

# **Statistical analysis of manufacturing system complexity**

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## **Abstract**

Given the dynamism of the markets and the economic growth, nowadays companies must look for mechanisms that allow them to develop new strategies and compete successfully. The objective of this work is to develop a statistical analysis of the complexity of a manufacturing system. The methodological approach starts with the analysis of the data obtained through the Likert technique, identifying characteristics associated with high complexity, consequently, an inquiry is made on the factors that influence significantly from an experimental analysis, then a factor analysis is made to determine the correlations between the variables raised, and finally the association between the complexity of the manufacturing characteristics and the complexity of the elements of a system is evaluated. The study is based on a sample of 71 small- and medium-sized companies in the city of Cartagena, Colombia. The results obtained show a dominance of complexity in manufacturing systems, confirming the level of significance between subsectors, type of operation, and type of process; determining that there are high correlations between the variables; and corroborating the relationship between the variables and the characteristics of the manufacturing system.

## **Keywords**

Complexity, Manufacturing, Statistical, Characteristics