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## Dynamic adaptive capacities that influence the export process of metal-mechanical SMEs in Barranquilla: A case study

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### Abstract

The capacity for adaptation expresses that it responds to a cyclical process that determines the survival of the different business organizations through systemic thinking, shared vision, models and the mastery of personnel. The objective of the article is to describe the dynamic capacity for adaptation in the export process of SMEs in the metalworking sector in Barranquilla, based on a positivist, descriptive and non-experimental investigation. The sample was made up of 4 SMEs from the metalworking sector in Barranquilla, which made it possible to establish that this dynamic capacity supports the development of competitive advantages based on organizational learning. It is concluded that these companies consider external variables in order to maximize management processes. Indeed, since the ability to adapt is a variable that responds to the characteristics of each organization, it is suggested to develop introspective experiential studies whose objective is the analysis of the influence that this dynamic capacity exerts on the competitive development of SMEs, supported by the moderating effect of organizational learning.

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## 1. Introduction

It should be noted that the characteristics of the markets immersed in today's society have demonstrated the need for an approach that would allow organizations to develop a competitive position through the manipulation of intangible assets derived from information and knowledge. This scenario laid the foundations for the emergence of the school of dynamic capabilities, which, according to Garzón, seeks to generate value through the creation, expansion, protection, improvement and maintenance of the organization's intangible resources. In this sense, the aforementioned author establishes the capacity for absorption, adaptation, innovation and learning as the necessary elements for the generation of competitive advantages [1].

With regard to adaptive capacity, Senge states that it responds to a cyclical process that determines the survival of different business organizations through systemic thinking, shared vision, models and personnel mastery [2]. In this way, several authors state that as from this dynamic capacity, the different business organizations under study are capable of supporting the materialization of institutional objectives through the knowledge generated and acquired [3, 4, 5].

In Colombia, this type of corporate organization has been characterized by supporting the national economic system from the different sectors that make it up; a demonstration of this is detailed in the article developed by Triana, Medina and Rodriguez, because it is considered that 90% of the country's business force is characterized by being small and medium-sized [6]. Similarly, Hernández, Marulanda and López believe that there are currently more than one million SMEs in the country, which together contribute 50% of the Gross Domestic Product (GDP) and 70% of job opportunities [7]. Regarding the metal-mechanic sector, Trujillo and Iglesias [8] established that of the 9135 institutions dedicated to the industry, 17.7% developed operations from this fragment of the Colombian economy. Another aspect of vital importance is the fact that this type of business organization is capable of contributing 13.5% of Colombia's gross production, 11.2% of VAT, 36.5% of net investment and 15% of the total number of personnel employed in the national industry as a whole.

In the case of the SMEs that make up the structure of the Colombian metal-mechanic sector, Trujillo and Iglesias state that in 2009, 94% of the business organizations in this sector had characteristics that allowed them to be classified as Small and Medium-sized companies. This type of business organization represents 55.6% of the employed personnel, 38.4% of the gross production, 32.3% of the value added and 23.7% of the net investment of the entire sector [8]. Due to the importance of adaptive capacity for the generation of knowledge bases to support innovation strategies, and the relevance of SMEs immersed in the metal-mechanic sector for the equilibrium of any current economic system, it is considered relevant to identify the practices incorporated in the dynamic adaptive capacity present in the export process of SMEs in the metal-mechanic sector in Barranquilla.

## 2. Methodology

The research is based on the positivist paradigm, since it aims at verifying, contrasting and verifying the research data in a factual manner, with the support of quantification tools for the validity of the results. Taking into account that it is developed in a social scenario, it is defined with a non-experimental transectional design, as a descriptive research, a detailed and systematic analysis of the object of research is carried out, represented by the dynamic capacities of adaptation, in the exporting process of the metal-mechanical companies of Barranquilla [9, 10].

In order to respond to the purpose of the study, a non-probabilistic sample has been selected by expert criteria, derived from the universe of companies in the metal-mechanical sector of Barranquilla, with a first inclusion criterion corresponding to the target population which are the SMEs of the sector and a second inclusion criterion in which the study has been focused within the segment of SMEs with current processes of exporting activity. Thus, the sample is made up of (4) Cases of SMEs of the Metal-mechanic Sector of Barranquilla with current processes of export activity.

