



THE IMPACT OF POTENTIAL ABSORPTIVE CAPACITY AND REALIZED ABSORPTIVE CAPACITY ON EXPLORATORY INNOVATION AND EXPLOITATIVE INNOVATION

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Abstract

Purpose: The objective of this paper is to explore the relationship between Absorptive Capacity, exploratory innovation and exploitative innovation.

Design/methodology/approach: A questionnaire planned as a self-reported summary, which was handed out to administrative personnel in public and private universities in Damascus, with a total sample of 240 respondents.

Findings: The results of this study show that both the potential absorptive capacity and the Realized absorptive capacity affect positively in both exploratory and exploitative innovation, but in different proportions.

Originality/value: This study will contribute in an acceptable way to highlight the effects and role of both the potential absorptive capacity and the Realized absorptive capacity in their role as independent variables and the results of this in innovation in turn as a dependent variable which will be measured by exploratory innovation and exploitative innovation

Keywords: Potential absorptive capacity , Realized absorptive capacity, Exploratory innovation, Exploitative innovation.

Introduction

Organizations facing turbulent and changing environments seek innovation Where the literature is concerned with a set of variables that lead organizations to innovation, the most prominent of which is the absorptive capacity, and with the intensification of competition and the speed of the changes taking place companies need to renew themselves through the exploitation of existing



competencies and the exploration of new competencies and that is consistent with exploratory innovation and exploitative innovation.

Organizations that embrace exploratory innovation seek new knowledge and develop products and services for customers and emerging markets. On the other hand, organizations adopting exploitative innovation build on existing knowledge and expand products and services to clients and existing markets. In this study, we will seek to know the effect of potential absorptive capacity and realized absorptive capacity on exploratory and exploitative innovation.

The importance of absorptive capacity is highlighted as it is viewed as an explanation of the competitive advantage (Cohen & Levinthal, 1990), Innovation (Stock, Greis, & Fischer, 2001), Exploration and exploitation (Lane, Salk, & Lyles, 2001), Although most studies and research have focused on the tangible results of absorptive capacity, absorptive ability has intangible results such as the search for knowledge as well as the transfer of knowledge within the organization and learning, According to Cohen, absorptive capacity is strongly linked to both innovation and product innovation and learning, Consequently, sectors interested in achieving innovative outputs must work to build absorptive capacity, that is, organizations must work to increase their capacity and effectiveness in order to reach those outputs, This requires keeping abreast of new knowledge and exploiting existing knowledge to contribute to both exploration and exploitation, In view of the importance of the educational sector and the challenges it faces in Syria, the importance of absorptive capacity has emerged, which, as we mentioned, is considered a primary axis that affects the outputs of innovation.

Therefore, it was worth the universities to work to create and achieve an absorptive capacity that enables them to keep abreast of developments and changes and enhance its competitive position and achieve the required levels of exploratory and exploitative innovation, The following figure shows the research model including potential absorptive capacity, realized absorptive capacity, exploratory innovation, and exploitative innovation.

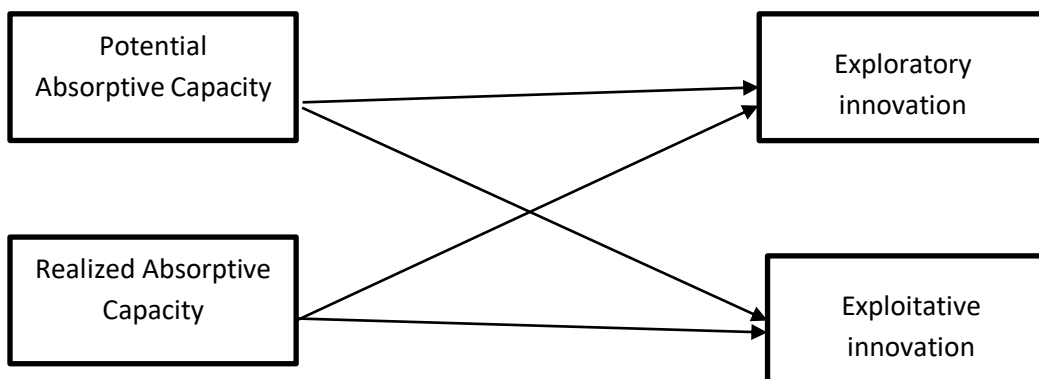




Figure 1a Research Model on Potential Absorptive Capacity and Realized Absorptive Capacity -Exploratory innovation-and Exploitative innovation Literature Review and Hypothesis Development

