Effect of job organization on job satisfaction among shop floor employees in automotive industries in Malaysia

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**Abstract**

The effect of job organization factors on job satisfaction was examined in two automotive industries in Malaysia. The information was collected from 170 male subjects with the mean age and work experience of 26.8 ± 5.3 years and 6.5 ± 4.9 years, respectively. The results showed that the job satisfaction was significantly related to job organization factors. The potential applications of these findings include methods developed in diagnosing the industrial work, namely, questionnaire design, data collection and statistical analysis to diagnose current industrial work design that affect workers satisfaction. The relationship between job organization factors and job satisfaction was analyzed using statistical methods to determine the correlations and regression model. The model developed highlights that the most significant factors in both automotive companies are job rotation, work method, problem solving and goal setting with adjusted $R^2$ of 0.8 and 0.7 for the two automotive companies.

Relevance to industry: The study highlights methodological developments in determining the effect of job organization factors on job satisfaction in the automotive industries. The findings suggest that job organization factors and job satisfaction are significantly related and it is therefore important to maintain these factors in an automotive industrial environment in order to keep the shop-floor employees motivated.

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**1. Introduction**

Researchers have suggested a number of work design strategies in order to enhance the quality of work (Nadin et al., 2001). However, little attention has been given to the actual process of work design (Oldham, 1996). There is a need for the development of tools to assist this process (Clegg, 1995). This suggests that there is a need for a more thorough understanding of the various factors that affect industrial work design which in turn has a direct impact on operational performance and productivity (Das, 1999). Work design research can also contribute to further knowledge in the field by applying what is already known and by adopting a more holistic approach to the research (Holman et al., 2002). What is currently in dire need is an approach to the design of a work system that is human centered and one that adequately addresses critical factors that are affecting work design.

The most important evidence indicating a decline in the well-being of an organization is the low level of job satisfaction (Kaya, 1995). Thus job satisfaction is one of the major criteria for establishing a healthy organizational environment. Employees generally work harder and perform better when they are satisfied with their jobs; so factors related to job satisfaction are relevant in the prevention of employee frustration and low level of job satisfaction (Boltes et al., 1995; Bowen et al., 1994; Mallio, 1990; Manthe, 1976; McCaslin and Mwangi, 1994; Riggs and Beus, 1993; Shriver, 1968).

Why do we need satisfied employees? The answer is survival. Satisfied employees help organizations to survive and be more productive (Lindner, 1998). The fundamental objective of this research is to investigate the relationship between job organization factors that affect work design and job satisfaction. The methodology developed to address this objective includes questionnaire design, data collection and statistical analysis.

**2. Methodology**

The job diagnostic survey (JDS) developed by Hackman and Oldham (1974) was used as a tool to diagnose the characteristics of the job organization factors and job satisfaction in the survey. The questionnaires used in the survey consist of a set of Likert-type scales multiple-choice items (Rodeghier, 1996). To identify the relationship between the tested factors and job satisfaction, the data were analyzed using statistical methods including regression analysis to determine the correlations.
2.1. The survey

The questionnaires were distributed to the subjects individually. Two automotive manufacturing industries were involved in the survey, one will be called Auto 1 and the other Auto 2. Both Auto 1 and Auto 2 are public listed companies. Auto 1 employs a total of more than 10,000 workers while Auto 2 employs a total of more than 8000 workers. The annual production for Auto 1 is in the region of 200,000 units of cars and that for Auto 2 is in the region of 150,000 units of cars. One hundred and seventy male subjects between the ages of 18 and 40 years took part in the survey.

2.2. The questionnaires

The questionnaires consisted of a set of Likert-type scales multiple-choice items (Rodeghier, 1996). Basically, the questionnaires were designed in three sequential sections covering:

(a) General background data, i.e. age, gender, years of employment, marital status and education levels.
(b) Job organization, i.e. job rotation, work method, training, problems solving and goal setting.
(c) Workers satisfaction toward their job.

2.3. Data analysis

Reliability measures, correlation coefficient and regression analysis were conducted, and linearity tests were also carried out on the correlation coefficient and the regression analysis.

2.4. Job organization

It has been pointed out by previous researchers that factors that influenced the performance of a group of workers were participation in job related decision, self-regulation, and worker autonomy (Das, 1999). In the current study, five job organization factors were tested. They were job rotation, work method, training, problem solving and goal setting. The questionnaires indicated the respondents’ perception on these factors and how they could affect job satisfaction. As a cross check and reference for the analysis, an interview with the management was conducted prior to the questionnaire session. The study intended to find out how the respondents felt about the organization of the task, the methods applied and the work load and how these factors affect their job satisfaction.

2.5. Job satisfaction

Job satisfaction is a measure of the degree to which the employee is satisfied and happy with the job. Job satisfaction is higher when a person feels that he or she has control over the way a given task is accomplished. The major instrument for measuring job satisfaction is JDS developed by Hackman and Oldham (1974). Initially, JDS was used as a diagnostic tool designed to measure the characteristics of jobs in an organization, the readiness of workers to perform challenging and motivating work, and the reaction of employees to their jobs.