The instrument is structured and collects quantitative information; it was designed and validated by the criteria of expert judges. It consists of (30) items on a frequency scale with (5) grades. For the design process, the theories that serve as support for the construction of the theoretical framework and some validated instruments whose content obeys the object of study were reviewed. Subsequently, the instrument was adjusted, taking as a reference the observations made. The reliability was established on the basis of Cronbach's Alpha indicator, which yielded an

index of 0.983 out of 30 items, which provides evidence of the consistency of the instrument in the analysis of the central variable, which corresponds to the practices incorporated in the dynamic capacity of adaptation in the export process of the SMEs of the metal-mechanic sector in Barranquilla.

### 3. Results

Initially, it can be observed that in the SMEs of the metal-mechanic sector in Barranquilla, the most strengthened practices correspond to the use of optimizing strategies in the relationship (cost-benefit), flexible use of the organization's installed capacity to respond to market needs and the development of innovative tactics to compete in export processes, while the main difficulty is in the development of market intelligence systems to face problems and unforeseen events (See Figure 1).

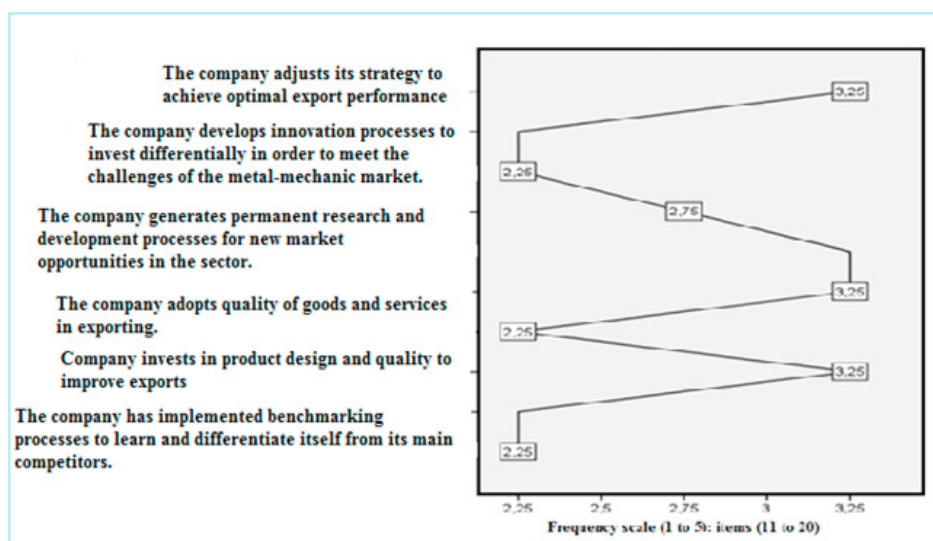


Fig. 1. Practices incorporated into dynamic adaptive capacity No 1.

Similarly, Figure 2 highlights as strengths the use of adjusted strategies to optimize export processes, the investment of resources to permanently improve the design and quality of products and the strategic management of resources. This allows inferring the existence of institutional policies aimed at identifying environmental conditions that merit the reconfiguration of the organization's resources and capabilities.

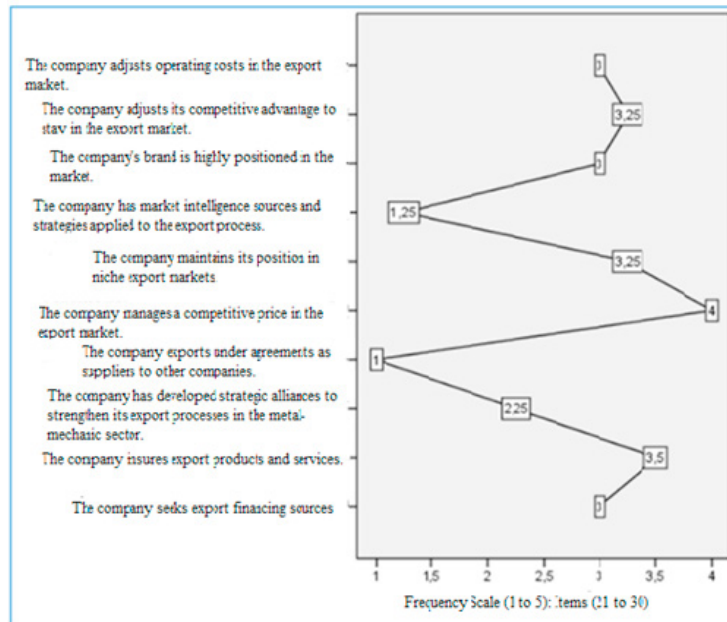


Fig. 2. Practices incorporated in the dynamic adaptive capacity No 2.

