

THE COMPETITIVENESS OF ANDALUSIAN METAL-MECHANIC SMEs: A QUANTITATIVE MODEL

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The current economic crisis has caused a significant negative tendency in revenues and a notable reduction of the average size of firms in the Andalusian metal-mechanic sector, which is one of the most important in Spain. In this context, the University of Sevilla and the Andalusian Institute of Technology have collaborated on a research project - financed with ERDF funds by the Ministry of Economy, Innovation and Science - to obtain a model which quantifies the importance of the factors that are relevant for competitiveness in this sector. This model provides useful information for political and business decision-making. The main findings of this work are reviews in the paper “Exploratory analysis of the competitiveness of SMEs in the metal-mechanic sector in Andalusia”, published by the DYNA Management Journal.

The paper develops and verifies an explanatory model of the competitiveness of Andalusian SMEs in the metal-mechanic sector. A model has been worked out from Michael Porter’s theoretical framework of competitive advantage. In this model competitiveness depends on strategy, organisation and innovation, as well as financial and human resources, collaboration with suppliers, networks and other agents of the value chain and, finally, the conditions of the sector’s demand and competition (Figure 1).



Figure 1. Theoretical model of competitiveness

The methodology developed has allowed: 1) the synthesising of the total set of explanatory variables noted in a more parsimonious model of 13 latent variables or explanatory constructs via the analysis of structural equations, 2) the quantifying of competitiveness as a latent variable or construct made up of 5 basic dimensions or proxies (extension of the market, firm productivity or profitability) and 3) to calculate a multiple regression with the 13 explanatory constructs and competitiveness as a variable to be explained.

The final empirical model, shown in Figure 2, has been statistically validated (p -value $< 1\%$ y $R^2 = 0.47$) using a sample of 80 prominent firms in the sector. The normalised coefficients that appear in the figure indicate the influence of each of the model’s explanatory constructs on competitiveness. The significant coefficients (p -value $< 5\%$) appear in bold and are marked with a “Q” when the construct has a quadratic

component. Likewise, the weights of the proxies calculated in order for competitiveness to be explained to the maximum by the explanatory constructs appear in the figure's central pentagon.

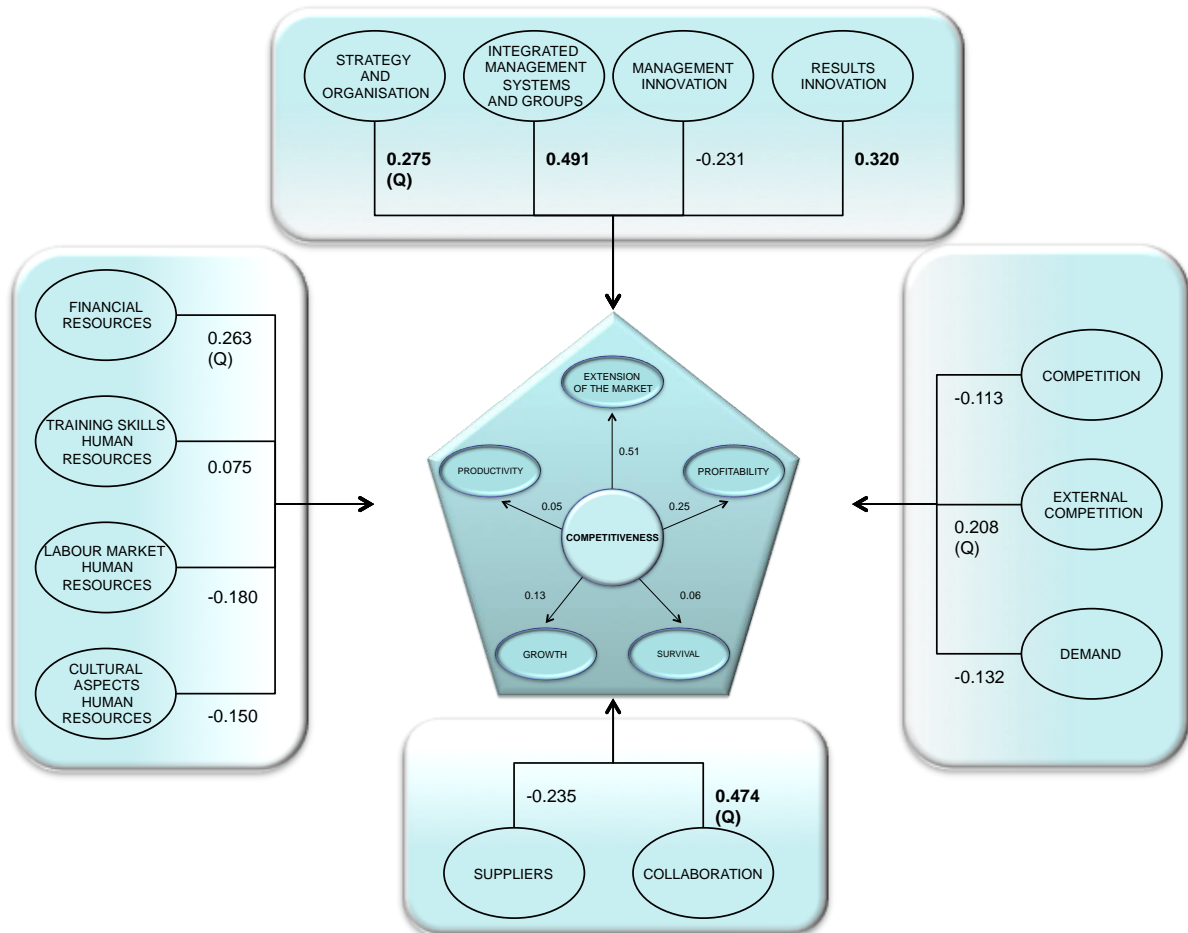


Figure 2. Empirical model of competitiveness of the SMEs of the Andalusian metal-mechanic sector

