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Evaluation of Working Life Quality For A Textile Company in Turkey: A Case Study

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ABSTRACT

The main objective of this study is to analyze the quality of working life (QWL) and current working conditions in cutting and sewing branches of a large Turkish textile factory. A survey is conducted on 87 workers to determine the degrees of QWL in the cutting and sewing workshops. The results show that the factors of levels of education of workers, ergonomics conditions and work safety of the workshops have good degrees of QWL while the levels of physical and psychological environment and psychology, occupational health and organizational motivation, and performance have acceptable degrees of QWL that the some opportunities can be occurred for the improvement of the QWL degrees for these factors.

Keywords: *Textile Industry, Quality of Working Life (QWL), Work conditions evaluation*

1. INTRODUCTION

Globalization is rising in the worldwide competition on the goods market. International standards and regulations make products and their quality attributes, and thus also their prices, ever easier to compare. This alignment has, however, not kept up with the harmonization on the goods markets. European Union (EU) regulations for work place configuration (e.g. Work Safety Guideline 89/ 39) do not come into effect until a nation has been accepted into the EU and the corresponding accords become legally binding, usually after a multi-year transition period.

As a result of the rapid transition from state-directed to market economy, old structures, such as the monitoring of occupational health and safety have largely collapsed. Financial resources and, above all, awareness for an ergonomic configuration of workplaces, are very lacking, leading to generally poorer working conditions than in the European Union.

The human factor plays an important role in production systems. Only human beings can ensure the flexibility of using new technologies of enterprises in competitive environment to obtain advantage against competitors. Enterprises are expecting from workers to add their own values to firms. The most important feature which is separates successful and unsuccessful enterprises is that what employers can add to the organization from their own knowledge and skill in the environment where the differences between products are decreasing.

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The management knows importance of human factor can reach its goals with hiring people who are able to produce additional values and by offering some facilities to keep these staff working. All these can be done by improving work conditions and quality of working life.

The quality of working life can be determined as obtaining mutual respect between workers and managers, applying cooperation and participation of workers to the decisions in management. According to another description, the quality of working life is the degree of covering the important personal needs of workers via lives in the organization [1].

Activities of the quality of working life are used in two different meanings when they appeared first time. In the first meaning, it is focused on particularly describing and improving according to people's reaction to work satisfaction and mental hygiene and mainly, how work can be improved consistent with personnel results of work experience and supplying demands of people [2].

The second usage includes descriptions of techniques and approaches which are used to improve a job. The quality of working life is used as identical to enhancing the work, autonomous working groups and employee-employer comities [3].

The objective of this study has been determined to investigate the quality of working life index of a textile factory in Turkey. Therefore, a questionnaire, given in Appendix A, has been prepared and applied on the workers in the cutting and sewing branches of a textile factory. Results show that some organizational policies must be developed for the subjects related to "Physical and Psychological", "Environment and Psychology", "Education", "Ergonomics", "Occupational Health", and "Organization, Motivation, Performance".

1.1. Background

The effects of advanced technology on the quality of working life have attracted much research interest, but conclusions are contradictory. There is evidence that advanced technology alleviates the traditional hardships of work, such as dirt, noise and danger, and requires higher order skills from those who operate it. The classified literature review is given in Table 1.

Table 1 Literature Review

Application Area	**Ergonomics**	Ingelgard and Norrgen, 2001 [7]; Zink, 2000 [8], Yucel et al., 2005 [22].
	Job Analysis and Enrichment	Buchanan and Boddy, 1982 [4]; Mehta and Shah, 2005 [5]; Hall and Parker, 1993 [15]; Shoaf et al., 1998 [17].
	Life Cycle Management	Westkämper et al., 2001 [6].
	Occupational Health	Cheng et al., 2001 [12]; Ikuma et al., 2009 [13]; Wada et al., 2008 [14]; Ditlevsen, 2004 [16]; Pecillo, 2003 [19]; Milczerak, 2003 [20].
	QWL (Organizational Analysis)	Takezawa, 1982 [9]; Cherns, 1975 [10]; Konrad and Mangel, 2000 [11]; Haley et al., 2005 [18]; Cicek, 2005 [21]., Kandasamy and Ancheri, 2009 [23], Koonmee et al., 2010 [24].

