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The triple helix as a dynamic system for the generation of innovative capacities in MIPYMES*

La triple hélice como sistema dinámico para la generación de capacidades innovadoras en las MIPYMES

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Oscar Mauricio Gómez-Miranda**

ORCID: <https://orcid.org/0000-0001-6658-3403>

Verenice Sánchez-Castillo***

ORCID: <https://orcid.org/0000-0002-3669-3123>

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Abstract

The study aims to identify, within the triple helix, a mechanism that promotes collaboration among businesses, academia, and the government. This mechanism is a dynamic system for generating innovative capabilities in Small and Medium-sized Enterprises (SMEs). The development of this study stems from a qualitative research approach, employing a descriptive methodology along with a document review approach. Among the main findings, it becomes evident that the key characteristics of dynamic capabilities are flexibility, agility, dynamism, knowledge use and management within organizations to generate competitive advantages and business values. It is concluded that interaction with the academic sector and the government generates a positive synergy for SMEs, facilitating support for innovative ideas, resource sharing, transfer of research outcomes, market dynamism, and new trends originating from innovative environments and systems.

Keywords: Dynamic capabilities, Innovation, Innovation systems, MIPYMES

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** Business Administrator by the Universidad Militar Nueva Granada, Colombia. Specialist in University Teaching by the Universidad Militar Nueva Granada, Colombia. Master's degree in Strategic Process Management by the International University of La Rioja, Spain. Teacher and researcher at the Corporación Unificada Nacional de Educación Superior, Colombia. Email: oscar_gomezm@cun.edu.co

*** Agroecological Engineer by the Universidad de la Amazonia, Colombia. Master in Environment and Development by the Universidad Iberoamericana Puebla, Mexico. PhD in Anthropology by the University of Cauca, Colombia. Lecturer and researcher at the Universidad de la Amazonia, Colombia. Email: ve.sanchez@udla.edu.co

Resumen

El propósito del estudio es identificar en la triple hélice, un mecanismo que sirva para el fomento de la colaboración entre la empresa, la academia y el Estado, al presentarse como un sistema dinámico para la generación de capacidades innovadoras en las MIPYMES. El desarrollo de dicho estudio es producto de una investigación con enfoque cualitativo, de tipo descriptivo y con abordaje de una revisión documental. Entre los principales resultados, se evidencia que las principales características de las capacidades dinámicas son la flexibilidad, agilidad, dinamismo, aprovechamiento y gestión del conocimiento de las organizaciones para generar ventajas competitivas y valores empresariales. Se concluye que, la interacción con el sector académico y con el Estado, genera una sinergia positiva para las MIPYMES, a la vez que permite apoyar ideas innovadoras, compartir recursos, realizar transferencia de resultados investigativos, dinamizar el mercado y formar nuevas tendencias que parten de ambientes y sistemas innovadores.

Palabras Clave: Capacidades dinámicas, innovación, sistemas de innovación, MIPYMES

SUMMARY

INTRODUCTION. - RESOLUTION SCHEME. - I. Research problem. - II. Methodology. - III. Writing plan. - 1. Innovation. - 2. Models of University-Business-State relationship. - IV. Research results. - CONCLUSIONS. - REFERENCES.

Introduction

The arrival and development of Information and Communication Technologies (ICTs) led to an increase in the supply of goods and services (Rodríguez-Torres, 2021; Rodríguez-Torres, 2022) in business markets due to the need for constant innovation. It turned knowledge and technology into inputs for the maintenance and growth of companies and elements of greater impact on nations' economic and social development (Ginés-Mora, 2004).

This development was mainly evidenced in the '60s of the last century when knowledge came to be considered an economic resource, which involved the need to start talking about the information society as an engine of transformation (Machlup, 1962). However, it was not until Drucker (2011) coined the concept of the knowledge society, which, together with the promotion of innovation processes, shaped the thinking of the current collectivity, which sought to bring investments to commercial applicability that was profitable (Romero-Rodríguez, Ramírez-Montoya, Aznar-Díaz & Hinojo-Lucena, 2020).

