ASSESSING THE EFFECT OF ABSORPTIVE CAPACITY AND ECONOMIC GRANTS ON INNOVATION: EVIDENCE FROM PERUVIAN MSMEs

Maria Fernanda Ricalde-Chahua[1], Christian Fernando Libaque-Saenz[2]

[1] *Engineering School, Universidad del Pacifico, Lima-Peru, m.ricaldechahua@alum.up.edu.pe*

[2] *Engineering School, Universidad del Pacifico, Lima-Peru, cf.libaques@up.edu.pe*

ABSTRACT

Micro, small and medium-sized enterprises (MSMEs) have been recognized as key players in promoting countries' economic development through innovation. In Peru, 99.5% of the formal companies are MSMEs; however, their efforts to innovate are low, representing just 0.12% of the gross domestic product (GDP). Not surprisingly, Peru is at the bottom of the region in terms of innovation indicators. Then, strengthening these companies' innovation capabilities could have a positive effect on the Peruvian economy. The government has launched some initiatives through Innovate Peru (Peru's national innovation agency) to achieve this goal, but there is no evidence of their impact yet. These initiatives focused on MSMEs aims to build capabilities in these companies. Among the main capabilities to innovate, literature suggests that absorptive capacity (AC) is necessary to acquire, assimilate, transform, and exploit external knowledge for commercial purposes. Accordingly, the present study will assess the impact of absorptive capacity on innovation in the case of MSMEs that received a grant from Innovate Peru. We gathered data from 85 MSMEs that participated in the program 'technological missions' between 2014 and 2016. AC was theorized as a concept made up of three dimensions: external knowledge acquisition (acquire), human resources training (assimilate), and internal R&D (transform and exploit). Preliminary results support that the three dimensions of AC has a positive impact on innovation, while the impact of the innovation grant was found to be non-significant. These results are expected to have both theoretical and practical implications (for Peruvian MSMEs and Innovate Peru).

Keywords: absorptive capacity; innovation; Peruvian MSMEs; public grant

1. INTRODUCTION

The Organization for Economic Cooperation and Development (OECD) recognizes micro, small and medium-sized enterprises (MSMEs) as an engine of inclusive and sustainable economic development, which provides employment and decent work, reduces economic inequality, promotes industrialization, and encourages innovation [1]. In terms of innovation, it can be internally created or adopted, as long as the innovation differs significantly from the company's previous products or business processes [2]. In the case of MSMEs, these companies are characterized by the adoption

of externally generated innovations [1].

An internationally accepted indicator for measuring the degree of innovation in a country is the expenditure in innovation as a percentage of gross domestic product (GDP). The average of this indicator in OECD countries is 2.58% [3]. In these countries, MSMEs represent 99% of all companies [1], while represent between 50% and 60% of value-added products and services [4]. It should be noted that the percentage of MSMEs in Latin America is similar to that of the OECD countries – 99% of all companies; however, they represent only 25% of value-added products and services [5]. In fact, Latin American countries invest substantially less in innovation than the average of 2.58% reached by the OECD countries [3]. In the case of Peru, it is even worse because it is one of the countries that invests the least in innovation in the region, barely 0.12% of GDP [3].

The context described above is important for the economic growth of Peru because in the country 99.5% of formal companies are MSMEs [6]. In order to increase the competitiveness of this type of companies, the National Innovation Program for Competitiveness and Productivity – Innóvate Perú – was created in 2014, becoming the most recent innovation agency in the region. However, MSMEs in Peru still present low levels of innovation – 46.63% of MSMEs did not make any effort to innovate in the period from 2015 to 2017 [6]. This context suggests that there is a great opportunity to grow economically in Peru through the promotion of innovation in MSMEs.

The literature indicates that for a company to benefit from the adoption of an innovation, it requires certain internal capacities that allow it to take advantage of the new product, technology or practice within its organization, and thus generate a sustained competitive advantage [7], [8]. This capacity is known in the literature as absorption capacity, and it is defined as the ability of the company to recognize the value of external knowledge, assimilate it and apply it for commercial purposes [9].

