Job Characteristics Model and Quality of Work Life: A Case Study of an Automobile Parts Manufacturing Plant

Seyed Abolfazl Zakerian, Mehdi Asghari, Abdolrasoul Rahmani, Iman Ahmadnezhad, Mehdi Kangavari, Yavar Gholizadeh, Marzieh Abbassinia

Background: The objective of this study was to investigate job characteristics model level and quality of work life among workers of automobile parts manufacturing plant, and the association between job characteristics model and quality of work life. Method: In this Descriptive - analytic study, 150 workers of the automobile parts manufacturing plant at Tehran city were chosen by simple random sampling. Data collection tool were three questionnaires for demographic, quality of work life and job characteristics model information, which were filled up by the participants. Result: The results revealed that 83.3% of workers have low MPS (motivating potential score) and MPS value for the remaining participants considerate moderate MPS. 54.6%, of the people were dissatisfied with the quality of work life; 22% of the people were satisfied with the quality of work life and 23.3 of the people were with no opinion. As the results showed, there was a positive and significant relation between job characteristics model and quality of work life (p = 0.001). Also, skill variety and task significance had the highest effects on quality of work life. Conclusion: As the results showed, there was a positive and significant relation between job characteristics model and quality of work life, so that the higher the potential motivation, the higher the quality of work life. Also, further research should be performed to find other factors influencing job characteristics model and quality of work life in understudy Company.

INTRODUCTION

Today, the problems of human societies, and consequently, the problems of organizations are increasingly more sophisticated, more extensive, and more diverse, and their solution requires a better and more holistic thinking. In many cases, trying to solve individual, social and occupational problems with the view that the incidence of the problem is caused by various factors may also causes other problems. A systemic thinking approach tries to deal with the complexities of the current world more on principles, and offer a more appropriate strategy to encounter it. The quality of the work life is one of the topics, which has been discussed from the various aspects in the last half-century, and there are many differences of opinion still about its examples.

The quality of work life, due to the ever-increasing complexity of societies and labor markets and pay more attention to the nature of the human forces is of special importance. Nowadays, the quality of work life is considered as an essential dimension of the quality of life. In addition, a high quality of work life is essential for organizations to attract and retain workers (1). When the organization offers the quality of work life to its employees, has done a great approach to attract and retain employees. In fact, it causes the formation of this idea that the organization will be able to provide a suitable working environment for its employees (2). Several factors are influential on the quality of work life, including a fair and adequate remuneration, a safe and healthy working conditions and social integration in the work of the organizationthat enables an individual to develop...
and use all his or her capacities (3). The quality of work life is essentially a multi-dimensional concept and is a way of reasoning about the people, work and organization (4). Quality of work life is important to organizational performance and it is an important factor that affects employee motivation at work (3). A lot of the definitions in this field are in order to achieve an efficient work environment that can meet the individual and organizational needs of the human resources and have a positive impact on the aspects of the quality of work life. Based on Van Lar definition, the quality of work life include job and career satisfaction, work conditions, general well being, home work interface, stress at work, and control at work (5).

Job enrichment is one of the most interesting ways to create motivation and an important contributor in the design and increase the quality of work life of employees. Job enrichment, as a managerial activity and motivation technique to improve performance and increase the work motivation and satisfaction, give employees increased responsibility and opportunities to feel a sense of achievement in their jobs (6,7,8). The theoretical basis for job enrichment lays on the work done by Hackman and Oldham (6), in which the Job Characteristics Model is proposed (9). This model provides a framework for a better implementation of the job by working through the interaction between the main aspects of the job with the mental- living states of a person. Based on this model, Key characteristics of the job including skill variety, task identity, task significance, autonomy, and job-based feedback (10). The above five core dimensions can be combined to form a single index as Motivating Potential Score (MPS) for a job (11). MPS can be used to assess the capacity of a job to motivate, so the high motivation potential level suggests the high the motivation and job satisfaction, and jobs with low MPS may be considered for redesign to increase motivation level (12,13).

