

Management Standardization Versus Quality of Working Life

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Abstract. In the paper there was defined notion of “quality of working life”, starting from the definition included in the ISO90000 norm. The results of employees’ satisfaction survey carried out in the following three years in the company having the integrated management system (ISO 9k, ISO 14k, ISO 18k & SA 8000) have been presented. The statistical analysis of the obtained results was carried out and the employees’ satisfaction assessment method was proposed. The global assessment coefficients, variance analysis between groups of the employees, assessments correlation analysis and trend coefficient of changes received on the basis of the regression model were taken into account.

Keywords: quality, working life, statistical analysis, management systems.

1 Introduction

Discussion on operations and processes performed by an enterprise and their influence on quality of work environment and working life should start with a definition of the terms “quality” and “quality of working life”. In the literature, there are numerous approaches to these terms. Heskett, Sasser and Schlesinger [1] define the term of quality of working life (QWL) as the feelings that employees have towards their jobs, colleagues and organizations that ignite a chain leading to the organizations growth and profitability. Lau, Wong, Chan and Law [2] operationalized QWL as the favorable working environment that supports and promotes satisfaction by providing employees with rewards, job security and career growth opportunities. Serey’s [3] definition of QWL is related to meaningful and satisfying work. It includes (i) an opportunity to exercise one’s talents and capacities, to face challenges and situations that require independent initiative and self-direction; (ii) an activity thought to be worthwhile by the individuals involved; (iii) an activity in which one understands the role the individual plays in the achievement of some overall goals; and (iv) a sense of taking pride in what one is doing and in doing it well. This issue of meaningful and satisfying work is often merged with discussions of job satisfaction, and believed to be more favorable to QWL. QWL [4] is thus a multi-dimensional construct, made up of a number of interrelated factors that need careful consideration

to conceptualize and measure. It is associated with job satisfaction, job involvement, motivation, productivity, health, safety and well-being, job security, competence development and balance between work and non work life.

Plato defined quality of an item as a level of excellence it achieves. On the other hand, ISO 9000:2005 standard defines quality as a level of meeting requirements by a set of inherent characteristics. The important aspect of the last definition is referring the idea of quality with requirements – of customers (internal and external), of users and other interested parties.

In case of taking an effort to define quality of working life the parties of such an agreement (requirements – fulfillment of demands) are employees (potential employees) and employers. Thereby, it is necessary to admit that employees are the demanding party and employers are the meeting requirements ones. An employee, accepting negotiated or proposed by an employer working and financial conditions, determines the satisfactory level of quality of working life and requires fulfillment of the contract conditions. Therefore, if quality is defined as a level of meeting requirements, then level of meeting employees' requirements by employers defines their quality of working life.

Certainly, employees' requirements can not be unlimited (then we would deal with Plato's definition of quality). So, fulfillment of employees' requirements by employers consists in by presenting employees a job offer on conditions in compliance with the law of the particular country, customs, good manners, internal regulations concerning work and salary as well as enforced different management standards.

2 Working Life Quality

Thus, precise definition of the term "quality of working life" requires definition of the interested parties, namely employees working in the company, concerning this aspect.

In the course of three year survey done in the years 2007 – 2009, the employees of the same company from the electronics branch were asked the same question on the importance of factors concerning occupational satisfaction. The results have been presented in the fig. 1. It results from the figure that the employees consider decent salary for their work, good atmosphere, supervisors' respect, working conditions, opportunities for self - development and promotion as the most important factors. It is interesting that the hierarchy of the priorities did not change within the space of three years.

The results were confirmed by the experiment carried out by the authors of the paper, who as professional auditors and experts of certifying bodies, during numerous interviews with employees of various companies realized in SA8000, SEDEX and Code of Conducts audits, corporate standards of social responsibility and business ethics were identifying and analyzing the hierarchy of employees' requirements concerning quality of working life.

