

## **Outlier detection in function of quality improvement of business decisions**

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### **Abstract**

Analysis of the modern business environment points to its two key determinations and characteristics: a high dynamism and unpredictability, with which the organizational entities are continually facing in making (business) decisions. A successful dealing with the constantly present changes, not only the individual business systems, but also the national economies and the world economy, and functioning in conditions of uncertainty and risk is based on the creation, maintenance, improvement and affirmation of the role of knowledge as a key strategic resource.

Intensive development and use of information and communication technologies in all spheres of human activity, has caused significant structural changes at the enterprises level, which primarily affected the business processes related to data and information. In other words, the information revolution has enabled enterprises to collect and store huge amount of data created as a result of performing their daily routine activities. However, the collected raw data do not have automatically great practical value in the decision-making process. Under such circumstances, the need for defining and making a timely and high quality business decisions has led to emphasizing the importance of the methodologies of how to extract a valuable and hidden information or knowledge, from the huge amount of data, based on the application of different and sophisticated methods (mainly statistical), with the help of appropriate software tools.

Exploration and analysis of data in function of increasing the possibilities for effective business decision making is nothing new for the managers, but, according to the afore mentioned, is gaining in its importance from the standpoint of the survival of modern enterprise and development of its competitive advantages. In this context, understanding the data is crucial, because it contributes to the identification of business opportunities and avoidance of situations that may be detrimental to the enterprise.

Data for the purposes of business decision making are absorbed from different information repositories and thus can be incomplete, unsystematic and inconsistent. In order to achieve elimination or reduction of the shortcomings of the original data, before the application of sophisticated data analysis techniques, which are very sensitive to the quality of data, preprocessing activities must be carried out. The above activities include data cleansing, i.e. spotting: missing data, outliers, extreme values, inconsistencies in the data, etc.. In general it can be said that the quality of the input data determines the quality of information obtained in the process of data analysis, and therefore the quality of business decisions based on them.

A component of preprocessing data which attracts the attention of researchers from different fields is outlier detection (also know as anomaly detection). Conceptually, the anomalies are related to cases that do not fit the model of data "normal" (usual) behavior. Starting from the above mentioned, the aim of this Paper is to present the problem of outlier detection, as an important data quality issues faced by a number of analysts in the implementation of business projects. In this paper, conceptual and methodological framework for the identification of presence of outliers in the data, as a component of preprocessing activities, in function of creating a suitable basis for decision making in specific business contexts, will be presented.

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