A limited number of studies have investigated the relationship between the Job characteristics model and quality of work life. However, some studies have been conducted in the field of quality of work life and MPS, or in other fields and work environments; and each investigator has emphasized on the necessity of increasing the quality of work life or create motivation for the employees in a work environment. Sharma and Gupta suggested that quality of working life is a vital factor for organizational performance and an effective factor to motivate staff at work (3). In order to achieving the highest level of motivation, Robbins and Cenzo suggested that it is necessary managers offer more flexibility, and pay more attention to employees’ different needs and goals that in work environment have been ignored (14). Armstrong showed that staff satisfaction is achieved by realization of their demands using the resources, activities, and the outcomes of participation in workplace activities (15). NasleSeraji and Dargahi showed that the quality of working life is affected by their learning at work, and helps them to manage working changes; otherwise dissatisfaction negatively influences on all staff regardless their position (16).

Iran, a country tremendously rich in natural resources such as oil and gas, and numerous manufacturing and petrochemical industries, serves as strategic and economic importance role in Persian Gulf and West Asia. Nevertheless, there is a great deal of potential in the Iranian educated and young workforce, they usually present low productivity. They seem unmotivated and disappointed of quality of work life. So, the present study was aimed at investigating job characteristics model and quality of work life among workers of automobile parts manufacturing plant. This paper is also an attempt that focuses on how job characteristics model and quality of work life can impact each other. The research presented here studies the factors affecting the mentioned issues.

**MATERIAL AND METHODS**

The present study was conducted in automobile parts manufacturing plant in 2012 (%95 confidence level, 0.8 test power, and%25 absolute error). 150 men were assigned using cluster random sampling to participate in this survey. Research environment of understudy plant was Foundry unit which included four parts: Melting, Finishing, Aluminum and CNC. All data collected through demographic information and Job Characteristics Model Questionnaire, designed by Hackman and Oldham and Quality of Work Life, based on Van Lar.

**Demographic information questionnaire:**

The demographic information questionnaire included information about age, marital status, education background, working experience, second job, working hours per week and job title.

**Job Characteristics Model Questionnaire:**

The former include 15 questions, scored according to Likert 5 point scale ranging from “Completely Incorrect = 1” to “Completely Correct = 5”, and it is used to calculate “Motivating Potential Score (MPS)” (16, 17, 18, 19, 20, 21).

The questionnaire encompasses the five subscales: Skill variety (SV), Task identity (TI), Task significance (TS), Autonomy (AU), and Job-based Feedback (FB) (10), each subscale contains three questions.

Skill variety is “the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the person” (16,17). Task identity is “the degree to which the job requires completion of a "whole" and identifiable piece of work; that is, doing a job
from beginning to end with a visible outcome” (16,17). Task significance is “the degree to which the job has a substantial impact on the lives or work of other people, whether in the immediate organization or in the external environment” (16,17). Autonomy is “the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out” (16,17). Feedback from the job is “the degree to which carrying out the work activities required by the job results in the individual's obtaining direct and clear information about the effectiveness of performance” (16,17).

MPS can be calculated by (10,21):

\[
MPS = \frac{SV + TI + TS}{3} \times AU \times FB
\]

Questions 2, 4, 6, 7, 10, and 15 are reversely scored.

As seen in above formula, the combination of job characteristic (Skill variety, Task identity, Task significance) has the same weight as Autonomy and Feedback, so AU and FB are given more importance in determining a job's Motivating Potential Score (22,23).

Maximum and minimum possible MPS scores are 125 and 1 respectively. MPS scores are interpreted as follow: scores below 50 was considered low, 50 to 87.5 as moderate, and greater than 87.5 high MPS. Scoring for all five core job characteristics was the same as MPS calculation method and there were three levels of low, moderate, and high MPS for each job characteristics (19).

Quality of work life questionnaire:

Validity and reliability of the quality of working life questionnaire designed by Van Lar were confirmed by ShabaniNejad et al (24). This questionnaire including 24 questions was designed in Likert's 5-point scale (strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree). In order to better assessment and comparison of results with other studies, total point of each field of life quality questionnaire was balanced in the range of 0-100.

Job and career satisfaction (JCS), general wellbeing (GWB), work condition (WCS), home-work interface (HWI), stress at work (SAW), and control at work (CAW) were assessed by 23 questions of the questionnaire respectively.