The different strategies are proposed in the literature to enhance the outcomes of ergonomic improvements and related to quality of working life and economic output. The results indicated that there are important positive correlations between learning strategy, quality of working life and economic output [7]. Macro-ergonomics elements and relationship between macro- and micro-ergonomics issues are described, especially in German management. These issues are work place, design of work content, work environment etc. on micro-ergonomics and work organization, development of organization, technology, integrated management systems etc. on macro-ergonomics [8].

The changes in quality of working life is analyzed in three Japanese industries which are ship-building, the electrical machinery industry and automobile manufacturing, over the period from mid-1960s to 1977 [9]. The QWL is defined as systems perspective of organizational and structural behavior by considering interpersonal and human relations with supervisory style perspectives. Cherns explained some basic assumptions of QWL, which are organization technical system, parameters for operation of social systems, task based patterns of interactions, protection reliability of a system in a service [10]. Another study analyzed psychosocial job stressors on working people with a survey of in Taiwan. The results showed that 7.6% of men and 6.5% of women have heavy stresses at work. The impacts of job stressors' implications are founded more important for health among the working people [12].

A questionnaire was developed from job content questionnaire and quality of work life survey (QWL) for physical and psychosocial levels at work by simulation experiments. Then a factor analysis is applied to skill discretion and decision authority, stress level and supervisor support, physical demands, quality of coworker support, and decision making support [13]. The factors on working conditions and prolonged fatigue among physicians are determined with a questionnaire by mailing in Japan. The results showed that harder workload and the prolonged fatigue were negatively associated with better relationships for both male and female physicians. Their study suggested that these factors on working conditions and prolonged fatigue are considered as important by management [14].

A life quality index (LQI) is defined for revision and necessary work time, dimension analysis to stay alive in clean and healthy conditions to fit for effective wealth producing work and to enjoyable free time. Consistency

problems with the standard power function expression of the LQI are pointed out [16]. A study is focused on job content and context with the primary aim of quantitatively establishing a level of risk for the purpose of improving organizational performance and quality of life in work setting. Several job analysis techniques are evaluated based on their ability to achieve the fundamental objectives of job analysis as well as the quality criteria of validity, reliability and utility [17].

The personnel qualifications of managers, their preferences concerning quality of working life, motivation of workers and the level of quality of working life are determined in a survey carried out in a public institution. It is observed that using authority and personnel judgment with the salary and performance system applied in the organization and establishing essential steps with together workers to meet the need for change by managers to attend major decisions are necessary to increase success and efficiency in the institution according to the survey results [21].

Yucel et al. worked on physiological and psychological circumstances in social level by threading and pushing the physical and psychological limits in textile industry. They study on different health conditions such as extensive work duration, shift type work, existence of physical danger, increase of responsibility and threat of unemployment [22]. The identification of QWL dimensions are studied in working environment of a hotel from Mangalore city in India. An open-ended questionnaire has been developed and surveyed on 84 students and 64 employees from three hotel management institutes and three hotel organizations [23]. Another QWL study investigates the association between institutionalization of ethics, quality of work life (QWL), and employee job-related outcomes for 164 human resource managers in Thailand. Ethics and employee job-related outcomes, organizational commitment and team spirit are found as the impacts on QWL [24].

Consequently, the purpose of the quality of working life is to increase productivity and benefit of workers by improving working environment for workers. This term which is used to get attention of lower quality of working life in 1960s in the USA, later it included workers' enrollment and aims of organizational efficiency with changes and improvements.

1.2. General Perspective of Ergonomics Applications in Turkey for Textile Industry

As a result of interaction of Turkish companies selling their products to European Union and World Market, customers are pushing producers to make necessary arrangements to improve the quality of working life. Lawful arrangements and surveys are other factors to improve working environment. There are positive developments like as the European worker's protection law, which has to be realized in all European Union (EU) membership countries. This law goes far beyond traditional content: the new content may be understood as describing 'applied ergonomics'. Independently from ergonomics approaches, one sees recent management concepts using ideas discussed in the context of organizational design and management (ODAM). By talking about the future of ergonomics it might be helpful first to analyze the past.

Though psychological and sociological topics have been dealt with too, the concepts of stress and strain and more physiological aspects (e.g. in heavy industry) have dominated the scene. Ergonomics in industrial practice has been mostly corrective and additive.