3. Results

3.1. General background data

Analysis of the 170 male participants interviewed showed that 80% possessed Malaysian Certificate of Education (SPM) which is equivalent to the Cambridge “O” levels, in both companies while others possessed SPM certificates with other skill certificates. Sixty nine percent of participants in Auto 1 were married and 31% were single. On the other hand, 87% of participants in Auto 2 were single and 13% were married. The subjects were between the ages of 18 and 40 years with the mean age of 26.8 ± 5.3 years and mean work experience of 6.5 ± 4.9 years.

The age factor was normally distributed but work experience was not. Work experience for Auto 1 was negatively skewed while work experience for Auto 2 was positively skewed. The responses indicated that 83% of the workers in Auto 1 were 26 years and above while 90% of the workers in Auto 2 were below 26 years. Only 17% of workers in Auto 1 were 25 years and below while 9% of the workers in Auto 2 were 26 years and above. As for work experience, 90% of the workers in Auto 1 had worked for more than 5 years. Another 10% had work experience of less than 5 years. In the case of Auto 2, 90% of the workers had work experience of 4 years and below. Only 10% had work experience of between 5 and 8 years. Respondents in Auto 2 were younger and less experienced than respondents in Auto 1. The distribution of respondents’ age is shown in Table 1 and the distribution of respondents’ work experience is shown in Table 2, respectively.

3.2. Job organization factors

The responses for job organization factors in the two companies are illustrated in Fig. 1 and Fig. 2. It could be seen that about 50% of respondents from both companies had chosen a Likert-scale 3 and 4 for job rotation, work method, problem solving and goal setting. As for training about 50% of respondents from Auto 1 had chosen a Likert-scale 3 while about 50% of respondents from Auto 2 had chosen Likert-scale 4 and 5. To summarize, generally, the majority of workers were satisfied with job organization factors tested in the study. From Figs. 1 and 2 it is noted generally that training and goal setting were the two most dominant factors affecting job satisfaction. The least dominant was job rotation.

3.2.1. Reliability measures

Questionnaire reliability was tested using Cronbach alpha (α) as shown in Table 3. Cronbach’s alpha is derived from the average correlations of all the items on the scale (Rodeghier, 1996). Out of 12 reliability measures in both companies, 10 had reliabilities above 0.7. One item had reliability measures around 0.6 and one item had reliability measures of at least 0.5. The results indicated that the reliability measures were high for job factors in both companies.

**Table 1**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Respondents’ percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Auto 1</td>
</tr>
<tr>
<td>18–20</td>
<td>3</td>
</tr>
<tr>
<td>21–25</td>
<td>14</td>
</tr>
<tr>
<td>26–30</td>
<td>50</td>
</tr>
<tr>
<td>31–35</td>
<td>26</td>
</tr>
<tr>
<td>36–40</td>
<td>7</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Work experience (years)</th>
<th>Respondents’ percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Auto 1</td>
</tr>
<tr>
<td>1–2</td>
<td>5</td>
</tr>
<tr>
<td>3–4</td>
<td>5</td>
</tr>
<tr>
<td>5–6</td>
<td>20</td>
</tr>
<tr>
<td>7–8</td>
<td>44</td>
</tr>
<tr>
<td>9 and above</td>
<td>26</td>
</tr>
</tbody>
</table>
especially for job rotation, work method, problem solving and goal setting with values from 0.69 to 0.88. However, the reliability measure on training for Auto 2 was found to have a comparatively low value of 0.5. Reliability measures for job satisfaction in both companies were high with 0.89 and 0.82 in Auto 1 and Auto 2, respectively.

3.2.2. The correlation coefficient

Fig. 3 shows the correlation coefficient between the job organization factors and job satisfaction. The results indicated that there were significant correlations between job organization factors and job satisfaction. Four factors which had strong significant correlations in Auto 1 were for goal setting, work method, training and job rotation while two factors having distinctive significant correlations in Auto 2 were job rotation and work method.

3.2.3. Regression analysis – model summary

The regression analysis can predict the importance of each factor in the equation. It can also assist in manipulating the factors in determining job satisfaction as the relative advantages of one factor over another which can be clearly defined in work design. The regression analysis of the data indicated a significant positive correlation between job organization factors and job satisfaction. Job rotation, work method, training and goal setting showed strong correlations with job satisfaction while problem solving showed intermediate correlations in Auto 1. On the other hand most job organization factors showed intermediate correlation with job satisfaction in Auto 2.

The Pearson correlation coefficient, $R$, is most frequently used to see how well a model fits a set of data, the closer it is to unity, the better the correlation. Table 4 indicates that as the correlation between the predictor factors combined and the dependent factor, the value of $R$ equals 0.908 for Auto 1 and 0.836 for Auto 2. The above values indicate that the linear regression models could be predicted from the independents variables.