Absorptive Capacity :

According to Cohen (Cohen & Levinthal, 1990), Absorptive Capacity constitutes the ability of an organization to value and grasp external knowledge and apply the assimilated knowledge for commercial ends. This definition highlights three consecutive steps of absorptive capacity, beginning with the identification of knowledge and then the assimilation of knowledge and finally the exploitation of knowledge for commercial purposes.

(Zahra & George, 2002) then presented another definition and analysis of absorptive capacity and highlighted the absorptive capacity as a dynamic capability in terms of creating knowledge and defined the absorptive capacity, It is a set of organizational processes through which organizations acquire, assimilate, transform and exploit external knowledge to produce a dynamic capacity, (Zahra & George, 2002) emphasized that absorptive capacity consists of two components: potential absorptive capacity and realized absorptive capacity, and these two components of absorptive capacity have different capabilities for creating value. Where the potential absorptive capacity focuses on the ability to acquire and assimilated external knowledge and the realized absorptive capacity focuses on the ability to transform and exploit external knowledge, Although different roles are occupied by both the potential absorptive capacity and the realized absorptive capacity, they occupy an integral role between them. Where organizations cannot exploit external knowledge without acquiring it first, just as it is possible for organizations to lose the ability to transfer and exploit knowledge after they have acquired and successfully assimilated knowledge. Thus, we show the integrative role of both the potential absorptive capacity and the realized absorptive capacity.

According to (Flatten, Engelen, Zahra, & Brettel, 2011) (Zahra & George, 2002) As indicated in many of the literature (Zerwas, 2014) absorptive capacity components can be described as having four capabilities as follows :

- 1- The **acquisition capability**: It is the ability of a company to identify and acquire knowledge related to the company's operations from external knowledge sources
- 2- The **assimilation capability**: It is a firm's ability to develop procedures and processes that allow analysis, processing, interpretation and understanding of external sources of acquired knowledge
- 3- The **transformation capability**: The company's ability to develop and improve routine procedures that facilitate combining existing knowledge with external knowledge acquired and assimilated for future use

- 4- The **exploitation capability**: The company's ability to refine, expand and benefit from routine operations, efficiencies and existing technologies or create new methods by integrating acquired and transferred external knowledge into the company's own operations
- 5-