This new knowledge society developed rapidly in some countries and gradually in others, guided mainly by the level of interest, prioritisation of resources and development of each region (Pece, Simona & Salisteanu, 2015). Thus, the main environmental actors were tasked with absorbing the responsibility of stimulating and working together to achieve sustainable development, which, in turn, would respond and contribute to their benefits. These actors included universities, businesses, states and society. In today's contexts, universities have a role as higher education systems to assist in the production of research and the generation of rigorous science and technology knowledge that can be applied, transferred and replicated.

Likewise, the university has the role of responding assertively, coherently and flexibly to the needs of society, countries and the productive sector that are part of the demands of the knowledge society, which produces a tripartite sense, in which there is the spatial, reaching any geographical area through the use of ICTs (Ernst & Haar, 2019); the temporal, due to its permanent vocation (Seoane-Pardo, García-Peñalvo, Bosom-Nieto, Fernández-Recio & Hernández-Tovar, 2006); and access, due to the search for an increase in the annual percentage

of young people enrolled in universities after secondary education (Hernández & Pérez, 2017). Thus, universities in the knowledge society would go from being closed and unidirectional agents to generating open and participatory knowledge units.

Alongside universities, companies are the main entities for satisfying the needs and demands of society. Thus, organisations, whether public or private organisations, seek the means to improve their efficiency and competitiveness, where innovation has become one of the main resources to differentiate and offer socially responsible solutions (Hao & He, 2022).

For its part, the State has played the role of driving public policies by prioritising resources and key economic sectors for the development of countries. In this way, it has become one of the main articulators and drivers of innovation systems based on collaborative work (Lawton-Smith & Leydesdorff, 2014).

Given this scenario, the need arises to foster the relationship and communication between the actors above. Thus, the objective of the research was to identify in the triple helix a mechanism that contributes to the promotion of collaboration between business, academia and the State by presenting itself as a dynamic system for generating innovative capabilities in Micro, Small and Medium Enterprises (MSMEs). It is worth mentioning that, in the case of Colombia, these types of companies currently represent 99.50% of the business fabric, of which 1.5 million are micro-enterprises (La República, 2022). Likewise, a descriptive study was conducted using a qualitative approach and a documentary review.

Resolution scheme

1. Research problem

Can a mechanism be identified to foster collaboration between business, academia and the state?

2. Methodology

For its execution, a qualitative, descriptive research approach was implemented, with an approach derived from a documentary review. In this way, the objective was to identify a mechanism in the triple helix that would contribute to the promotion of collaboration between business, academia and the State by presenting itself as a dynamic system for generating innovative capacities in MSMEs.

The methodological structure of the research comprised two stages. The first stage addressed the understanding of the problem, its justification, and the documentary review that supported the basis of the study in the theoretical framework. For this purpose, an exhaustive search was carried out on university extension, innovation and the evolution of university-business-state relationship models. For this construction, academic articles from national and international indexed journals were used as a basis and books and reports where statistics from recognised and reliable entities were found.

Once the theoretical framework had been structured, the second stage of the research process began. This stage consisted of a review of successful cooperation cases and their analysis. A search was conducted for information collection in indexed databases, including Scielo, Web of Science, Redalyc and Scopus.

Thus, based on the information obtained, the analysis was carried out, which focused on the review of successful cases of the triple helix relationship and the identification of the most

representative strategies in order to meet the proposed objective and generate key, timely and effective strategies that fit the case of MSMEs.

3. Writing plan

3.1 Innovation

Innovation has been one of the most analysed topics in the economic literature, mainly due to its identification as a key factor of differentiation at the microeconomic and macroeconomic levels; it plays a fundamental role in all economic activities of a country, including the so-called traditional ones (Jian, Fan, Zhao & Zhou, 2021).

In the 20th century, price was the main attribute determining product purchase. However, the accelerated development of ICTs led to a shift from a basic and centralised market to a globalised and flexible one, making it an increasingly competitive and complex environment. Today, consumers no longer make decisions based on price alone but also involve their differential needs, expectations and desires. Therefore, organisations cannot remain static (Kodama, 2019) but must start from innovation to generate positioning and recognition against their competitors (Porter, 1990), which involves adaptation, as well as change management and understanding the needs of a diverse and multicultural society (Fontalvo-Barrios, Luckert-Beltrán, Martínez-Puentes, Olivella-Suarez & Cantillo-Guerrero, 2013).