The conclusion from the research is the following: the most important expectations are:

- Fair salary,
- Occupational satisfaction (I like what I do),

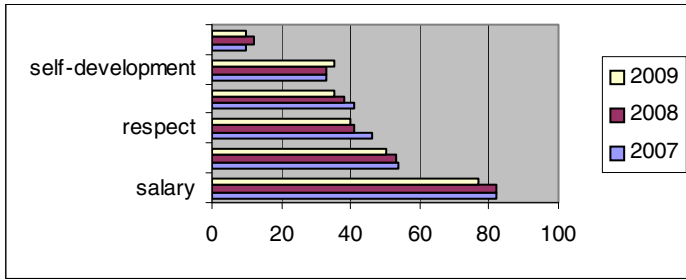


Fig. 1. Importance of factors concerning occupational satisfaction

- Supervisors' respect,
- Good organization of work and workstations,
- Safety, hygiene, ergonomics,
- Opportunity to prove one's independence (strict definition of responsibilities and rights).

Last but not least, the important aspects mentioned by the employees were respect for the natural environment, supporting local societies, enabling freedom of employees' societies.

3 International Standards Versus Life Quality Factors

Most of the requirements presented above are reflected in various management standards. For example, fair salary is directly mentioned in the point 8 of the SA8000 standard, safety and hygiene of work are mentioned both in the SA8000 standard (point 3) and in the OHSAS standard, supervisors' respect is mentioned in points 5 and 6 of the SA8000 standard, definition of the rights and responsibilities is mentioned in point 5.5.1 of the ISO 9001:2008 standard and environmental aspects are discussed in the ISO14001 standard. There are numerous examples of such connections between the employees' requirements and requirements of standards (factor\standard\clause and requirement): Economical demands (salary, working hours, overtime): SA (7. Working Hours, 8. Remuneration); SEDEX (5. Wages and Benefits, 6. Working Hours).

- Civil demands (discrimination, discipline, respect, interpersonal relations): SA8000 (2. Forced and Compulsory Labor, 4. Freedom of Associations & Rights to Collective Bargaining, 5. Discrimination, 6. Disciplinary Practices, 9. Management Systems – Addressing Concerns and Taking Corrective Actions); SEDEX (1. Employment Freely Chosen, 2. Freedom of Association, 4. Child Labor, 7. Discrimination, 9. Harsh or Inhumane Treatment).
- Social demands: SEDEX (announced indirectly).

- Legal and Technical Demands (for example labor code); ISO 9001 (1.1. General ruling), ISO 14001 (entirely), ISO 18001 (entirely), SA8000 (9. Management Systems – Polic); SEDEX (8. Regular employment, A. Entitlement to Work).
- Workstation Organization Demands (efficient procedures on workstations): ISO 9001 (5.5.3. Communication Inside of Organization, 6.3. Infrastructure, 6.4. Working Environment, 7. Execution of Product) [5].
- Safety and Health at Work: SA8000 (3. Health and Safety), ISO 18001 (entirely), SEDEX (3. Safety and Hygienic Conditions).
- Demands concerning environmental protection: ISO 14001 (entirely), SEDEX (B. Environment).
- Demands concerning self – development, competence, responsibility: ISO 9001 (5.5.1. Responsibility and Rights, 6.2.1. General Rules, 6.2.2. Competences, Awareness and Training); SA8000 (9. Management Systems – Planning and Implementation).
- Demands concerning employer’s image: SA8000 (9. Management Systems – Outside Communication and Stakeholder Engagement, 9. Management Systems – Control of Suppliers/Subcontractors and Sub - suppliers), SEDEX (0. Management Systems and Code Implementation).

There arises an issue concerning influence of the implementation of these demands on quality of working life by employees.

4 Example of Research of Working Life after Implementation of Quality Integrated Management System

The considered example has been developed on the basis of the data obtained during survey of employees’ satisfaction in the company from the electronics branch. The survey was carried out in the three following years (2007 – 2009), beginning with the time of the implementation of the quality integrated management system.

