IMPLEMENTATION OF DECISION SUPPORT SYSTEMS FOR SMALL BUSINESSES

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Small businesses in modern conditions operate in a dynamic, unstable environment, where entrepreneurs have to make decisions every day that directly affect the profitability, efficiency and sustainability of the business. Typical tasks faced by small businesses include: supplier selection, assortment formation, pricing, inventory management, service profitability assessment, personnel planning, logistics, marketing campaign planning, etc.

The hypothesis of the study is that the use of a decision support system based on specialized methods of multifactor analysis and mathematical modeling allows you to improve the quality of management decisions in small businesses, while ensuring a balance between the complexity of implementation and the accuracy of results.

Unlike simple tables or template accounting tools, such a DSS system should use analytical methods of medium complexity that can be implemented using affordable software. Such methods include:

– ABC and XYZ analysis - for classifying goods/customers by sales volume and demand stability;

– Sensitivity analysis – to assess the impact of changes in individual parameters on the final results;

– Analytical hierarchy process (AHP) – to choose between alternatives taking into account many criteria;

– Multivariate linear regression – to identify dependencies between variables;

– Cluster analysis (k-means or hierarchical clustering methods) – to segment customers, products or markets by similarity;

– Functional cost analysis (FCA) – to identify unnecessary costs in processes and make decisions on resource optimization;

– Linear programming – for resource allocation, production planning or logistics problems taking into account constraints.

Implementing such a DSS system allows entrepreneurs to move from intuitive decision-making to structured, reasoned conclusions based on data and analytics. The implementation of the system can be presented both as a package of add-ons to existing solutions, for example, Microsoft Excel or MATLAB, and as separate software developed using various programming languages and frameworks.