However, not only existing companies are interested in innovation since a country's competitive and economic development is based on creating companies (Fontalvo-Barrios et al., 2013) and on their ability to create, generate knowledge and satisfy society from more efficient environments. Thus, implementing and understanding the concept of organisational innovation is complex (Jordán-Sánchez, 2011) because innovative companies must possess different attributes, including the ability to develop or improve new products or services, adapt to market changes and respond effectively to new behaviours and technologies (Fontalvo-Barrios et al., 2013).

Innovation has been understood as the improvement of something that already exists or the creation of something new that seeks commercial applicability. Therefore, business innovation can occur in processes, products, structures (organisational) and marketing so that it can be generated in any area and level of the organisation (Palacio-Fierro, Arévalo-Chávez & Guadalupe-Lanas, 2017; Hermundsdottir & Aspelund, 2020). In this way, innovation has different levels, depending on its degree of development and applicability.

Likewise, when referring to innovation, its focus has been associated with companies, but this is not its only approach, and it can, therefore, be classified within a three-level framework: the macro level of the country and the environment; the intermediate level of companies; and the basic level made up of individuals. These dimensions generate that innovation becomes part of the culture in a society, a capacity in the companies and a characteristic in the competitive environment of the countries. Therefore, when worked on in harmony, they can contribute to a society being more entrepreneurial and able to develop a competitive advantage to be an active part of the global market (Vesga, 2008). In this sense, the potentiation of human talent, companies and the macro context is required.

3.2 Models of University-Business-State relations

Globalisation has changed how all the environment actors interact, moving from unidirectional communications to dynamic and complex environments that support comprehensiveness and are based on bidirectional communication (Kpolovie & Lale, 2017). Thus, the trend in universities globally is to join the openness proposed by interconnectivity through the generation and transfer of knowledge and innovation (Soria-Caiza, Álvarez-Toscano, Guerrero-Espinosa & Crespata-Barriga, 2020).

Therefore, the knowledge produced through a rigorous scientific method supports the theoretical basis for all actors who intend to get involved in the processes of research, development and innovation - R&D&I, which generates that they become fundamental factors of competitiveness for companies (Soria-Caiza et al., 2020). In addition, it generates responses to the problems of the most vulnerable communities, facilitating inclusion processes (Sampedro-Hernández & Díaz-Pérez, 2016), as is the case of crowdfunding, which entrepreneurs and investors can use.

In this scenario, the challenge for universities is based on modifying and adapting their rigid and centralised structures to move towards a flexible strategy, with open communication and openness towards generating alliances with different social and business actors (Awasthy, Flint, Sankarnarayana & Jones, 2020).

Consequently, to respond to these needs, universities have implemented research results transfer offices - OTRIs, which are administrative units created to channel and facilitate the relationship processes between the actors interested in working together, as well as to establish strategies to guarantee the transfer of research results and identify trends in social and business needs, in addition to providing advice on the processes of protecting developments (Alvarado-Moreno, 2018).

For their part, companies identify opportunities in universities and research centres to promote competitiveness and strengthen innovative culture (Macias-Urrego, Valencia-Arias & Montoya-Restrepo, 2018) through strategic alliances that make it possible to share resources and experiences, set common goals, and increase the chances of survival in a predatory and changing environment.

In this dynamic environment, states have become involved in implementing public policies in favour of productivity, innovation and research to foster integrality and collaborative work between actors in order to generate environments that contribute to the social and economic growth of countries (Alshumaimri, Aldridge & Audretsch, 2010). It, in turn, has made it possible to approach a solution to the problems that affect citizens in a cross-cutting manner.

In this way, relationship models have emerged that explain the behaviour of the actors according to the degree of involvement and cooperation between the state, academia and business (Barrios-Hernández & Olivero-Vega, 2020). Among the main models, the following are identified: Sábato's Triangle, described by Sábato & Botana in 1968; Innovation Systems (IS), conducted by Lundvall in 1997; the Triple Helix Model, explained by Etzkowitz & Leydesdorff in 2000; and the Tetra Helix Model (Saltos-Briones, Odriozola-Guitart & Ortiz-Torres, 2018).