The survey covered three groups of the employees:

- office workers (**monthly**),
- laborers (accounted according to **hourly** rates),
- seasonal workers (**temporarily** employed).

The scope of the survey was very extensive and concerned as much as 24 criteria of working life, which were judged in the scale from 1 to 6 by the respondents. In the report the survey results have been presented in the form of layer charts built with percentages of answers, for the established scale of assessment. The fig. 2 presents the exemplary survey results.

The results concerned mainly identification of aspects assessed the worst by the employees. The results also concerned the recommendations to take actions in order to improve the situation. The results breakdown from the year 2007 was presented in the table 1.

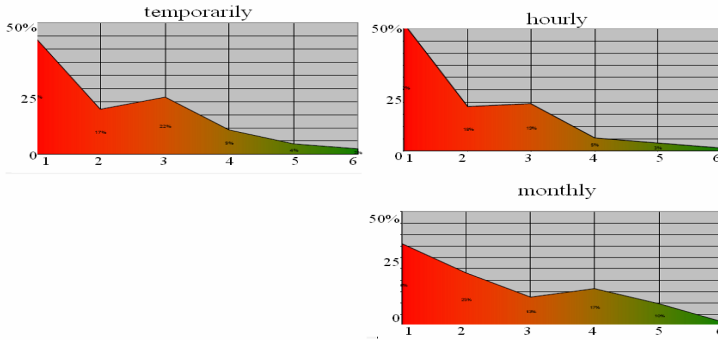


Fig. 2. Example of survey results of employees’ treatment assessment in 2007

Table 1. Survey results on employees’ satisfaction in 2007

Results following from opinion poll	Recommendations suggested by employees	Recommendations suggested by authors of survey
<p>Especially positive evaluation:</p> <ul style="list-style-type: none"> - Friendly atmosphere in work, - Salary paid out in due time, <p>Especially negative evaluation:</p> <ul style="list-style-type: none"> - Salary is too low, - Not keeping promises by management, - Treating badly employees by management, - Badly administered social services, - Bad organization of labor and management, - Communication system not effective, - Injustice in giving loans and bonuses. 	<ul style="list-style-type: none"> - Replace production management staff and company board, - Free Saturdays or 100 % rate, - Extend breaks for employees, - Gift certificates for employees, - To put permanent contract of employment, - To shorten accounting period to one month, - Establish motivation rewards, 	<ul style="list-style-type: none"> - Training for company management staff, - Continuation of training series for employees management staff, - Analysis of components of salary system, - Increase of employees’ participation in disposal of social services assets, - Adding of new communication channels (company newspaper).

The conclusions from the two following years were very similar. However, on the basis of the results obtained this way, it is impossible to answer the following questions:

- Is it possible to admit, that the evaluation of working life is similar in the particular group of the employees?
- What is the tendency in assessment change after introduction of the quality management system?
- Which assessment categories of working life are statistically similar to each other?
- What is the global assessment of the company?

In order to answer all the above mentioned questions the following analytical and statistical methods were applied: \

- Correlation analysis of evaluation by different groups of employees,
- Analysis of directional coefficients of the regression and linear models (another criterion may be applied for the nonlinear models, on condition of many year's standing of survey),
- Analysis of variance – in order to identify similar categories of assessment of working life.

In the established method of assessment of the employees' satisfaction V was taken as a measure (for each of the criteria):

$$V=L_pR,$$

where: V – assessment measure, L_p – percentage of answers of a given value of assessment, R – value of assessment (1 to 6).

For the purpose of the further analysis 11 criteria were selected:

- Work station equipment,
- Medical care,
- Occupational health and care,
- Relations between employees,
- Working conditions satisfaction,
- Treating by supervisors,
- Communication,
- Information on shape of the company,
- Management,
- Salary,
- Social services.

As the result of the carried out correlation analysis [6,7,8] of the working life assessment given by different groups of the employees, one must say that in the years 2007 – 2008 the assessment does not differ essentially. Thus, the mean values can be assumed in the further evaluation procedure. The results of the correlation analysis were presented in the table 2.