Results:

The average age of the participants in this study was 33.87 ± 5.27 years. 5. The average work experience was 10.3 ±5.2 years; 28.7%, 66%, and 5.3% of the people had the educational degrees of under diploma, diploma, and post-diploma, respectively. 95.3% of people were married and the rest were single. 97.3% of people did not have second jobs. On average, people are committed to do their job as 56 hours a week. 20.7%, 37.3%, 17.3%, and 24.7% of people were working in the completion unit, the CNS unit, the aluminum unit, and the melting unit, respectively.

After analysis of the data, it was determined that the average motivational potential was 36.84 ± 14.68. 125 people (83.3%) were with low MPS and 25 people (16.7%) were with moderate low MPS. The average and categorization of the effective aspects in the job characteristics and Motivating Potential Score (MPS) has been shown in the Table1. The results of the ANOVA test showed a significant difference exists between the mean motivational potential in the various tasks (P = 0.016).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average ±SD</th>
<th>Low Value</th>
<th>Moderate Value</th>
<th>High Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
<td>Frequency</td>
</tr>
<tr>
<td>MPS</td>
<td>36.84 ±14.68</td>
<td>125</td>
<td>83.3</td>
<td>25</td>
</tr>
<tr>
<td>Skill variety (SV)</td>
<td>25.6 ±21</td>
<td>136</td>
<td>90.7</td>
<td>11</td>
</tr>
<tr>
<td>Task identity (TI)</td>
<td>20.29 ±18.28</td>
<td>141</td>
<td>94</td>
<td>8</td>
</tr>
<tr>
<td>Task significance (TS)</td>
<td>19.95 ±14.53</td>
<td>146</td>
<td>97.3</td>
<td>4</td>
</tr>
<tr>
<td>Autonomy (AU)</td>
<td>31.71 ±26.27</td>
<td>118</td>
<td>78.7</td>
<td>26</td>
</tr>
<tr>
<td>Feedback (FB)</td>
<td>25.33 ±19.98</td>
<td>137</td>
<td>91.3</td>
<td>11</td>
</tr>
</tbody>
</table>

The mean quality of total work life expressed was 39.73 along with a standard deviation 16.23. Furthermore, 54.6%, of the people were dissatisfied with the quality of work life; 22% of the people were satisfied with the quality of work life and 23.3 of the people were with no opinion.

Figure 1 illustrates the mean of different fields of quality of work life. JSC obtained the highest average (44.88) and home-work interface had lowest average(34.11).
The results of T-test did not show any significant difference between the different aspects of quality of work life among the single and married people (P> 0.050).

The results of the ANOVA test showed a significant difference between the areas of home-work interface, control at work, working conditions and quality of work life expressed in the various jobs in the industry (P> 0.026); however, this difference was not significant in other areas (P> 0.050).

Results of regression analysis and final model of influence of job characteristics model’s dimensions on quality of work life are presented in Table 2. The findings in Table 2 reveal that that skill variety has the greatest effect on quality of work life and task significance and task identity are in next ranking.

Table 2: Results of regression analysis and final model of influence of job characteristics model on total quality of work life.

<table>
<thead>
<tr>
<th>Model</th>
<th>Non-standard coef.</th>
<th>Standard Error</th>
<th>Standard coef.</th>
<th>Beta</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed coef.</td>
<td>26.739</td>
<td>2.513</td>
<td>10.639</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill variety</td>
<td>.153</td>
<td>.069</td>
<td>.199</td>
<td>2.221</td>
<td>.028</td>
<td></td>
</tr>
<tr>
<td>Task identity</td>
<td>.181</td>
<td>.089</td>
<td>.168</td>
<td>1.914</td>
<td>.042</td>
<td></td>
</tr>
<tr>
<td>Task significance</td>
<td>.198</td>
<td>.095</td>
<td>.177</td>
<td>2.087</td>
<td>.039</td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>.038</td>
<td>.056</td>
<td>.061</td>
<td>.670</td>
<td>.504</td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td>.066</td>
<td>.070</td>
<td>.081</td>
<td>.945</td>
<td>.346</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2 shows a comparison between mean MPS and Total Quality of Work Life values at understudy units.