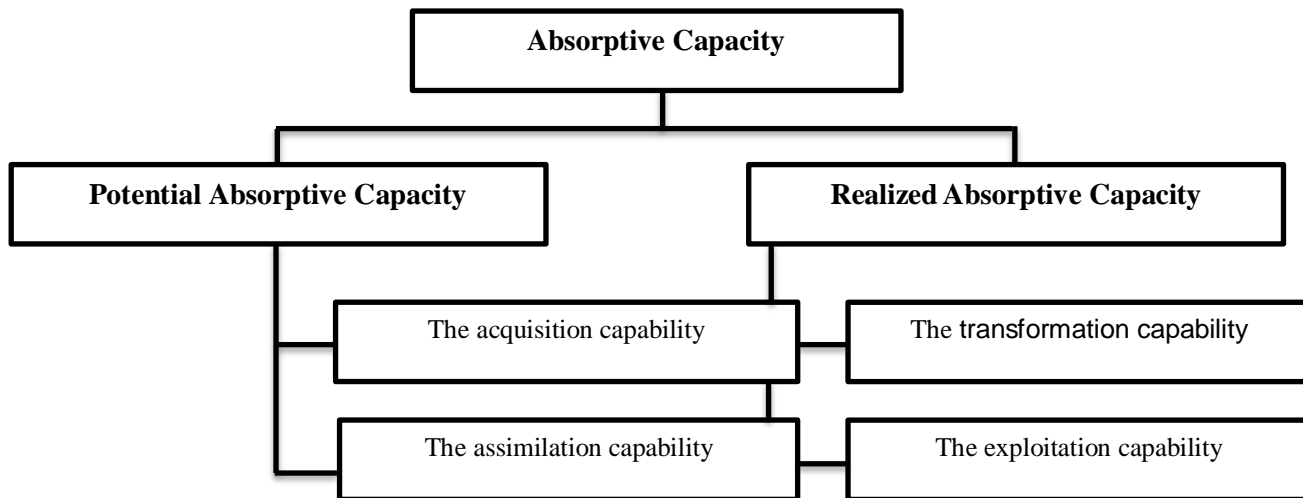


Figure 2 capabilities of absorptive capacity

Exploratory and Exploitative innovation:

Define innovation in literature with a wide range of definitions, we will present two definitions to understand the term innovation , Where (Weerawardena, 2003) defined innovation as the development of new products, production processes, administrative changes, and marketing improvements, In another definition similar to the previous definition, (Damanpour, 1996) defined innovation as developing new products, new services, and new technologies, creating new managerial systems, new plans, and new procedures, As we mentioned earlier, there is a wide range of definitions for innovation.

It should be noted that innovation faces a set of obstacles and challenges, as they identified (Madeira, Carvalho, Moreira, Duarte, & de São Pedro Filho, 2017) A set of obstacles, most notably the lack of a common vision for all members of the organization and focus on the short term and time constraints or the absence of a specific time to generate or develop innovative ideas, the lack of a clear methodology for the innovation process, the absence of adequate understanding of customers, fear of criticism and the absence of training necessary for individuals to motivate them and raise their ability to innovate.



In general, there is a wide range of classifications that have examined the types of innovation, But we will focus in our study on the classification of innovation as exploratory and exploitative innovation.

Where he defined exploratory innovation as Innovations that involve improvements in existing components and build on the existing technological trajectory (Benner & Tushman, 2002) Where he defined exploitative innovation as Innovations that involve a shift to a different technological trajectory (Benner & Tushman, 2002).

In addition to the above, exploratory innovation focuses on increasing deviation and variance from current knowledge and risk, and searching for alternatives, unlike exploitative innovation that focuses on reducing deviation, reducing variation from current knowledge, avoiding risk, and restricting regulations and procedures (Schindler, 2015). The following table(1) helps to understand the difference between exploratory and exploitative innovation

	Exploratory Innovation	Exploitative Innovation
Definition	are radical innovations and are designed to meet the needs of emerging customers or markets	are incremental innovations and are designed to meet the needs of existing customers or markets
Outcomes	new designs, new arkets, and new distribution channels	existing designs, current markets, and existing distribution channels
Knowledge base	require new knowledge and departure from existing knowledge	build and broaden existing knowledge and skills
Result from	search, variation, lexibility, experimentation, and isktaking	refinement, production, efficiency, and execution
Performance implications	distant in time	short-term benefits

table(1) Source: Adapted from (Jansen, Ambidextrous organizations: a multiple-level study of absorptive capacity, exploratory and exploitative innovation and performance, 2005)



Absorptive Capacity, Exploratory and Exploitative Innovation

Based on what (Zahra & George, 2002) (Zahra, Sapienza, & Davidsson, 2006) emphasized, the absorptive capacity is a key dynamic capability, As the dynamic capabilities seek to create innovations to maintain the competitive advantage of the company, In addition, organizations need a necessary external knowledge that is considered to be the basis of the absorptive capacity work, that this external knowledge is important for achieving innovation (Ferrerias-Méndez, Newell, Fernández-Mesa, & Alegre, 2015), There are also many studies that linked absorptive capacity and innovation (innovative performance, product innovation, process innovation) and demonstrated the positive effect in the previous relationship, for example Chen's study that showed the positive effect of absorptive capacity in innovative performance.