The comparison of the global measure obtained from particular groups of the employees is the acknowledgement of the conclusions resulting from the correlation analysis of the assessment for the categories:

$$G_j = \frac{\sum_{k=1}^K V_{j,k}}{K},$$

where: G_j – global measure for j group of employees ($j=1-3$), $V_{j,k}$ – assessment measure made by j group of employees for k criterion ($k=1-11$), K – number of criteria.

Table 2. Report on correlation analysis from Winstat computer program (correlation investigation of assessments between employees groups) [7]

Number of observations = 66			
Accepted significance level = 0.050			
Name of variable	Mean	Standard Deviation	Variation coefficient
1 X01->Monthly	177.5455	122.395432	68.94%
2 X02->Hourly	163.0909	100.703695	61.75%
3 X03->Temporarily	170.9242	105.217280	61.56%
Matrix of correlation coefficients			
	1	2	3
1	1.000000	0.880780	0.827918
2	0.880780	1.000000	0.729480
3	0.827918	0.729480	1.000000
Critical region - two - sided			
Critical value of correlation coefficient =		0.242276	

The mean value of the global assessment \bar{G} can be determined:

$$\bar{G} = \frac{\sum_{j=1}^J G_j}{J}, J=3.$$

Fig. 3 shows the distribution of the determined global measures in the particular years of the survey, their mean value and model of the linear regression.

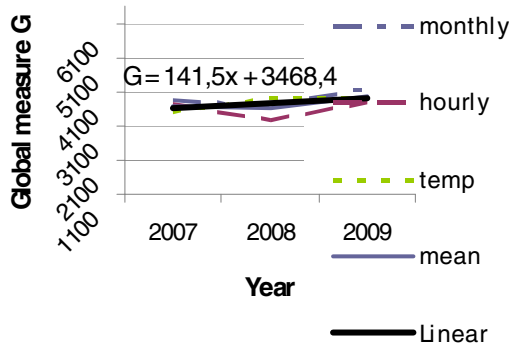


Fig. 3. Graph of global assessment of particular groups of employees and mean value

In the fig. 3 the scale for the values of G within the interval of 1100 – 6600 (tab. 3) was kept on purpose. It is an interval of the possible values of G in the considered example. This way of presentation of the calculation results indicates on what level the global assessment is while artificially adjusted scale might lead to false conclusions. It follows from the figure that the general assessment of working life is very similar in the examined groups of the employees and the mean value of that assessment reveals slight uptrend. The determined regression model (linear form) lets find out that at the existing level of the quality improvement of working life the assessment of G will have reached 5101 approximately in 7 years. Therefore, it is not the optimistic prognosis and improving actions must be intensified.

Table 3. Assessment scale of G coefficient

Value of G coefficient	Interpretation
1100 - 2100	Quality of Working Life - very low
2101 - 3100	Quality of Working Life – low
3101 - 5100	Quality of Working Life - average
5101 - 6100	Quality of Working Life – high
6101 - 6600	Quality of Working Life – very high

In order to identify the similarly assessed criteria groups the analysis of variance was applied. On the basis of the analysis the hypothesis of equality of the means of the investigated features in several populations is verified [9].

One made the null hypothesis H_0 : mean values from the group are equal ($H_0: \mu_1 = \mu_2 = \dots = \mu_k$), i.e. the investigated criteria are assessed similarly, towards the alternative hypothesis H_1 : mean values from the group are not equal (the investigated criteria are not assessed similarly) [7].

