 and 2008 were also conducted among the chief executive officers of the world's top companies; it was shown that in various industries, managers of high-profitable and high-performing firms are looking for how to innovate their business models to improve their ability to create and acquire value. The studies conducted in the area of the business model agree that “business model innovation is the key for the performance of a firm”. The IBM research team conducted studies in 2006 and indicated an increase in the awareness of the necessity of business model innovation. This research showed that compared to the companies with weak performance, high-performing companies have been more successful in implementing their innovative business model. According to this study and subsequent polls, many of the current models of business innovation have been identified as a new strategic distinguisher. Many companies have blind spots in their business concept that prevent them from seeing innovation opportunities in many areas of the business concept. Researchers agree that the business model not only facilitates technological and organizational innovation, but can itself become the subject of strategic innovation to share and enhance the impact of resources such as knowledge, management, and entrepreneurial skills, or rebuild value chains or value networks. From this perspective, the business model is a strategic asset for improving a firm's performance agenda and is essentially leading the innovation and management of the strategic business model of Schaltegger et al. (2011) and a fundamental change in the organizational agenda for doing business. Many companies consider their strategic task, which is the development of competitive advantage, as an issue that needs one or two main plans to ensure its efficiency.

#### **The relationship between potential and realized absorptive capacity**

In an increasingly dynamic environment, management and transformation of the firm's accumulated knowledge are key points. Companies do this by developing their absorptive capacity to maintain their competitive advantage by increasing the company's strategic flexibility and innovation level. According to Zahra and George (2002), absorptive capacity is manifested through the simultaneous presence of four basic factors, two factors are related to potential absorptive capacity (knowledge acquisition and full understanding of knowledge) and the other two factors are related to the realized absorptive capacity (knowledge transformation and exploitation). The realized absorptive capacity can be particularly strong in firms

with organizational mechanisms such as job survival, multi-application relations, and decision-making participation (Jansen et al., 2005). Reciprocally, the organizational mechanisms related to the socialization of capabilities such as communication and socialization tactics promote the realized absorptive capacity. The two dimensions of absorptive capacity are distinguished but complementary roles. Although the potential absorptive capacity enables the companies to discover competitive alternatives for sustainable development, it does not guarantee that the alternatives are followed successfully. Zahra and George (2002) emphasize that “firms can acquire knowledge and perceive it completely, but maybe unable to transform and exploit knowledge to make profit”. Therefore, the acquisition and full understanding of knowledge (potential absorptive capacity) are regarded as the prerequisites for the exploitation of the realized absorptive capacity (Jansen et al., 2005).

#### **The relationship between realized absorptive capacity and business model innovation**

While potential absorptive capacity enhances strategic flexibility, the realized absorptive capacity is manifested in stronger innovation performance. Especially, when the external knowledge is acquired and perceived completely (realized absorptive capacity), this knowledge needs to be transformed and exploited. For example, new insights and consequences enable the firm's true absorptive capacity to innovate and create value through combining the available knowledge with new knowledge and attaching the new knowledge to the performance (Khan et al., 2019). As mentioned in the first hypothesis, the potential absorptive capacity precedes realized absorptive capacity, which drives innovation. The firm's ability to acquire and fully understand new knowledge increases the knowledge base while the ability to transform and exploit new knowledge enables the firm to innovate. Although this conceptual inference is widely accepted, there is limited empirical evidence. Some recent studies have reported that the realized absorptive capacity is followed by exploitative and exploratory innovation, product innovation and green process (Albort-Morant et al., 2018), and creation of new business (e.g., reformulation of strategies, redefinition of businesses). Limaj and Bernroider (2019) found that the path from potential absorptive capacity to innovation is fully mediated by realized absorptive capacity. As far as the information is available, the researchers have less explored the role of realized absorptive capacity in the adoption of the business model innovation. Business model innovation “can spread in a range from gradual changes in individual components in business models, the expansion of the current business model, the introduction of parallel business models, to the deconstruction of the business model, which may potentially require replacing the existing model with a

substantially different one". Therefore, the firm's ability to invent its business model can be strongly dependent on the fact that how efficiently the firm can combine the available knowledge with new knowledge and exploit it to transform, develop, and use the existing competencies or create new competencies by attaching the acquired and transformed knowledge to performance. Thus, it is expected that the true absorptive capacity has a positive effect on the business model innovation.