There is no doubt that the consequences needed to meet these challenges require fundamental and sustained changes also in work organization. If one wants to transform these challenges into chances, convergence between performance and quality of working life must be taken care of and one must start as soon as possible. As experience shows, many companies start too late, driven by crisis and/or customers. The results then are limited in scope and sustainability because they are mainly cost-driven. As a consequence, most of the recent change concepts (e.g. total quality management (TQM), lean production/management, business reengineering) failed because there was no (full) commitment of employees and it was not no embedded in company practice and culture. Some of the concepts also failed because of their fragmented nature [8].

We were faced with an interesting example. A purchaser from a US-trading-company would observe the production of the analyzed Turkish clothing company. He included in his report that there are some deficits from the point of view of quality of working life, lightening is not enough in some corners, the production areas are dusty and noisy, etc. The trading-company only purchases from the Turkish clothing company after correcting all the observed negative issues in work design. This example shows that customers do not just demand the quality of a product, lower price and short delivery time but also they demand some other factors related to conditions of working environment where goods are produced.

There are a lot of textile companies in the city of Denizli where this survey is carried out. These companies are selling their 80 % of products to the USA or EU countries. Therefore, the quality of working life is increased in these exporter companies. Membership meetings of Turkey with EU, deficiencies in work laws, arrangements from application are affecting the quality of working life in positive way.

2. METHODOLOGY

2.1. Classification of Questionnaire

In order to effectively assess a work system, all components of the respective system must be addressed

in the analysis. Thus, the following components must be considered for an inclusive study.

The first eleven questions of the questionnaire which is given in Appendix-A are related to the general information of a worker. The other questions are related to the QWL degrees of sewing and cutting branches of the textile factory.

Table 2 Classification of questionnaire and content of questions.

Classification of Questionnaire	Content of Questions
Physical and Psychological	Work load and being backbreaking, monotony, level of noise.
Environment and Psychology	Level of lighting, opportunity of resting in a break, music etc., hygiene of working environment, dust, smoke, dirty smell, discomfort, air pollution.
Education	On site work education, suitability of work with employment knowledge and capability
Ergonomics	Order of tools, work posture, consistency of machine and dimensions of work benches
Occupational Health	Ventilation of working area, proper nourishment, occupational diseases and work accidents, satisfaction with the work chair, taking care of employees' health problems by employers, satisfaction with lunches, having sun light in working environment, harmony of lightening and working environment colors, satisfaction from shift type working
Organization, Motivation, Performance	The negative effect of occupational safety tools to work productivity, work experience of workers in machines, being open to change in work environment, opportunity to improve work experience, sincerity in work environment, using personal judgment in work, giving information to workers related to work by employers, contributing decisions related to work, integrity in promoting workers, comparing wages with other firms
Work Safety	Being afraid of work accidents, adequacy of preventive work safety actions, adequacy of equipments against work accidents, satisfaction with layout of work environment, preventive maintenance of machines

2.2. Options of Answers for Questions

The participants evaluated each question in five categories where 5 show the situation of the most satisfaction and 1 shows the worst situation. Table 3 shows an example result table of survey for ergonomics section. The other sections are realized by using same methods with fifty questions.

Table 3 Ratios of answering and weighted averages for ergonomics.

Ergonomics	1 Never (No)	2 Sometimes	3 Changeable	4 Often	5 Always (Yes)	Total	Group Weighted Average
40. Are you satisfied with the positioning of your working tools and working posture?	17	15	7	4	40	83	3.42
41. Are the sizes of the machine and workbench that you use suitable for you?	15	7	7	1	54	84	3.86
Ergonomics (General)	16	11	7	3	47	84	**3.64**

This study is conducted in the cutting and sewing workshops of a large textile factory. According to Table 3, only 84 workers joined the survey to answer questions of Ergonomics despite total 87 questionnaires are distributed to workers in these workshops.

2.3. Evaluation Method and Risk Analyzes

SPSS 12.0 statistical software is used to evaluate the survey forms. Data are summarized as graphics in conclusions section. The ranges which are accepted to evaluate quality of working life are [26]:

- RED (0.0-1.6): The risk of illness or injury is evident and unacceptable. Possible operators should not be exposed to this risk (High risk, should be avoided).
- YELLOW (1.6-3.5): There is, overall or in part, a non-negligible risk of illness or injury for the possible operators (possible risk, not recommendable).
- GREEN (3.5.-5.0): The risk of illness or injury is negligible or at a level acceptable for all possible operators (low risk, recommendable).