The Sábato Triangle identifies the state, universities and companies as actors that must work together to promote countries' economic, social, technological and scientific development. Thus, the state channels and stimulates efforts using resources and generates the prioritisation of economic sectors in public policies. Based on this regulation, universities produce developments and processes of research and innovation to transfer the results to companies, as

these organisations need to improve their productivity and offer innovative products and services to consumers (García-Mogollón, Gualdrón-Guerrero & Bolívar-León, 2013).

On the other hand, it involves the same practitioners as the Sábato Triangle. However, the university's responsibility can become secondary, as it supports the research centres throughout the process (Londoño-Pineda, 2014). Therefore, the main role of innovation is assumed by companies through their capacity to generate investments and developments focused on collaborative work with other organisations and long-term relationships. At the same time, the state continues with the role of articulator of the system from a political and legal environment. Thus, innovation systems can have a local, regional or national scope, depending on the needs of companies and the prioritisation of economic sectors by the state (Pineda-Márquez, Morales-Rubiano & Ortiz-Riaga, 2011).

Finally, the Triple Helix Model, like the Sábato Triangle, identifies universities, companies and the State as actors with the same level of importance; however, in the Triple Helix, the actors tend to promote dynamic relationships and collaborative work through openness and permanent interaction for the benefit of knowledge and innovation, which allows one actor to take on the role of the other in a flexible way for the benefit of innovation. In this way, universities with an entrepreneurial approach and spin-offs appear, this modality being a company that derives and results from a research project to generate real applicability (König, Suwala & Delargy, 2021).

In general, the Tetra Helix Model is the natural evolution of the Triple Helix, so it starts from the same bases and approaches the actors from the same angle. However, it adds society as an important factor in the innovation processes. In this way, it not only proposes solutions to economic problems but also addresses social phenomena, where society is represented by communities or non-governmental organisations (Olvera-Torres, Luna-Fernández, Martínez-Espinoza & Ortiz-Cabrera, 2019).

4. Research results

In the globalised reality, MSMEs must be aware of the factors that help ensure their survival in the face of environmental changes. Thus, process and product innovation at the strategic level are variables that the organisation must manage to improve its competitiveness (Vivas-López, 2013).

The management of organisational innovation can be approached according to innovative capabilities and assets developed through methods, activities and business processes to obtain a competitive advantage, a product of the reconfiguration of available resources. By analysing these capabilities, each organisation has a potential that can be fostered and developed (Appio, Frattini, Petruzzelli & Neirotti, 2021).

Thus, the dynamic capabilities that help foster innovation are differential activities, methods and processes, and therefore, not only involve the know-how to fulfil the company's function but also the way to rethink and reorganise resources to make a strategy better and unique, as well as a company structure (Aguilar-Zambrano & Yepes, 2006).

Dynamic capabilities are anchored to information and knowledge management, so they contemplate not only economic resources but also the willingness to take advantage of the resources that are present in the environment, such as the possibility of strategic alliances with the education sector and the government sector, through systems that promote innovation (Serrano-Moya, 2012).

The main ones responsible for managing innovative capabilities in MSMEs are the managers, as those responsible for top management (Vivas-López, 2013). Thus, it is understood that innovative capabilities are not the product of luck or sporadic events generated only by employees but can be based on structured and planned processes from the management, which support and encourage unique and innovative activities (Rodríguez, 2022; Rodríguez, Marichal & Martin, 2022).

Therefore, top management is responsible for identifying dynamic capabilities to generate planning on these, which allows their sustainability over time (Čiutienė & Thattakath, 2014). Innovation must, therefore, be part of both the corporate culture and the company's formal structure, i.e. it must be embedded in the protocols, values and indeed in all the elements associated with the strategic planning and governance model.