Hypothesis

H 1: Potential Absorptive Capacity is positively related to exploratory innovation.

H 2: Potential Absorptive Capacity is positively related to exploitative innovation.

H 3: Realized Absorptive Capacity is positively related to exploratory innovation.

H 4: Realized Absorptive Capacity is positively related to exploitative innovation.

Research Methodology

-Data Collection and Sample:

The private data for the study was collected by distributing the appropriate questionnaire for the study, as it was distributed to a sample of 140 administrative employees in public and private universities in Damascus, Syria, The education sector was chosen because it is considered as a knowledge intensive production sector.

-Measurement:

The questionnaire distributed consists of three sections, the first section covers the demographic information of the respondents, the second section covers the absorptive capacity (potential and realized), the third section covers exploratory and exploitative innovation, Likert format applied 5 points, Results on the scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree.

-Potential Absorptive Capacity and Realized Absorptive Capacity : The Potential Absorptive Capacity and Realized Absorptive Capacity were measured by (Camisón & Forés, 2010) (Flatten, Engelen, Zahra, & Brettel, 2011), This includes 6 items of potential absorptive capacity and 6 items of Realized absorptive capacity, It reported a reliability measure of 0.76 For Potential Absorptive Capacity and 0.79 for Realized Absorptive Capacity

- Exploratory innovation and Exploitative innovation: The Exploratory innovation and Exploitative innovation were measured by (Jansen, Van Den Bosch, & Volberda, 2006), This



includes 5 items of Exploratory innovation and 5 items of Exploitative innovation , It reported a reliability measure of 0.72 For Exploratory innovation and 0.68 for Exploitative innovation

Findings

This study aims to find out the impact The Potential Absorptive Capacity and Realized Absorptive Capacity on exploratory and exploitative innovation, As presented in table (2), model is significant at 5% level ($R^2 = .154$). Table (3) shows the results of the regression analysis regarding the effect of Potential Absorptive Capacity on the exploratory innovation, Table (4) shows the results of the regression analysis regarding the effect of Potential Absorptive Capacity on the Exploitative innovation, Table (5) shows the results of the regression analysis regarding the effect of realized Absorptive Capacity on the exploratory innovation, , Table (6) shows the results of the regression analysis regarding the effect of realized Absorptive Capacity on the Exploitative innovation, Coefficient of Potential Absorptive Capacity is significant and positive for exploratory innovation ($P < 0.05$).thus H1 is supported and Coefficient of Potential Absorptive Capacity is significant and positive for exploitative innovation ($P < 0.05$), thus H2 is supported, Likewise Coefficient of realized Absorptive Capacity is significant and positive for exploratory innovation ($P < 0.05$).thus H3 is supported and Coefficient of of realized Absorptive Capacity is significant and positive for exploitative innovation ($P < 0.05$), thus H4 is supported.

Table(2) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.426a	.154	.141	.62235

a. Predictors: (Constant)

Table(3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Beta	Beta		
(Constant)	.911	.177		5.665	.000
Potential Absorptive Capacity	.489	.92	.232	5.915	.000

a. Dependent Variable: exploratory Innovation



Table(4) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Beta	Beta		
(Constant)	.849	.156		5.872	.000
Potential Absorptive Capacity	.492	.082	.293	6.421	.000

a. Dependent Variable: Exploitative Innovation

Table(5) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Beta	Beta		
(Constant)	.921	.174		7.491	.000
Realized Absorptive Capacity	.514	.079	.186	7.121	.000

a. Dependent Variable: exploratory Innovation

Table(6) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Beta	Beta		
(Constant)	.836	.159		6.889	.000
Realized Absorptive Capacity	.487	.071	.255	7.411	.000