Based on this risk rating, the following measures should be taken:

- GREEN ZONE: No measures are necessary.

- YELLOW ZONE: A further risk assessment as well as an analysis, taking other, not associated risk factors into account, will follow. Subsequently, measures for reconfiguration or, if this is not possible, other measures for control should be taken as soon as possible.
- RED ZONE: Measure for risk reduction is necessary.

3. EXPERIMENTAL RESULTS

The detailed analysis of the work content and the quality of the work life are carried out with a conventional single factor analysis of variance. Different groups are built and then results are explained for each group according to answers.

3.1. General Evaluation

The results are given in Figure 1 for the survey to determine and to raise quality of working life of workers in cutting and sewing workshops of the textile factory.

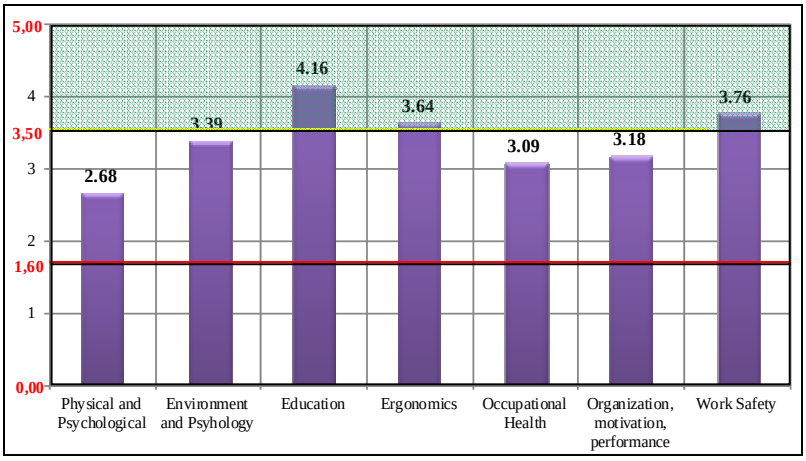

Figure 1. Results of general evaluation.

It is obvious that the company must continue improvements in different areas according to survey results. The 'Education' is the level of satisfaction with a general average of 4.16 according to criteria evaluated. 'Ergonomics' and 'Work Safety' have general averages of 3.64 and 3.76, respectively. Thus, these three areas are in the 'Green Zone' which can be said that these areas are in a good level in the factory. But, still there are opportunities for improvements. "Physical and Psychological" factors are in the lowest level of satisfaction with a general average of 2.68. Actions for enhancement are necessary for these factors since they are in the 'Yellow Zone' in the view point of quality of working life. It is pleasure that there are no survey data in or around the 'Red Zone'. The weighted level of quality of working life of company is computed as 3.41 and it is in the 'Yellow Zone'.

3.2. Age Groups Analysis

Evaluation of survey is carried out in sub categories. The age is the main factor in the first sub category for quality of working life to determine the level of satisfaction. The workers are divided into two groups as (1) ages between 18 and 25, and (2) ages over 26 when considering the age. The levels of quality of working life are given in Figure 2 for age groups. The value with discontinuous line shows the level of general average in the Figure 2.