The result of Pearson’s test, which we applied to measure statistical relationship between job characteristics model (and all dimensions) and quality of work life (and all area), implied that there was significant correlation between job characteristics model (and all five dimensions) and quality of work life (and all five area) (Table 3).

**Discussion:**

The present study was to examine the relationship between the job characteristics model and the quality of work life. Based on the results obtained, a positive and significant existed between job characteristics model and the quality of work life (p < 0.01). So that by increasing the potential motivation, quality of work life also increases. These results confirm the hypothesis that the effects of job enrichment on quality of work life of people. Such a significant relationship between job characteristics model and quality of work life showed that
job enrichment enhances the quality of work life of people. Understanding factors related to the motivational potential of the employees is very important. Because it has a significant positive relationship with the quality of work life, so, the quality of work life can be improved by changing and manipulating its components. The results of the study that is among the limited studies conducted in this field in the Iranian industries can be a useful version for policy makers and managers to provide effective interventions to improve the motivational potential and the quality of work life of staff in the diverse professional.

**Table 3: Relationship between job characteristics model and its related items with the factors of quality of work life (Pearson test)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>JCS</th>
<th>GWB</th>
<th>WCS</th>
<th>HWI</th>
<th>SAW</th>
<th>CAW</th>
<th>QWL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS</td>
<td>0.366 (p=.001)</td>
<td>0.375 (p=.001)</td>
<td>0.201 (p=.014)</td>
<td>0.190 (p=.021)</td>
<td>0.201 (p=.014)</td>
<td>0.328 (p=.001)</td>
<td>0.353 (p=.001)</td>
</tr>
<tr>
<td>Skill variety</td>
<td>0.487 (p=.001)</td>
<td>0.427 (p=.001)</td>
<td>0.326 (p=.001)</td>
<td>0.326 (p=.001)</td>
<td>0.301 (p=.001)</td>
<td>0.429 (p=.001)</td>
<td>0.498 (p=.001)</td>
</tr>
<tr>
<td>Task identity</td>
<td>0.393 (p=.001)</td>
<td>0.429 (p=.001)</td>
<td>0.189 (p=.029)</td>
<td>0.270 (p=.001)</td>
<td>0.306 (p=.001)</td>
<td>0.408 (p=.001)</td>
<td>0.411 (p=.001)</td>
</tr>
<tr>
<td>Task significance</td>
<td>0.235 (p=.004)</td>
<td>0.283 (p=.001)</td>
<td>0.164 (p=.046)</td>
<td>0.176 (p=.031)</td>
<td>0.287 (p=.001)</td>
<td>0.336 (p=.001)</td>
<td>0.302 (p=.001)</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.304 (p=.039)</td>
<td>0.346 (p=.026)</td>
<td>0.164 (p=.046)</td>
<td>0.175 (p=.033)</td>
<td>0.192 (p=.026)</td>
<td>0.334 (p=.001)</td>
<td>0.304 (p=.001)</td>
</tr>
<tr>
<td>Feedback</td>
<td>0.366 (p=.001)</td>
<td>0.375 (p=.001)</td>
<td>0.201 (p=.014)</td>
<td>0.190 (p=.021)</td>
<td>0.201 (p=.014)</td>
<td>0.328 (p=.001)</td>
<td>0.353 (p=.001)</td>
</tr>
</tbody>
</table>

Low mean of MPS among the participants reveal that their job does not motivate them enough. Khalesi and et al (26) reported low MPS among hospital professions in Kerman, Iran. Majidi showed that high MPS among managers in the central office of Jihad Sazandegi Ministry Tehran, Iran and low MPS among it’s clerks (27). Contrary with our finding, Tang indicated that teachers of social development school in Hong Kong had high MPS (28) and also High MPS in the Rehabilitation Center of Tehran Welfare was reported by Porhadi and et al (29). Porhadi and et al only studied 13 subjects in their research that this inconsistency between our results and them can be due to different sample size and certainly job identity.