a. Dependent Variable: Exploitative Innovation



Conclusion

Based on the results mentioned previously in the study, the potential absorptive capacity influences significantly and positively on exploratory innovation ($B = 0.232$) at a level of significance ($\text{Sig} \leq 0.001$). This confirms the importance of the potential absorptive capacity in exploratory innovation, and this result is logical. As the potential absorptive capacity is based in its content on the instant and continuous search for external knowledge, as this will automatically result in ideas and proposals that will eventually lead to trying to provide new services and products and open markets that did not exist previously and this is one of the most important pillars of exploration innovation. The results also showed that the potential absorptive capacity influences significantly and positively on exploitative innovation ($B = 0.293$) at a level of significance ($\text{Sig} \leq 0.001$), also. This confirms the importance of the potential absorptive capacity in exploitative innovation. We can explain this result by returning to the university sector, the sample of the research, and we find that the nature of exploitative activities and practices allows for a significant investment in activities and practices of potential absorptive capacity. To complement this idea, the various activities, practices, and operational tasks have always been limited by strict automated instructions and rules, the possibility of incremental improvements is possible and reasonable.

The results also showed that the realized absorptive capacity influences significantly and positively on exploratory innovation ($B = 0.186$) at a level of significance ($\text{Sig} \leq 0.001$). We can explain this result by the realized absorptive capacity based on its practice of transforming the mass of knowledge and its application that helps the university in creating the mass of new knowledge and investing in it in an optimal way. New knowledge in an attempt to introduce new radical innovations completely deviated from existing knowledge, and working to introduce new services, which may prepare to open new markets.

The results also showed that the realized absorptive capacity influences significantly and positively on exploitative innovation ($B = 0.255$) at a level of significance ($\text{Sig} \leq 0.001$). We can explain this result by the realized absorptive capacity based on the dimensions of the realized absorptive capacity and the resulting effects on exploitative innovation, through knowledge transfer practices we find that the knowledge obtained by working to organize it and make it valid and ready for use and benefit from it, all of this helps in introducing small partial incremental amendments and updates, as well as exploiting knowledge through investing in development and modernization processes and its employees in facing various internal and external environmental disturbances all of this would help the university to reach its goal by entering. For incremental improvements to products or services or even improve the current markets serve.



Practical Implications

We can summarize the practical outcomes as follows, the results of the study indicate the importance of potential absorptive capacity and realized absorptive capacity in exploratory and exploitative innovation in universities, and the results of this study are valuable for those in charge of administrative work and decision-making in universities, Therefore, they must work on the causes of the absorptive capacity and adequate understanding of the factors affecting the absorptive capacity, where according to the study of (Charry, Barahona, & Collazos, 2017) pointed to two types of factors affecting the absorptive capacity as internal factors (Investment in R&D, Knowledge level of the firm, Combinatory or relation capabilities, Knowledge diversity of the firm, Innovation culture, Strategic orientation) and as external factors (Environmental Turbulence, Technological opportunities, Externalities or Spillovers, Knowledge features of other Firms, Cultural Diversity, Geographical Diversity, Existence of external knowledge mechanisms, Position in the knowledge network). University management and decision-makers must also work to achieve the dimensions of absorptive capacity from the acquisition of knowledge, the assimilation of knowledge, the transformation of knowledge and the exploitation of knowledge

Theoretical Implications

We can summarize the theoretical implications that, according to the researcher's knowledge, there are few studies that dealt with absorptive capacity with these two types of innovation (exploratory and exploitative).

In addition, according to the country of the study and the research sites devoted to publishing research in the country of study, according to the researcher's knowledge, there are no studies similar to this study, Thus, this study calls for increased interest in such studies that show the importance of absorptive capacity, and this study enriches studies that confirm that absorptive capacity is a precedent for innovations As reported by (Stock, Greis, & Fischer, 2001)

Directions for Future Research

The previous results also showed a positive impact and a direct relationship to both the potential absorptive capacity and the realized absorptive capacity in both exploratory and exploitative innovation, and the model was limited to previous relationships as independent and dependent variables without the presence of modified variables in the model, where there is a set of variables that always limit the ability Organizations have access to innovations such as the study of (Limaj & Bernroider, 2019) who studied a similar model with a modified variable which is the cultural balance. Therefore, we suggest researchers interested in the same field to study the effects of modified variables and how they can affect and change the effects of the Potential and realized absorptive in exploratory and exploitative innovation



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