**Method**

This is an applied descriptive survey. The population included auto parts manufacturing companies and assemblies of Iran Khodro Company (IKCO). Based on the statistics, about 500

companies currently supply auto parts and assemblies needed for IKCO. Krejcie and Morgan's table was used to determine the sample size in the present study; simple random sampling was adopted due to the limited population. The sample size was estimated at 229. Respondents to the questionnaires of this study included strategy managers with regard to the constructs of strategic flexibility, realized and potential absorptive capacity, and engineering managers with regard to the construct of business innovation. The standard questionnaire of Miroshnychenko et al. (2020) with a seven-option Likert scale was used for data collection. The Fornell-Larcker criterion was used to estimate divergent validity.( Table 1)

Table 1. Divergent validity matrix through Fornell-Larcker criterion

	Business model innovation	Potential absorptive capacity	Realized absorptive capacity
Business model innovation	0.78102		
Potential absorptive capacity	0.42356	0.71783	
Realized absorptive capacity	0.51698	0.36089	0.72449

The following methods were used to assess the reliability of the measurement instruments. (Table 2)

Table 2. Cronbach's alpha and composite reliability

Construct	Cronbach's alpha	Composite reliability
Business model innovation	0.90955	0.92590
Potential absorptive capacity	0.76592	0.84246
Realized absorptive capacity	0.85144	0.88712

**Findings**

According to the Table 3, there is a positive relationship between potential absorptive capacity and realized absorptive

capacity. The results showed that there is a significant and positive relationship between potential and realized absorptive capacity ( $\beta=0.822$ ;  $t=46.4638$ ).

Table 3. The relationship between potential and realized absorptive capacity

	Standard coefficients	path SE	Sig. of standard coefficients
Realized absorptive capacity <- potential absorptive capacity	0.822	0.0177	46.4638

According to the Table 4, there is a positive relationship between realized absorptive capacity and business model innovation. The results indicated that there is a significant and

positive relationship between realized absorptive capacity and business model innovation ( $\beta=0.5138$ ;  $t=5.949$ ).

Table 4. The relationship between realized absorptive capacity and business model innovation

	Standard coefficients	path SE	Sig. of standard coefficients
Business model innovation <- realized absorptive capacity	0.5138	0.0864	5.949

According to the results, the realized absorptive capacity plays a mediating role in the relationship between potential absorptive capacity and business model innovation. Baron and Kenny's criteria were used to determine the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation. The results showed:

- a) There is a significant and positive relationship between potential absorptive capacity and business model innovation.
- b) There is a significant and positive relationship between potential absorptive capacity and realized absorptive capacity.
- c) There is a significant and positive relationship between realized absorptive capacity and business model innovation.( Figure 1 & Figure 2)

- d) When the realized absorptive capacity has been introduced to the relationship between potential absorptive capacity and business model innovation, the value of the standard path coefficient has decreased from 0.843 to 0.4282, indicating the relationship between potential absorptive capacity and business model innovation has been obtained through the mediating variable of the realized absorptive capacity by 49.52%. Moreover, the value of 50.48 has been obtained from the direct relationship between potential absorptive capacity and business model innovation. Sobel test was used to explore the significance of the effect of the mediating variable. As seen in Table 5, this value is higher than 1.96, indicating the significant effect of the mediating variable in the relationship between independent and dependent variables.