Our results showed the average total quality of work life was 39.73. Arab et al. (30) and Goudarznand-Chegini et al. and Mirdoozandeh (31) studied quality of work life and job satisfaction in some health care workers. They reported the mean of the quality of work life was 48.75 and 73.28 respectively. It can be see there is considerable difference with our results. Further, we found that job career satisfaction (JCS) had the highest average while in Arab study general wellbeing (GWB) had this situation (30). This inconsistency may be due to different studied populations and background of education, or different dominant systems in two investigated groups. In addition, Home-Work Interface (HWI) obtained the lowest point; therefore the work life quality of staff can have undesirable effects on their personal life.

The quality of work life is an analogical concept, so comparing the results of present study with those of other studies may propose effective solutions. A research conducted by Health and Safety Executive (HSE) in the UK on quality of work life of more than 30000 employees was taken as a criterion in our study (32). As illustrated in figure 3, comparison of our results with the criterion indicates that quality of work life in our study is undesirable. Only 2.7% of the participants were satisfied with their quality of working life and 19.4% were completely unsatisfied (Figure 3).

**Fig. 3: Comparison of quality of working life between this study and HSE.**

There are some reasons for low quality of work life in our study, for example the tasks assigned to the participants were not challenging, and the staff had no chance or opportunity to develop and realize their talents and potentials; moreover, they could not take part to organizational decision making.

Results showed a significant difference exists between the areas of home-Work interface, control at work, working conditions and quality of work life expressed in various positions in the industry. So that it was consistent with our observations when study and research on this industry. For example, the highest average of quality of work life was observed among the employees in the CNC and finishing units and melting. Our study
demonstrated that these units were with better working conditions and employees were more successful in the relationship between the family and their work environment. However, the quality of work life and working conditions of employees in the Aluminum unit were weaker than employees of other units. Because having a safe and healthy working environment, ideal working conditions, job control, and more importantly the relationship between work and home that has a significant impact in reducing the adverse effects on employees' personal lives, and they are necessary and important for the quality of work life of employees, authorities of the company are recommended, on a wider scale, to study quality of work life, the relationship between work and home, control at work and working conditions in the of various units in the industry and to minimize differences in the different units.

The highest average motivational potential was observed among the employees of melting and CNC units. Being higher average motivational potential among the employees of melting and CNC units can express this issue that these units are of the variety of job, autonomy and job feedback better than the other units. In these units, working conditions is so that provides to take advantage of the skills and talents of employees; as a result, it has caused higher quality of work life of employees in these units. In contrast, to be low motivational potential in the aluminum unit compared with others unit shows that there are stressors for workers in the working environment, and working conditions is so that a skill variety, autonomy and job feedback is less to provide for the employee; and the average quality of work life of the unit is lower than other units. On a larger scale, the company's educational designers and planners are suggested to study quality of work life of the unit, try to solve this problem and improve the quality of work life of the staff in the unit.

According to the regression table, skill variety, significance, and task identity have the greatest impact on the quality of work life, respectively. This shows the extent to which a variety of activities are needed to do the job, the degree to which the job affects the lives and careers of others and the extent to which the worker performs a job completely are the most influential factors on the quality of work life, respectively. Therefore, the relevant authorities are recommended, with an emphasis on these factors, to improve the quality of work life.

One of the limitations of this study was the weakness of co-working of the staff due to the lack of time and resources and scarce research in the field of industry; a problem that researchers are facing with it constantly in the individual and questionnaire-based studies. To continue on the study findings, due to the low motivational potential as well as low quality of work life of employees, more surveys and studies are proposed on etiology and offering practical solutions in order to eliminate or minimize these factors.

Conclusion:
As the results showed, there was a positive and significant relation between job characteristics model and quality of work life, so that the higher the potential motivation, the higher the quality of work life. There are some reasons for low quality of work life. Tasks assigned to participants were not challenging; staff had no opportunities to realize their talents; they could not take part to organizational decision making. Individuals who adopt their job voluntarily are more satisfied. By improving the job characteristics model, staff can feel justice, security and success. Also, further research should be performed to find other factors influencing motivation and quality of work life in understudy Company.

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