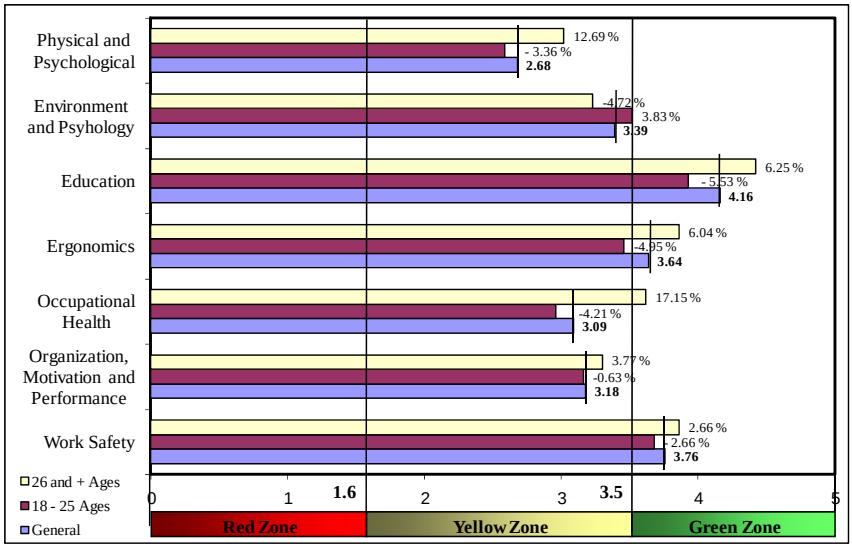

Figure 2. Results of general evaluation of age groups.

Especially "Physical and Psychological" and "Occupational Health" circumstances are greater than the general average for ages over 26 as 12.69% and 17.15%, respectively, for workers' level of satisfaction of work according to Figure 2. Also, the level of workers' satisfaction is above the general average with 3.83% for just the category of "Environmental and Psychology" for age group of 18-25 according to Figure 2. It is under the general averages for other categories of evaluation. The highest level of satisfaction for 'Education' is 4.42. The level of satisfaction for 'Ergonomics', 'Occupational Health' and 'Work Safety' is above the 3.50 and is in the 'Green Zone' for the age group of 26 and over. The highest level of satisfaction for 'Education' is 3.93. The level of satisfaction for 'Environmental and Psychology' and 'Work Safety' is just above the 3.50 and is also in the Green Zone' for the age group of 18-25.

3.3. Education Levels Analysis

Similarly, the levels of satisfaction of quality of working life of the workers who attended to the survey are obtained according to level of education. The level of education is classified as:

(1) Graduate of elementary school,

(2) Graduate of junior high school,

(3) Graduate of high school or vocational high school.

The evaluation of the survey and the levels of quality of working life of workers for the level of education are given in Figure 3. The values with discontinuous lines show the level of general averages.

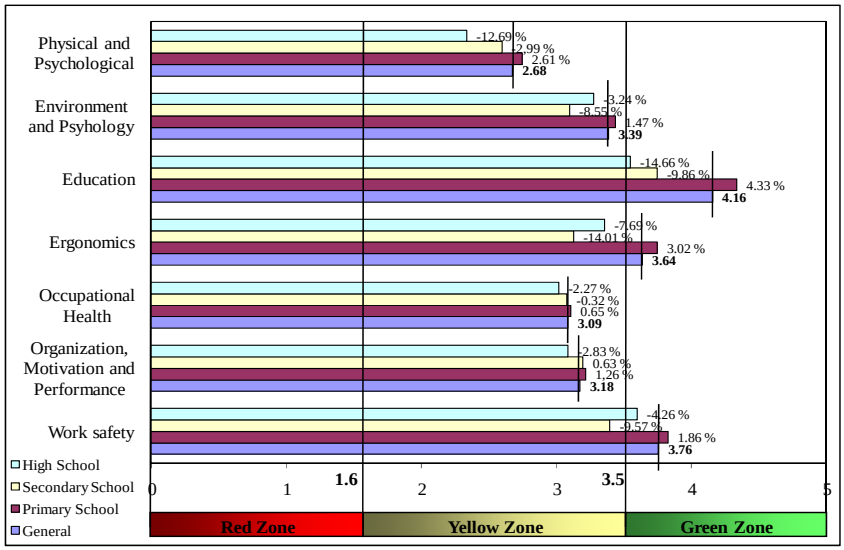

Figure 3. Results of general evaluation of educational levels.