Table 5. The mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation

	PA -> BMI	PA -> RAC	RAC -> BMI	PA -> BMI mediated by RAC		
				PA -> BMI	PA -> RAC	RAC -> BMI
Beta	<b>0.8483</b>	0.8229	0.8619	0.4282	0.8226	0.5091
SE	<b>0.015</b>	0.0175	0.0155	0.0591	0.0176	0.06
t-value	<b>56.6105</b>	47.0358	55.5615	7.249	46.7733	8.4898
Type of mediation:				Partial		
Sobel Z value: 35.90 significance at $p < 0.000$						

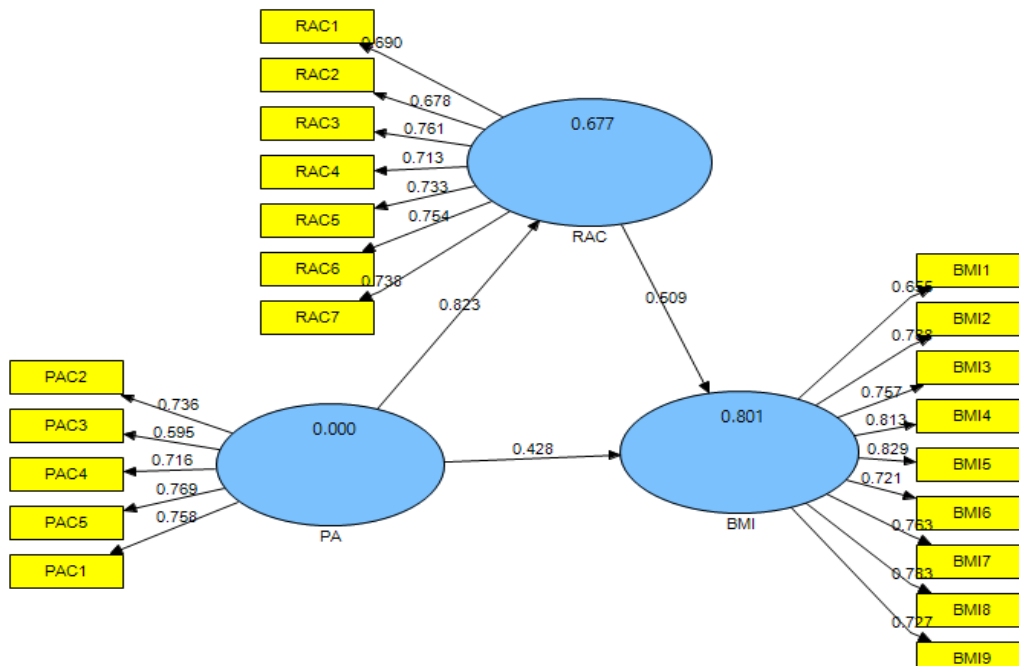


Figure 1. The graphic model of standard path coefficients of the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation

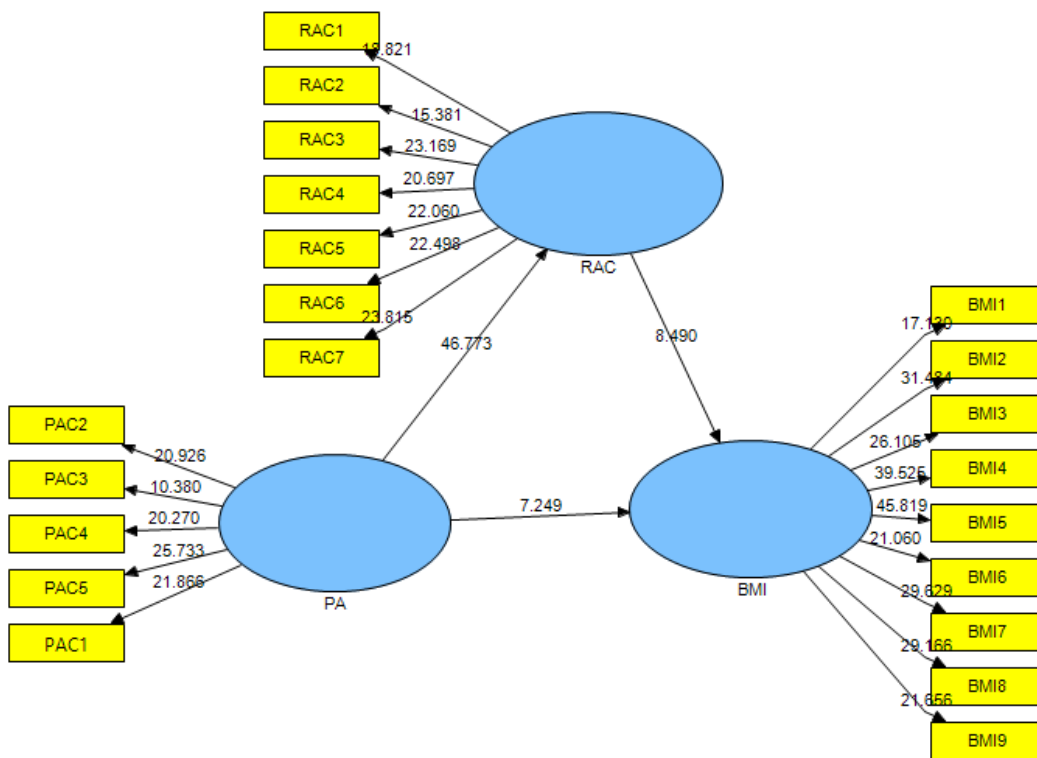


Figure 2. The graphic model of standard path coefficients significance of the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation

### Conclusion

The objective of the present study was to explore the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation. According to the results, there is a positive relationship between potential and realized absorptive capacity. The results indicated that there is a significant and positive relationship between potential and realized absorptive capacity ( $\beta=0.822$ ;  $t=46.4638$ ). The two dimensions of absorptive capacity are distinguished but complementary roles. Although the potential absorptive capacity enables the companies to discover competitive alternatives for sustainable development, it does not guarantee that the alternatives are followed successfully. Researchers emphasize that “firms can acquire knowledge and perceive it completely, but maybe unable to transform and exploit knowledge to make profit”. Therefore, the acquisition and full understanding of knowledge (potential absorptive capacity) are regarded as the prerequisites for the exploitation of the realized absorptive capacity. The results are in line with the results of Zadehgorgan et al. (2020), Mahmoudzadeh et al. (2020), Jafarinia et al. (2019), and Salehi et al. (2019), Tseng et al. (2019), and Chaudhary (2019).

According to the results, there is a positive relationship between realized absorptive capacity and business model innovation. The results indicated that there is a significant and positive relationship between realized absorptive capacity and business model innovation ( $\beta=0.5138$ ;  $t=5.949$ ). In other words, the actual absorptive capacity affects strategic innovation. It can be analyzed that the realized absorptive capacity makes the importance of value creation for customers, attention to creating new markets, considering the mechanism necessary to enter new markets, and identifying and exploiting new competitive opportunities find an actual aspect. These results are in line with the results of Seyyed Ameri and Jamshidi (2019), Mohammadbeygi and Hosseini (2019), Khan and Naeem (2018), and Sooshoun et al. (2016).

According to the results, the realized absorptive capacity plays a mediating role in the relationship between potential absorptive capacity and business model innovation. Baron and Kenny's criteria were used to determine the mediating role of realized absorptive capacity in the relationship between potential absorptive capacity and business model innovation. The results showed there is a significant and positive relationship between potential absorptive capacity and business model innovation. Moreover, there is a significant and



positive relationship between potential absorptive capacity and realized absorptive capacity. Besides, there is a significant and positive relationship between realized absorptive capacity and business model innovation. The value of the standard path coefficient has decreased from 0.843 to 0.4282, indicating the relationship between potential absorptive capacity and business model innovation has been obtained through the mediating variable of the realized absorptive capacity by 49.52%. Moreover, the value of 50.48 has been obtained from the direct relationship between potential absorptive capacity and business model innovation. Sobel test was used to explore the significance of the effect of the mediating variable. As it was observed, this value is higher than 1.96, indicating the significant effect of the mediating variable in the relationship between independent and dependent variables. These results are in line with those of Miroshnychenko et al. (2020). Concerning the results, it is suggested to use the knowledge management system for the optimal use of the new knowledge, permanently explore the usefulness of the new knowledge compared to the available internal knowledge, constantly monitor new knowledge, and develop well-organized programs to use the said knowledge, use certain guidelines to carry out the activities, and record technical points and staff's knowledge as well as transferring them to other processes.

## Acknowledgments

None.

## Conflict of interest

None.

## Financial support

None.

## Ethics statement

None

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