If the variance analysis does not reveal significance of the differences between the examined groups then no further tests will be carried out. However, if the null hypothesis is rejected in the variance analysis then a question arises, which of the compared populations are responsible for rejection of the null hypothesis. We would like to know, which out of n mean values differ between each other and which ones are equal. For that purpose more precise examination of differences between the mean values from particular groups should be carried out. In order to achieve that purpose special *post-hoc tests* (afterwards) will be applied. The test are also called multiple comparisons tests [7]. To evaluate homogenous groups the Duncan's test [9] was

Table 4. Report from Winstat computer program – variance analysis for assessment criteria [7]

Ho: Main effects of coefficient A equal zero.		
H1: Not each of main effects of coefficient A are equal.		
Critical region RIGHT-HAND. Significance level = 0.050		
Calculated value of statistic F = 20.7451		
Number of degree of freedom of numerator = 10		
Number of degrees of freedom of denominator = 88		
Ho has to be rejected in favor to the alternative hypothesis H1.		

Means arranged in ascending order.		
No of group	Name	Mean
6	Treatment	250.1111
11	Benefits	254.7778
7	Communication	294.2222
8	Information	306.0000
10	Salary	306.7778
2	Medical care	369.1111
5	Satisfaction	379.6667
9	Management	385.5556
1	Equipment	391.3333
4	Relations	396.2222
3	Safety and Health	417.6667

Test of homogeneity of groups (Duncan's test). Significance level = 0.05		
Homogenous groups and their means:		

{ 2 5 9 1 4 3}:389.93, {7 8 10}: 302.33, {6 11}: 252.44		

used. The variance analysis results for the assessment criteria of working life have been presented in the tab. 4.

On the basis of the obtained results of the variance analysis it might be assumed that there are three groups of the criteria assessed similarly. The treatment of employees by the employers and social services were assessed the worst. The communication in the company, information on the shape of the company and salary were assessed quite badly, too. The remaining categories were assessed by all the groups of the employees similarly, at the mean value of $\bar{V} = 390$ and the maximal value of $\bar{V}_{max} = 660$.

In order to answer the question, what is the effectiveness of the introduced actions, the linear regression analysis was applied [9]. Table 5 contains the comparison of the directional coefficients of the regression models and percentage intensity of the realized improving actions.

Table 5. Prognosis assessment of criteria assessment changes of working life

Criterion	Value of directional coefficient of linear regression model	Percentage intensity of changes annually [%]
Benefits	105	21
Treatment	84,5	16,9
Management	76	15,2
Medical care	58,5	11,7
Equipment	48,5	9,7
Satisfaction	46,5	9,3
Communication	44,5	8,9
Information	43	8,6
Safety and health	15	3
Relations	-13	-2,6
Salary	-85	-17

A very good and vivid way to compare current assessments and change tendency is to present the values of these measures in the form of radar chart (fig. 4).

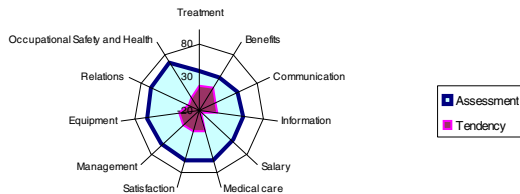


Fig. 4. Radar chart. *Assessment* – standardized mean values of assessment according to the scale 0 – 100. *Tendency* – percentage value of assessment change during year, determined on the basis of linear regression model

5 Conclusions

Implementation of the quality integrated management system does not guarantee the immediate improvement of quality of working life. It is a complicated process and it requires the systematic investigation of the effectiveness and efficiency of the implemented actions. In order to exactly determine the effects and recommendations it is necessary to carry out long – term investigation and monitor the obtained changes trends. In the method of the assessment of quality of working life it is important to consider the following aspects:

- identification of assessment criteria,
- selection of detailed and global measure,
- selection of employees groups and identification of compatibility of their assessments,
- determining criteria groups with similar assessments,
- prognosing assessments changes with determination of the trend coefficient of the changes.

While selecting a measure (coefficient) of the assessment it is important to remember the established scale and link the obtained results to the scale. More natural way and statistically precise is establishing a scale resulting from possible to obtain coefficients (no standardization) values. However, such a scale is difficult to compare with the results obtained from other investigations, for example benchmarking. Then, it is worth of standardizing the obtained results to the most often accepted range 0 – 100.

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