According to these results the competitive SMEs of the Andalusian metal-mechanic sector mainly tend to have a national and international market and obtain financial profitability. They are also characterised by a moderate growth tendency and, to a lesser extent, by their survival and productivity. Likewise, the value of the normalised coefficients and the composition of each explanatory construct allow the carrying out of proposals which favour the level of competitiveness of these SMEs. Regarding the explanatory factors, it can be concluded:

First. Setting up quality, residue and environmental management systems notably contributes to increasing competitiveness. The fostering of rationalisation in the management of the firms, especially an official quality certificate, influences their competitive advantage in a clearly positive way.

Second. Collaboration with suppliers, distributors, business networks and other firms of the sector also significantly rewards competitiveness. A clear orientation towards the market is paramount to generating competitive advantage in this sector.

Third. Increasing the level of innovation helps competitiveness, especially so when the innovation is in products. The orientation towards innovation radicalness in organisations creates a competitive advantage in the sector.

Fourth. The aspects of organisation and strategy which facilitates the competitiveness of organisations are their employees having a moderate level of autonomy. This is to be compatible with the supervision and control that are characteristic of a simple structure and the specialisation and differentiation of the products.

Finally, there are other contributing factors which have less influence on competitiveness, such as the importance of self-financing and, curiously, the low influence of the regulated training of the staff. Moreover, it is to be highlighted that the most competitive firms are located in specific, less hostile environments, compete in differentiation and are able to manage the complexity of the environment and its provisioning. Figure 3 provides a final synthesis.

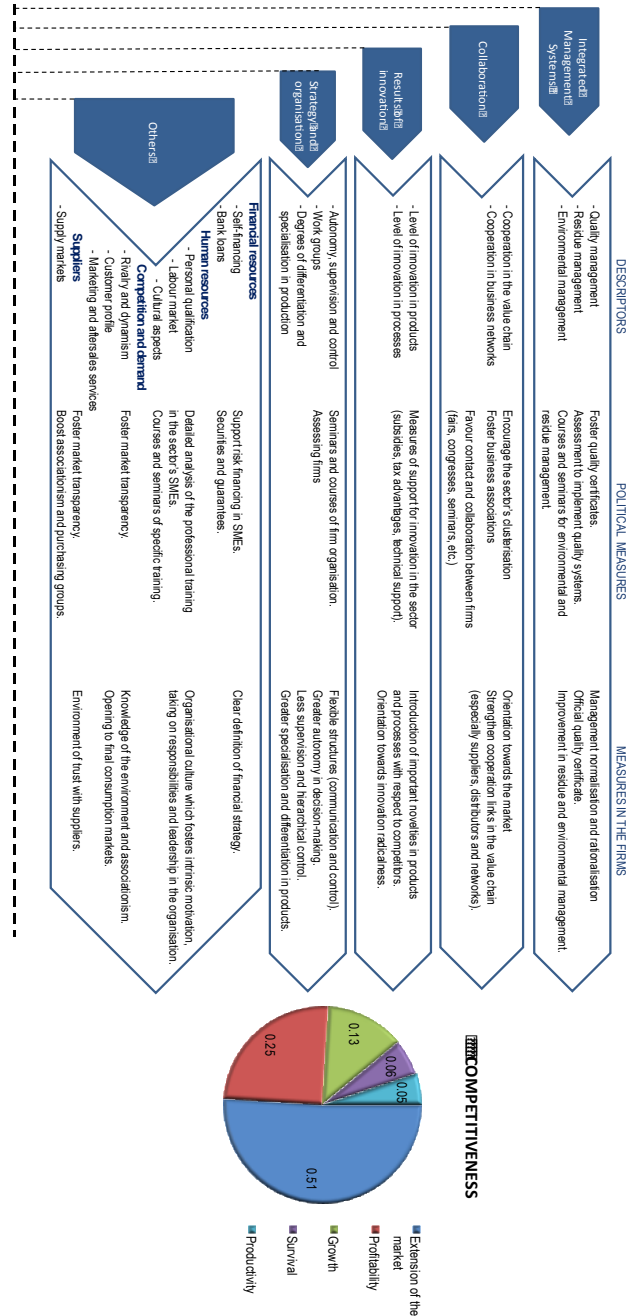


Figure 3: Summary of main results

REFERENCE:

MARTINEZ-ROMAN J, TAMAYO-GALLEGO J, GAMERO-ROJAS J et al. "ANÁLISIS EXPLORATORIO DE LA COMPETITIVIDAD DE LAS PYMES DEL SECTOR METALMECÁNICO EN ANDALUCÍA " DYNA Management. ENERO 2014. Vol. 2-1 p.[No Consta]. DOI: <http://dx.doi.org/10.6036/MN7123>