The levels of satisfaction of quality of working life of graduates of elementary school are above the general average for all evaluation criteria. The lowest level of satisfaction is in the category of 'Physical and Psychological' with 2.75 and the highest level of satisfaction is in the category of "Education" with 4.34

according to Figure 3. The levels of satisfaction of quality of working life of graduates of junior high school for the categories of 'Environmental and Psychology', 'Education', 'Ergonomics' and 'Work Safety' are under the general average as 8.55%, 9.86%, 14.01% and 9.57%, respectively. The levels of satisfaction of quality of working life of graduates of high school or vocational high school for the categories of 'Physical and Psychological', 'Education', 'Ergonomics' and 'Work Safety' are clearly under the general average as 12.69%, 14.66%, 7.69% and 4.26%, respectively. It is determined that the lowest level of satisfaction of quality of working life for level of education is in the category of 'Physical and Psychological' with 12.69% under the general average and the level of 2.34 for the workers who are graduates of high school or vocational high school. The graduates of elementary school for categories of 'Education', 'Ergonomics' and 'Work Safety', the graduates of junior high school for category of 'Education', and the graduates of high school or vocational high school for categories of 'Education' and 'Work Safety' are in the 'Green Zone' with a level of satisfaction above of 3.50.

3.4. Years in Work of Workers Analysis

The levels of satisfaction of workers are determined by considering years in work of workers to obtain indicators of quality of working life.

Years in work is classified as:

(1) 0 – 3 years

(2) 4 – 10 years

(3) 11 years and over.

Evaluation of survey and the levels of quality of working life in view of years in work are given in Figure 4. The values with discontinuous lines show the level of general averages.

The level of satisfaction of quality of working life is above the general average for category of 'Physical and Psychological' as 12.31% for years in work of 4-10 years and is above the general average for category of 'Education' as 11.30% for years in work of 11 years and over according to Figure 4. The lowest level of satisfaction is in the category of 'Physical and Psychological' with 2.45 and is 8.58% under the general average and the highest level of satisfaction is in the category of 'Education' with 4.23 and is 1.68% above the general average for years in work of 0-3 years. Similarly, the lowest level of satisfaction is in the category of 'Occupational Health' with 2.92 and is 5.50% under the general average and the highest level of satisfaction is in the category of 'Education' with 4.02 and is 3.37% under the general average for years in work of 4-10 years.

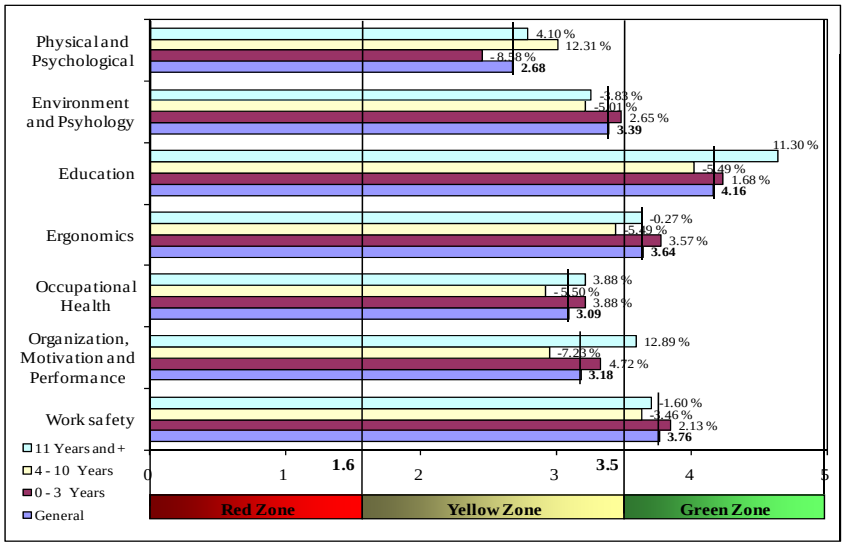

Figure 4. Results of general evaluation of years in work levels.

The lowest level of satisfaction is in the category of 'Physical and Psychological' with 2.79 and is 4.10% under the general average and the highest level of satisfaction is in the category of 'Education' with 4.63 and is 11.30% above the general average for years in work of 11 years and over. In addition, the years in work of 0-3 years for categories of 'Education', 'Ergonomics' and 'Work Safety', the years in work of 4-10 years for categories of 'Education' and 'Work Safety', and the years in work of 11 years and over for categories of 'Education', 'Ergonomics', 'Organization, Motivation and Performance' and 'Work Safety' are in the 'Green Zone' with a level of satisfaction above of 3.50.

4. DISCUSSION

In this paper, the quality of working life and current working conditions were evaluated in a large Turkish textile factory of cutting and sewing branch. Quality of working life of textile industry must be improved

according to findings. The company where the survey is conducted is insufficient according to category of 'Physical and Psychological (2.68)'. Some improvements are necessary in this category. Also, it can be said that the physical work load is affecting the occupational health since the level of category of 'Occupational Health (3.09)' is low. Therefore, the category of 'Organization, Motivation and Performance (3.18)' which measures motivation and performance is also low.