The innovative capabilities of any organisation can be classified as null, nascent, developing, standardised and improved. Null are those that are not present within the company at any scale. The nascent ones perceive minimal characteristics of the variable. Developing applies when the capability has shown a positive evolution since its identification but has yet to be consolidated as a crucial variable in the organisation. Standardised capability is routinely developed and clearly defined within the company. Finally, improved capability refers to an activity, method or process, which is a competitive advantage factor and, therefore, a differentiating factor compared to other organisations.

Consequently, dynamic capabilities are in constant evolution, which is why they are different from the static resources of the company, in which, through the experience of the organisation and the knowledge and relationship with the environment, the need for continuous learning is promoted, so that the resources are more efficient and unique, differential and superior processes to those of the competition are generated (Cohen & Levinthal, 1990).

In this sense, dynamic capabilities for MSMEs can be presented and developed at the operational, middle hands, administrative and integral or organizational levels. So they can be given at any level, according to their needs (Khouroh, Sudiro, Rahayu & Indrawati, 2020). These capabilities are realized through the integration of the administrative structure, available resources, market knowledge and management vis-à-vis the actors present in the environment and relevant to the organization (Martelo-Landroguez, Barroso-Castro & Cepeda-Carrión, 2011).

Thus, from the identification of the resources that the company had available or could access, continuous improvement was sought by modifying the business structure, the change in the understanding of strategic planning and its subsequent development in the operational part in order to offer innovative goods or services with greater value to the customer (Miranda-Torrez, 2015).

Table 1 presents the definitions and some tools to promote the main dynamic capabilities in MSMEs. These include constant analysis of the environment, analysis of internal capabilities, investment in research, networking, inter-firm collaboration, human capital management, knowledge management, constant learning, business diversification, risk management, threat management; and reconfiguration of capabilities (Pavlou & Sawy, 2011).

Table 1. Dynamic capabilities for the relationship with the environment

DYNAMIC CAPACITY	DESCRIPTION	TOOLS TO BE IMPLEMENTED OR PROMOTED IN MSMEs
Analysis of the environment	Identification of new trends and market niches, analysis of competition.	- PESTEL. - MEFE matrix. - Porter's 5 forces analysis. - Benchmarking. - Stakeholder analysis.

Internal analysis	Knowledge and use of resources, administrative and organisational structures.	<ul style="list-style-type: none"> - SWOT. - MEFI matrix. - Analysis of the business model: mission, vision and values.
Research	Development of research processes and prioritisation of resources to obtain competitive advantages.	<ul style="list-style-type: none"> - Observation of the environment. - Conduct market research. - Create an interdisciplinary team of professionals. - Establish process management.
Networking	Creation and management of formal and informal networks.	<ul style="list-style-type: none"> - Attendance at academic and scientific events. - Review of online communities. - Identification of OTRs in the region close to the company.
Collaboration and integration	Joint work between the different actors in the environment and their correct articulation.	<ul style="list-style-type: none"> - Approach university research centres to identify opportunities. - Generate two-way communication channels.
Knowledge management	Relationship between the use of current knowledge and its articulation with new knowledge. Part of the intangible assets.	<ul style="list-style-type: none"> - Identification and valuation of intangible assets. - Appropriation of knowledge to avoid its loss. - Protection of the investment made by the company.
Continuous learning	To perform feedback and evaluate the processes to improve them according to the new knowledge developed and acquired.	<ul style="list-style-type: none"> - Canales formales de retroalimentación. - Capacitación constante hacia los empleados. - Evaluación del aprendizaje a nivel individual, colectivo y organizacional.
Human capital management	Processes of attraction, selection and retention of human talent with differential skills.	<ul style="list-style-type: none"> - Career plans. - Training and development plans. - Welfare at work.
Business diversification and entrepreneurship	Search for new opportunities to diversify investments while maintaining the articulation between the base business and the new ones.	<ul style="list-style-type: none"> - 360° analysis of the business. - Business plan. - Partial or total purchase of a company. - Merger with companies that are part of the value chain.
Risk management	Cost-benefit analysis of possible new investments or activities, processes or methods modifications.	<ul style="list-style-type: none"> - Control matrix. - Financial analysis. - Decision tree. - Probability and impact matrix. - Ansoff matrix and PTM.
Threat management	Analysis and preparation for threats present in the environment through managing internal and external resources.	<ul style="list-style-type: none"> - Analysis of the organisation's capacity for restructuring in the face of environmental threats. - What if analysis. - Checklist.
Reconfiguration of capabilities	Developing new resources or innovative processes creatively by rethinking existing ones.	<ul style="list-style-type: none"> - Brainstorming. - Delphi method and prospective analysis. - Ishikawa diagram - Process modulation. - ERIC matrix and strategic canvas. - Tree of knowledge.