On the other hand, Figure 3 highlights as the main practices of dynamic adaptive capacity, the generation of competitive prices, quality assurance in products and services, positioning and the development of strategies aimed at maintaining a competitive advantage within the market niche.

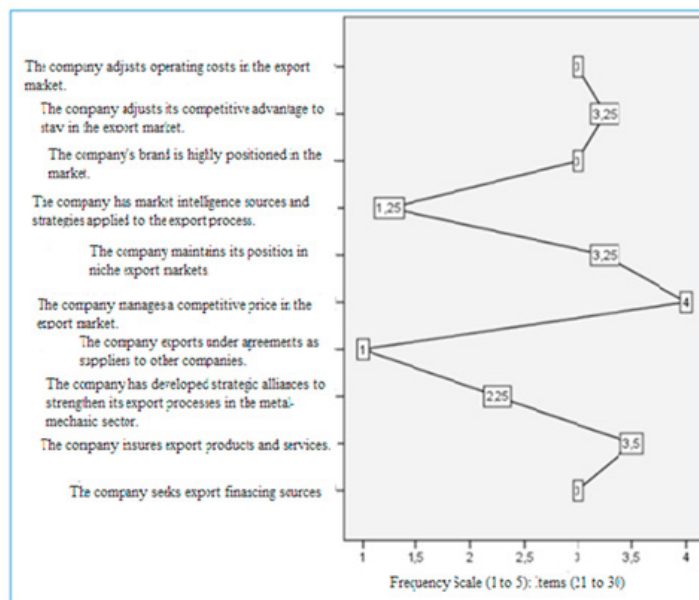


Fig. 3. Practices incorporated into the dynamic adaptive capacity No 3.

From the results, it is highlighted that the main characteristics of the level of development correspond to organizations with a traditional and hierarchical structure with an autocratic management and decision-making system, which implement innovation and market development strategies, with flexible strategies adjusted to the needs and processes, formulating contingencies to respond to the difficulties of the export process and oriented to the development of leadership and positioning in their sector, while the main shortcomings are congruent with the scale of practices in relation to the development of their market intelligence systems and the generation of adaptive multifunctional processes for the development of management processes and efficient and timely decision making.

#### 4. Discussion and conclusions

In coherence with the problem under study, regarding the need to analyze the current situation of incorporation of Dynamic Adaptive Capacity practices in the export process of SMEs belonging to the metal-mechanic sector in Barranquilla, the results are convergent with the contributions of Hernández et al. when they highlight the opportunity that companies have to formulate and implement expansion and differentiation strategies that position them as active competitors with dynamic adaptive capacities to face the challenges and risks of the environment [5].

In addition, the results allow characterizing the different levels of development presented by each of the (4) Colombian SMEs in the metal-mechanic sector, in terms of their dynamic capacity for adaptation in terms of their strengths, weaknesses, threats and opportunities in the face of the challenges and difficulties that they permanently assume within the export processes, based on the contributions of authors such as Teece, Wang and Ahmed and Nonaka and Takeuchi [11, 12, 13]. In this sense, it should be noted that the dynamic capacity for adaptation establishes an intrinsic relationship with the processes of learning, development and organizational growth, as suggested by different authors [14, 15].

On the other hand, it is reflected that the companies that have installed capacity for the export process have incorporated elements of innovation within their processes in the value chain and have established some organizational flexibility strategies that allow them to optimize their cost benefit ratios, product design and technological innovation oriented to quality and results in the management of their export processes.

However, it is also observed that the SMEs present some difficulties in relation to the development of a market intelligence system that allows them to have control and follow up strategies to solve the challenges and problems inherent to the export process. In addition, it is evident that some of the organizations maintain a certain level of rigidity in their administrative model for decision-making, which affects the permanent development of the dynamic capacity for adaptation.

Finally, resource management assumes a rationalization scheme to maintain a cost-benefit balance, with some limitations, especially with regard to investment in innovative processes, which becomes a barrier to the development of new adaptive strategies for the organization. This aspect is consistent with the traditional tendency of SMEs in their hierarchical structures in terms of governance, administrative management and especially the limitations in the decision-making processes.

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