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## **QUALIMETRIC APPROACHES TO THE QMS PROCESSES ACCORDING TO INTERNATIONAL STANDARDS ISO 9000 SERIES**

Efficient provision of product quality largely depends on enterprise management system. Achieving the goal of improving product quality assurance system is possible by way of implementation and certification of the quality management system (QMS) of an enterprise in accordance with the requirements of international standards of the ISO 9000 series, which has long and successfully been used by enterprises in the world.

In accordance with the international standards of the ISO 9000 series, efficient management becomes a key prerequisite for successful functioning of any organization. Hence the need for objective diagnosis of existing systems of management, for analysis of the state, for identifying the directions of their flexible and dynamic adaptation to changing conditions of organizations' performance. As confirmed by the practice, development and implementation of such an organizational structure that meets international quality standards significantly reduces production with defects (by 50–60 %), while reducing costs (by around 40 %) of such technological operations as controlling and testing of finished products. The expenditures for quality under these conditions decrease twofold while profitability of an enterprise or a business activity increases by 15–20 %.

Despite an intensive work for the certification of quality management systems, the majority of Ukrainian enterprises were not able to achieve the improvement in economic indicators, which is linked to the lack of efficient methods of quantitative assessment of the quality of the processes of QMS and the system in general. After all, as was written by a famous specialist in quality management field Professor Deming, "One can manage only what one can evaluate". So there appears an actual task of developing criteria for the functioning of QMS, as well as creating methods of their parametric analysis and comprehensive evaluation, brought to practical implementation. To do this, it is necessary to create a set of models, methods, algorithms and methods of monitoring, parametric analysis and comprehensive evaluation of quality system, which make it possible to increase efficiency of the functioning of enterprises. Such a set of models should cover all the elements of this system and main processes that ensure the quality of enterprise management.

Therefore, development of a methodology of quantitative assessment of the processes of quality management system of enterprises in accordance with modern requirements of international standards of the ISO 9000 series is an actual scientific–applied task.

As processes are different in their nature, their quality indicators have different measurement units and different optimal values, indicators of quality of processes can be divided into 4 groups:

1. Group of quality indicators in which the optimal (best) value tends to the lower limit of the tolerance field. For example, the number of defective products, the number of accidents, the number of fatal cases, late-comings, delays, etc. In this case, the lower the value of the indicator, the better.

2. Group of quality indicators in which the optimal (best) value tends to the upper limit of the tolerance field. For example, reliability, effectiveness, efficiency, success, etc. In this case, the higher the value of these indicators, the better.

3. Group of quality indicators in which the optimal (best) value tends to the middle of the tolerance field. For example, accuracy of dimensions in the manufacture of the parts, accuracy in maintaining the temperature in a technological process, accuracy during execution of some work, etc. As a rule, these indicators tend to the middle of the tolerance field.

4. Group of quality indicators in which the optimal (best) value tends to the edges of the tolerance field. For example, the largest productivity at the lowest costs.

Given that different groups of indicators have different optimal values, the individual dependencies were built for each group. The function of dependencies is known in the literature as the Harrington function, which was used for the evaluation of quality of technical objects [2, 3]. The function is exponential and is the first limit distribution of extreme values in the sample of random variables and it has a number of features that attracted researchers to practice its application.

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