Therefore, the present study aims to analyze the impact of absorptive capacity on innovation in the context of MSMEs that were beneficiaries of Innovate Peru. The results are expected to highlight strategies to promote innovation as a mechanism to improve the competitiveness of Peruvian MSMEs, thus contributing to the productivity of the national economy. Within innovation activities, we will focus on the adoption of technologies, since MSMEs in emerging economies must invest in technological updating processes (technological cath-up) to stay competitive [10].

2. LITERATURE REVIEW

2.1. Gaps in the Literature

From a literature review, we found mixed results regarding the impact of absorption capacity on innovation. Literature review has been divided into 3 sections: 1) studies on absorptive capacity in

sectors other than MSMEs in non-Latin American countries, 2) studies on absorption capacity in sectors other than MSMEs in Latin American countries, and 3) studies on absorption capacity in MSMEs. Regarding the first theme, there are studies that found a positive relationship between absorption capacity and innovation, as in the case of [11], who analyzed 461 general Greek companies from the manufacturing and services sectors. In contrast, other studies found no evidence of a significant relationship. For example, [12], who focused on 138 Finnish companies in the manufacturing, commerce, construction and services sectors.

Regarding the second theme, there are also mixed results from previous research. For example, a reference study is that of [13], which studied the absorption capacity in Brazilian manufacturing companies. In their study, the authors found a significant impact of absorptive capacity on innovation [13]. In contrast, in a study carried out also in Brazil, based on general manufacturing companies, it was found that the assimilation of external knowledge, as a dimension of absorptive capacity, has no effect on innovation [14].

Finally, as for the last theme. Some studies found a positive relationship between absorptive capacity and innovation. For example, [15] used a sample of 215 MSMEs worldwide from knowledge-intensive and labor-intensive industries. In contrast, [16] do not find a positive relationship between absorptive capacity and innovation, based on 403 Colombian MIPYMEs in manufacturing, construction, commerce and services. It should be noted that the latter is the only identified study that analyzes the impact of absorptive capacity on innovation in Latin American MSMEs.

Another field of study related to this study is the role of innovation agencies in the innovation achieved by companies. Studies also show mixed effects of the impact of innovation subsidy on innovation. For example, [17] studied 1,039 German companies in the service sector, finding a positive impact of the subsidy on organizational innovation and marketing. In contrast, there are studies that do not find a significant impact. Is the case of [18], which analyzed 284,662 Swedish manufacturing companies finding that the innovation subsidy does not have a significant impact on long-term business performance. However, to the best of our knowledge there are no studies about this relationship in Latin American countries.

Based on the above discussion, our study seeks to contribute in filling the following gaps identified in the literature review: 1) lack of empirical studies on the role of absorptive capacity in MSMEs' innovation, 2) little evidence about the role of absorptive capacity in companies from developing countries (there are non-conclusive results), and 3) gap in the study of companies subsidized by innovation agencies in Latin American countries, which generates a lack of knowledge about the effectiveness of these agencies in the region.

2.2. Conceptualization of Absorptive Capacity

Absorptive capacity is classified into two groups: potential and realized [7]. The first group is made up of two dimensions: acquisition and assimilation. The objective of potential absorptive capacity is to prepare the company to acquire and assimilate external knowledge. The second group – realized absorptive capacity – encompasses the transformation and exploitation of the knowledge, and reflects the company's ability to take advantage of the knowledge that has been absorbed [7].

3. METHODS

3.1. Variables Measurement

Inovation is our dependent variable. This variable was measured asking respondents to specify, in a 5-point Likert scale, the contribution of the mission in the business innovation [19]. As for the independent variables: 1) Acquisition of external knowledge was measured asking respondents to specify, in a 5-point Likert scale, the degree of external knowledge acquired during the technological mission [19]; 2) assimilation of external knowledge was conceptualized as a dichotomous variable, which measures whether or not the company has carried out personnel training activities [13]; 3) transformation and explotarion was conceptualized as a dichotomous variable, which measures whether or not the company has carried out internal R&D activities [13]; and 4) innovation grant was measured in a 5-point Likert scale with respect to the perception of the respondents about the contribution of economic resources they received from Inovate Peru [17].

