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YURIY S. KLOCHKOV[1]
ELENA S. KLOCHKOVA[2]
IRINA P. VASIL'EVA[3]

[1]Samara State Aerospace University
Samara, Russia

KEY CONCEPTS-BASED APPROACH FOR ASSESSMENT OF STAFF RESISTANCE TO NEW STANDARD IMPLEMENTATION

Abstract: *This paper presents a new approach to assessment of staff resistance level while introducing new standards. The approach is based on the analysis of the key terms frequency within the text of the standard ISO 9001 and further constructing a conceptual model of the text. The model is compared with the results of the management staff survey.*

Key words: ISO 9001, standard introduction, management decisions.

INTRODUCTION

The introduction of any new standard, particularly general ones such as ISO 9001 is met by enterprise staff with resistance [1]. Forecast of resistance level and its reduction presents a very important task nowadays [3-5]. The present paper offers an approach for forecasting staff resistance level based on determining crucial differences between a conceptual model of a new standard to be introduced and the previous standard version already implemented in an enterprise. Before describing the suggested approach in detail, we should make some preliminary remarks about its basic assumptions and limitations:

- ISO 9001 standard requirements present the model of worldwide successful enterprises and organizations,
- the text of the ISO 9001 standard can be presented as a network or a model of semantic concepts whose main elements are key words,
- key words are selected in the process of statistical analysis of literal and semantic repetitions of the terminological words in the text of the standard (key words frequency analysis) [2],
- we shall assume that the frequency of key words repetition in a standard to be introduced determines the significance level of the corresponding standard concept.

PROCEDURE AND METHODS

The assessment of standard requirements - Analysis procedure - was carried out in two stages. At the first stage, we used a visualization tool to represent key words in the text of the standard graphically (wordle.net). Figures 1-4 shows the main trends of standard change from earlier to later versions.

Visual presentation of the conceptual network of the text suggests that standard requirements were developing from following instructions to management in the period 1994-2015 while emphasis on product quality remained constant.

Figure 1. *Main trends of ISO 9001 versions change a) 1994 year model*

Figure 2. *Main trends of ISO 9001 versions change b) 2000 year model*

Figure 3. *Main trends of ISO 9001 versions change c) 2008 year model*

Figure 4. *Main trends of ISO 9001 versions change*

d) 2015 year model

Since visual representation in Figure 1-4 is an approximate model of key concepts network, we refined our results using statistical analysis of the key words frequency in the text of the standard (using the online tool at symvoli.net). Figure 5 shows the results of the statistical analysis graphically.

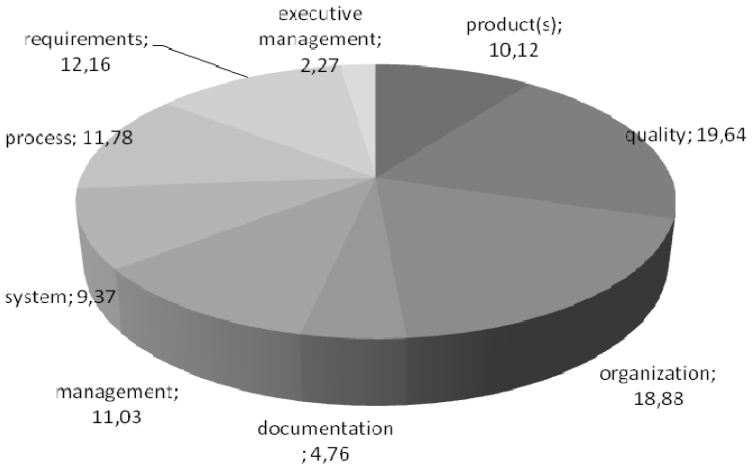

Figure 5. *Key words frequency in the text of the ISO 9001 standard*

ASSESSMENT OF THE ACTUAL CONCEPTUAL MODEL AT ENTERPRISES

At the third stage of our experiment we carried out a survey of a number of top managers at Russian enterprises with the aim to compare the prescriptive model of quality management presented in the standard with the actual model at enterprises. Having compared these two models, we will be able to answer the following questions: 1. To what degree the actual model of quality management at particular enterprises corresponds with the model of worldwide successful organizations; 2. Which measures are required for coordinating standard model and actual model at an enterprise; 3. What is the degree of potential resistance of the staff to the introduction of a new version of the standard; 4. Which issues should be considered and how staff should be trained to be prepared to the introduction of a new version; 5. How efficient is the conducted staff training (it can be determined by subsequent comparison of precriprtive and actual models after correction).