Source: own elaboration based on Pavlou & Sawy (2011).

Table 1 shows a compendium of tools to promote dynamic capabilities. These tools have varying degrees of commitment and complexity for their adaptation; however, any MSME could use them since they can be adapted to limited resources, especially economic and human resources. Therefore, part of the decision and interest of the organization in the selection and prioritization is based on identifying strategic planning priorities, understanding that not all of them can be covered from the beginning.

As shown in Table 1, MSMEs must fully understand their business model to identify their value creation proposal. It is understood as the potential to satisfy the customer by meeting their needs and expectations, generating innovative processes that seek efficiency and

obtaining a competitive advantage that is not easily adopted by the competition (Nagles-García, 2014).

Thus, eliminating activities that do not add value to the customer is also involved within the dynamic capabilities due to continuous improvement and flexibility. It generates a constant analysis to take advantage of the opportunities presented by the environment from the knowledge of internal resources and the ability to anticipate market movements from an environment of productivity to generate an accurate decision-making process.

By identifying the scope of its resources and the opportunities in the environment, the organization can take advantage of tangible and intangible resources through activities, processes and innovative methods. However, when referring to knowledge management, identifying information is only the first step since it is necessary to generate appropriation, protection and promotion of the cycle above.

The appropriation of knowledge means that the organization does not depend only on an innovative person but that the human talent is harmonized with the corporate structure and culture, which entails the survey, recording and systematization of processes. In this way, protection is a mechanism to preserve the investment made, which is done through patents, confidentiality contracts or industrial secrets. On the other hand, retention is equivalent to economic and welfare incentives to avoid the flight of the best human talent. Finally, promotion is the sustainability of the innovative culture anchored to the company's strategic planning and structure.

Thus, from the part of human talent, criteria are involved from the attraction and selection of personnel to hire people articulated to the innovative culture of the organization. In addition, retention processes involve constant training, including innovation and creativity, as well as flexibility in the functions of workers to make decisions based on the increase in autonomy.

Likewise, as already mentioned, the organization is responsible for identifying the innovative capabilities that exist in the company and their degree of development. In this way, it seeks to take advantage of the resources available to the organization to increase efficiency and innovation (Vivas-López, 2013). However, one of the main limits of MSMEs is the scarcity of tangible or intangible resources. In this scenario, the relationship with stakeholders takes on special relevance as a form of leverage that allows the creation of partnerships to share resources, experiences and knowledge.

In this sense, adaptable and flexible organizational structures must be generated to the market conditions and the environment's main actors in order to facilitate innovation, as well as the relationship and the maintenance of relationships. It impacts changes in the face of rethinking and rethinking available resources (Nieto-González & Crecente-Romero, 2019).

Thus, MSMEs can implement their structure to generate research and development processes, which involves a greater investment of their resources or taking advantage of existing structures that facilitate the relationship with stakeholders. Therefore, the key lies in the willingness and understanding of seeking mutually beneficial relationships.

Externally, this situation may involve concepts of collaborative work, such as competition, which encourages cooperation among some of the same competitors to create value for the client and the organizations themselves. As well as with the academic sector and the State. The first step is establishing a communication process for organizations facilitating the relationship, known as OTRIS-Offices, for transferring research results. These units tend to stabilize at the university level in order to serve as an articulating entity between the theoretical and the practical, so its function is the articulation between the research capacities of the academic

sector and the demands of society or the business sector (Nieto-González & Crecente-Romero, 2019).