3.2. Sample Description

Data were collected from the Innovate Peru database; specifically, from the program of technological missions. This program is a policy instrument that subsidizes local enterprises for visiting international markets and pertners to facilitate technology transference and, subsequently, these companies can commit to technological innovations.

The MSMEs forming the sample were beneficiaries of a technological mission between 2014 and 2016. It should be noted that the Oslo Manual recommends a period of at the least three years to observe effects of innovation activities on business performance [2]. In this sense, the selected time frame is adequate since the survey was conducted in 2019. Our final sample size is 85 MSMEs. It should be noted that the sample responds to a proportional stratified sampling.

3.3. Data Analysis

To assess the impact of absorptive capacity and subsidy on innovation, considering the latter is a metric variable, we will use multiple lineal regression, which is a technique widely used in the innovation field [20].

4. EXPECTED RESULTS

Preliminary results found that all the independent variables referring to absorptive capacity have a positive and significant impact on innovation. However, regarding the impact of the subsidy on innovation, a significant result was not found. Table 1 presents the details of this preliminary results.

Table 1. Preliminary Results of Multiple Lineal Regression

Dependent Variable: Innovation	B	SE B	β	R^2	F
Model				0.523	9.121*
Acquisition	0.592	0.110	0.508*		
Assimilation	0.464	0.214	0.188*		
Transformation & Explotation	0.893	0.333	0.217*		
Subsidy	0.029	0.080	0.034^{ns}		

ns = non-significant; * *p*-value < 0.05

5. DISCUSSION

The present research has limitations, which may lead to future studies in the absorptive capacity and innovation fields. First, the sample size was 85 cases made up of beneficiary MSMEs. While this is an accepted sample size, future studies may seek to expand the sample size. Second, the study has limitations in terms of its external validity because it has only considered Peruvian MSMEs. Through the literature review, it has been possible to verify that empirical studies on absorptive capacity may have different results according to the research context, such as the sector, country, type of company, and size, among other criteria. Therefore, future studies may seek to extend this study to other Latin American economies, in order to validate the generalization of the results. Third, the beneficiary MSMEs of Innovate Peru have been used as the unit of analysis. In a future study, it is possible to analyze both beneficiaries and non-beneficiaries of public funds, and evaluate the impact of absorptive capacity on innovation in each of them. Fourth, the instrument analyzed has been technological missions, which focus above all on the potential absorptive capacity. A future study may seek to evaluate other innovation instruments granted to MSMEs by innovation agencies.

6. CONCLUSION

MSMEs represent the main engine of development, both in developed and developing economies [1]. Likewise, they play an important role in the generation of innovation in an economy [4]. In Peru, 99.50% of formal companies are MSMEs; however, only 46.63% of them innovated between 2015 and 2017 [6]. This context suggests a great opportunity for economic growth through the promotion of innovation in MSMEs, so it is relevant to study the factors that impact innovation in these types of companies.

6.1. Theoretical implications

Since our study focuses on the effect of absorptive capacity and grant on the innovation of Peruvian MSMEs, it is expected that our results help to bridge the three identified gaps in literature: 1) lack of empirical studies on the role of absorptive capacity in MSMEs' innovation, 2) little evidence about the role of absorptive capacity in companies from developing countries (there are non-conclusive results), and 3) gap in the study of companies subsidized by innovation agencies in Latin American countries.

6.2. Practical implications

Our results are expected to help in drawing recommendations for both MSMEs and Peruvian government. In the case od MSMEs, this type of companies may be aware of the impact of each dimension of absortive capacity to focus their resources and strategies wisely. In the case of Peruvian government, it can assess the impact of the grants and resources they are investing through Innovate Peru. Accordingly, the Peruvian government can priorize its efforts in those dimensions that have more impact.

AUTHOR CONTRIBUTIONS

Maria Fernanda Ricalde-Chahua: Collected the data, performed the analysis, wrote the paper.

Christian Fernando Libaque-Saenz: Conceived and designed the analysis, wrote the paper.

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