In spite of all these negative factors, company had a success of keeping categories of 'Environmental and Psychology (3.39)', 'Ergonomics (3.64)' and 'Work Safety (3.76)' away from the 'Red Zone'. But arrangements are not enough to keep the psychological and physical factors in the necessary levels. The special importance must be given to the categories of 'Ergonomics (3.64)' and 'Work Safety (3.76)' to raise the level of satisfaction of quality of working life by improving physical and psychological factors.

As a results, the level of quality of working life of the company is determined as 3.41/5 as weighted. This stays in the 'Yellow Zone' for general evaluation. This can be considered as an advantage since it is near to the 'Green Zone'. The level can be pull to the 'Green Zone' by doing necessary arrangements discussed in the previous sections.

The further research can be determined to affected factors on QWL and optimization of QWL levels for these categories. Therefore, a new framework can be developed for the QWL analysis for the production systems.

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Appendix A. Questionnaire

Part I. General Information

No.	Group	Variable	Answer
1.	Age	18-25 25-35 36-45 46-55	
2.	Gender	Male Female	
3.	Education level	Only writing and reading Primary school Secondary school High school Vocational school or university	
4.	Title	Worker Foreman Head foreman Middle manager Top manager	
5.	Working place	Shop floor/factory Office	
6.	How long have you been working in this company?	0-3 4-10 11-16 17 and above	
7.	Are you educated before you start doing the job you are doing now?	Yes No	
8.	How did you learn the job you are working?	Starting from apprenticeship Learnt after started to work here Learnt in the related school	
9.	Are there regular breaks in your job?	Yes No	
10.	Do you think the breaks are enough?	Yes No	
11.	What is your working form?	On seat On foot On work bench	

Part II. Working Place

No.	Questions	Never (No)	Sometimes	Changeable	Often	Always (Yes)
12	Is your job hard and tiring?					
13	Is your job monotonous?					
14	Are you afraid of having work accidents in your working place?					
15	Is the noise level in your shop floor prevents your conversations?					
16	Is your productivity and performance negatively affected while you are using the preventives that you should use during your work?					
17	Do the noise, dust and smell in your shop floor disturb you?					
18	Is there air pollution in your shop floor?					
19	Are you bored of working in shifts?					
20	Is it noisy in your working place?					
21	Is the air conditioning done properly in your working place?					
22	Do the workers using work machinery have enough experience?					
23	Is the illumination enough in your working place?					
24	Would you like to have music broadcast during rest, lunch and tea breaks?					
25	Is the job-education useful for your co-workers in your working place?					
26	Is the job you are doing suitable for your knowledge and talents?					
27	Do you think security precautions are enough?					
28	Are you nourished orderly?					
29	Are there workers influenced by work-illnesses or work accidents?					
30	If you work on seat, are you satisfied with your chair?					
31	Do you feel uncomfortable after you sit for long period of time on your working chair?					
32	Did your employer give you enough equipment to save you from work accidents?					
33	Are you satisfied with the arrangement of the working environment?					
34	Is the employer concerned with the employees' health problems?					
35	Is the maintenance of the machinery that you are working with done periodically?					
36	Are you pleased with your lunch meal?					
37	Can you benefit the sun light in your working (and also in the garden) place?					
38	Is there harmony between the illumination and the colors of the working place?					
39	Is the cleaning of your working place done properly?					
40	Are you satisfied with the positioning of your working tools and working posture?					
41	Are the sizes of the machine and workbench that you use suitable for you?					
42	Is your working environment productive, alive and ready to changes?					
43	Are you able to learn new things continually in your working place?					

Part II. Working Place

44	Is there a sincere working-condition in your working place?					
45	Do you have enough authority usage possibility related to your job?					
46	Are enough knowledge and support obtained about your job by the managers?					
47	Do you have the right of joining decisions in your working place?					
48	Are there promotion and progressing possibilities in your working place?					
49	Is it fair to be promoted and progressed in your working place?					
50	Is your monthly salary higher than other employees in other firms?					