In addition, States have also generated their own offices to foster relationships. At the Colombian level, MSMEs can have contact with OTRIS supported by Colciencias, which performs functions of articulation, support for the development of business plans, advice on intellectual protection, valuation of the developments generated, training on the market and its main function, the connection between actors to transfer technology (Ardila-Correa & Gómez-Ramírez, 2022).

Therefore, MSMEs, in dynamic innovation systems, become actors who, based on their needs and problems, guide the public policies generated by the State in economic matters, and where, in turn, they receive a transfer of the developments generated from research centres (Gutiérrez-Ossa, 2014). Thus, each actor works dynamically to establish successful collaborative relationships that can be maintained over time (Lyu, Wu, Hu & Huang, 2017).

In this context, among the main variables for these relationships to be successful, and from a business approach, as shown in Table 2, MSMEs must have flexible structures, formal communication channels, negotiation capacity, reliable contact networks, generate negotiation processes that seek the gain of all parties and a clear definition of the type and scope of the relationship.

Thus, MSMEs should strengthen their dynamic capabilities, first internally and secondly from those variables that facilitate knowledge and relationships with the environment, where the decision to generate alliances is based on the willingness of senior management and the ability to develop an analysis of the opportunities present in the environment. Thus, the economic constraint should not be analyzed as a negative variable that makes it impossible to generate alliances, but rather, through relationships and collaborative research processes, which is a way to make up for the scarcity of resources, reduce costs and improve innovation processes.

Table 2. Business variables for the UEE relationship

STRUCTURE	COMMUNICATION	NEGOTIATION	TYPE OF RELATIONSHIP
Generate flexible structures with a research culture that responds to the environment's needs.	Existence of formal and two-way communication channels.	Seek mutually beneficial relationships for both parties.	Assess and recognise the existence of risks inherent to R&D&I processes.
Hire staff with emphasis and experience in research and knowledge of the environment to facilitate relations.	Clear, open, sincere, constant, simple and articulated language between the practical and the theoretical.	Articulate the company's interests with the academics to generate common objectives.	Identify external actors researching areas of interest to companies and the social, political and economic context.
Harmonise educational and organisational dynamics (educational holidays and the need for agile development).	Understanding that the way of working and communicating is different among the actors. Therefore, the productivity peaks of each of the actors must be communicated and harmonised.	Generate a joint work agenda with interests, types of contributions, scope and goals. Therefore, planning should be based on the proposed objectives.	Define the type of collaboration, which can be collaborative work from the outset or only receptive to developments.
Allocate resources for networking, which can be financial, inputs, staff or time.	Do not create false expectations towards the actors involved; rely on trust in relationships.	Establish long-term relationships that involve the actors from the beginning of the R&D&I processes.	Relationships may include co-financing of projects, equipment loans, and personnel exchanges.

Define processes to evaluate lessons learned and best practices.	Be aware of the existing financial and tax incentives that apply to companies.	Generate contracts that clarify the positions, scope and commitments of each actor.	Maintain commitment and motivation for collaborative work.
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Source: own elaboration based on Paredes-Frigolett (2016).

Conclusions

The main characteristics of dynamic capabilities are flexibility, agility, dynamism, and using and managing the organizations' knowledge to generate competitive advantages and business value. Likewise, it is concluded that constant learning in MSMEs is a cornerstone to improve processes and enhance them based on experience, training and knowledge updating. It allows evaluation of the permanence of the processes, methods and activities developed in the company. The above invites the structure of formal feedback activities and functions in order to stimulate and prioritize continuous improvement.

Likewise, it is identified that the great opportunity for MSMEs is to move to an analysis of external opportunities, which allows them to interact with actors outside the company to overcome their limitations and thus enhance their own tangible and intangible assets. Thus, interaction with the academic sector and the State generates a positive synergy for MSMEs, as it allows them to support innovative ideas, share resources, transfer research results, dynamize the market and generate new trends based on innovative environments and systems. It means greater economic participation, flexibility and adaptability for MSMEs because of their commitment to openness and a dynamic relationship with the actors that are part of the environment.

Finally, in future research, it is advisable to consider analyzing the variables that can increase the relationship between the main actors in the environment, especially in MSMEs' openness to the environment. In this context, society plays a participant and relevant actor in innovation systems.

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