During the survey we asked our respondents to assign the significance degree (in percentage) to the terms in the questionnaire considering the actual situation in the quality management system at their enterprise. Survey data are shown in Table 1. Analysis of the survey results and subsequent comparison with statistical data of the conceptual model of the standard allow concluding the following. The models differ significantly in their attitude to the concepts of "documents", "requirements" and "executive management". While the difference in the attitude to "executive management" can be explained by the fact that the respondents may interpret it as "management" in general, the emphasis on the concept "documents" suggests that surveyed enterprises still adhere to the standard version ISO 9001:1994 where the significance of documentation was emphasized.

Table 1. *Survey data for enterprises*

№	Terms	ISO 9001	Manufacturing enterprise	Service industry enterprise
1	Products	10.12	11.25	11.11
2	Quality	19.64	12.5	11.11
3	Organization	18.88	10	9.72
4	Documents	4.76	8.75	9.72
5	Management	11.03	11.25	13.89
6	System	9.37	12.5	11.11
7	Processes	11.78	11.25	11.11
8	Requirement	12.16	10	9.72
9	Executive management	2.27	12.5	12.50

That does not mean that quality management system should not pay attention to documentation, but it confirms the fact that the surveyed enterprises have not implemented electronic document management what requires significant number of human resources to manage the paper document flow such as keeping the filing system, updating documents etc. Therefore, the main deterrent for developing quality management system at the present stage is the lack of efficient technologies of document flow management. Thus, this problem should be solved as soon as possible; otherwise the present situation will lead to the lack of management human resources for implementing necessary changes. Moreover, attention should be paid to the key word "quality".

Both types of enterprises (manufacturing and service industry enterprises) focus on the issues of documents and executive management what results in the fact that such parameter as quality is not paid sufficient attention to. As to the factor "executive management", the substantial difference in the attitudes to that may be explained by the fact that Russian management often relies on the so-called "manual control" approach. The same can be said about the difference in the attitudes to the concept "organization". Thus, the main deterrents for the efficient development of the management system are problems of document flow management, general executive management and organization model. Differences between the actual quality management systems at enterprises and the ISO 9001 standard model can be represented as a radiation diagram (Figure 3) where divergence areas correspond to the level of the resistance to new standard introduction. Our calculations show that resistance level at a manufacturing enterprise and at a service industry enterprise are 0,37 and 0,42 correspondingly (the maximum is 1). We obtained the results by conducting a survey among top managers. Probably, similar survey of middle managers will show different results.

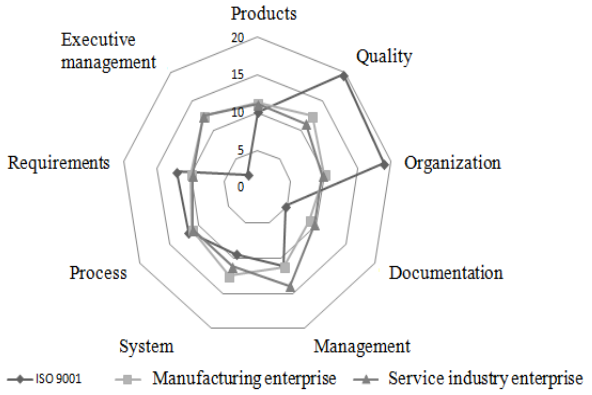

Figure 3. *Comparison of two models*

RESULTS AND DISCUSSION

The present research suggests new approach to analysing the resistance level of staff to introduction of a new standard version. Our approach is based on comparison of two conceptual models: the model of key concepts network of the text and the model obtained as a result of top managers survey. The main advantages of the suggested approach are the following:

It reveals methodological problems of an enterprise management system considering quality. The approach is not cost-efficient and time-consuming. The approach avoids the discrepancy between two principal methodologies: methodology based on the developing an actual model, or "it is-model" and subsequently a normative model, or "to be-model".

The approach makes possible to compare models at different staff levels: executive manager - department manager, etc.

The approach provides information for professional development by comparing the models of top and middle managers.

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KLJUČNI PRISTUP ZASNOVAN NA KONCEPTU PROCENE OTPORA ZAPOSLENIH PREMA PRIMENI NOVIH STANDARDA

Yuriy S. Klochkov, Elena S. Klochkova, Irina P. Vasil'eva

Rezime: *Ovaj rad predstavlja novi pristup u proceni nivoa otpornosti osoblja za uvođenje novih standarda. Pristup se zasniva na analizi učestalosti ključnih termina u tekstu standarda ISO 9001 i daljem konceptualnom modelu teksta . Model je upoređen sa rezultatima ankete rukovodećeg osoblja.*

Ključne reči: ISO 9001, standardni uvod, upravljačke odluke**.**