

Enhancing Quality Management Systems through Automated Controls and Neural Networks

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Abstract : The article discusses the importance of quality assessment as a strategic tool in business and emphasizes the significance of the effectiveness of quality management systems (QMS) for enterprises. The evaluation of these systems takes into account the specificity of quality indicators, the multilevel nature of the system, and the need for optimal selection of the number of indicators and evaluation of the system state, which is critical for making rational management decisions. Methods and models of automated enterprise quality management are proposed, including an intelligent automated quality management system integrated with the Management Information and Control System. These systems make it possible to automate the implementation and support of QMS, increasing the validity, efficiency, and effectiveness of management decisions by automating the functions performed by decision makers and personnel. The paper also emphasizes the use of recurrent neural networks to improve automated quality management. RNNs are used to analyze and process sequences of data, which is particularly useful in the context of document quality assessment and non-conformance detection in quality management systems. These networks are able to account for temporal dependencies and complex relationships between different data elements, which improves the accuracy and efficiency of automated decisions. The project was supported by a grant from the Ministry of Education and Science of the Republic of Kazakhstan under the Zhas Galym project No. AR 13268939, dedicated to research and development of digital technologies to ensure consistency of QMS regulatory documents.

Keywords : automated control system, quality management, document structure, formal language

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