Five factors were identified to be significant for Auto 1 and four factors were identified for Auto 2. Significant factors for Auto 1 were job rotation, work method, training, problem solving and goal

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**Fig. 1.** Respondents’ percentage versus job factors on 5-point Likert-scale for Auto 1.

**Fig. 2.** Respondents’ percentage versus job factors on 5-point Likert-scale for Auto 2.
setting with adjusted $R^2$ value of 0.804 while significant factors for Auto 2 were job rotation, work method, problem solving and goal setting with adjusted $R^2$ of 0.667. Here the values of about 80% for Auto 1 and about 70% for Auto 2 of the variability of job satisfaction were explained by factors mentioned earlier. The results indicated that the five independent variables could explain the observed variability of about 70% for job satisfaction in both models. The value was high and only about 30% could not be explained. The observed values of 0.80 and 0.70 indicated that the linear regression models predicted the data well. It could be concluded that job rotation, work method, problem solving and goal setting influenced job satisfaction in Auto 1 while job rotation, work method, problem solving and goal setting influenced job satisfaction in Auto 2.

3.2.4. Linearity test

Evidence to indicate that the relationships between the independent and the dependent factors were linear is shown using scatter plots. Scatter plots of Job Satisfaction against Regression Studentized Deleted (Press) Residual for Auto 1 and Auto 2 are shown in Figs. 4 and 5. Job satisfaction is the dependent variable. The factors are scattered without showing any pattern giving evidence that the independent and the dependent factors are linear (Foster, 2001).

3.3. Job satisfaction

The responses for job satisfaction in the two companies are illustrated in Figs. 1 and 2. The responses indicated that, about 50% of the respondents from Auto 1 and Auto 2 had chosen a Likert-scale 3 for job satisfaction. The second highest in percentage is a Likert-scale 4 which was dominated by Auto 2 with 40% responses and Auto 1 with 30% responses. The rest of the scales indicated responses of about 5–12%. This showed that in general more than 90% employees were moderately satisfied with their job for both companies.

### Table 3
Reliability measures using Cronbach’s $\alpha$ for tested factors.

<table>
<thead>
<tr>
<th>Tested factors</th>
<th>$\alpha_{Auto1}$</th>
<th>$\alpha_{Auto2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job organization factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job rotation</td>
<td>0.828</td>
<td>0.83</td>
</tr>
<tr>
<td>Work method</td>
<td>0.887</td>
<td>0.88</td>
</tr>
<tr>
<td>Training</td>
<td>0.828</td>
<td>0.50</td>
</tr>
<tr>
<td>Problem solving</td>
<td>0.69</td>
<td>0.79</td>
</tr>
<tr>
<td>Goal setting</td>
<td>0.904</td>
<td>0.82</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.89</td>
<td>0.82</td>
</tr>
</tbody>
</table>

### Table 4
Model summary regression model for Auto 1 and Auto 2.

<table>
<thead>
<tr>
<th>Regression model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. error of the estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto 1</td>
<td>0.908</td>
<td>0.825</td>
<td>0.804</td>
<td>0.2823</td>
</tr>
<tr>
<td>Work method</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job rotation</td>
<td>0.836</td>
<td>0.698</td>
<td>0.667</td>
<td>0.3311</td>
</tr>
<tr>
<td>Problem solving</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal setting</td>
<td>0.894</td>
<td>0.828</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Discussion

4.1. Job satisfaction as affected by age, work experience and marital status

Fig. 3 clearly shows that the correlation between job satisfaction and job organization factors is higher in Auto 1 compared to Auto 2. One possible explanation is that workers in Auto 1 were highly satisfied with their work because they were older, married and more experienced as compared to the younger, mostly single and less experienced workers in Auto 2.

Age is known to be one of the factors affecting job satisfaction. Studies in five different countries have proven that older workers were more satisfied than their younger counterparts (Kaya, 1995). The present survey results also support findings by Janson and Martin (1983) and McCaslin and Mwangi (1994) who found that older employees have higher job satisfaction. Lee and Wilbur (1985) suggested that job satisfaction increased with age. One explanation for such a finding is that older employees are more able to adjust their expectations to the returns of their work (DeSantis and Durst, 1996).

Marital status did highlight differences in degree of job satisfaction in both companies. Research done by Bowen et al. (1994) stated that older, married and more experienced workers had higher levels of job satisfaction and were more committed and cooperative than younger, single and less experienced workers. Benin and Nienstedt (1985) examined how job satisfaction affected marital happiness and global happiness. They found...
that job satisfaction influenced marital happiness and the effects of job satisfaction and fulfillment interacted with the effects of marital happiness in producing global happiness. In addition Bowen et al. (1994) also suggested that the younger, single and less experienced workers might still be deciding on their career and this might preclude job satisfaction and organizational commitment.

4.2 Job satisfaction versus job organization

The significance of job rotation and work method on job satisfaction are rarely discussed in the literature since most research emphasized more on worker’s performance and productivity as exemplified by Vroom and Deci (1970) and The Ergonomics Group (1986). In this study, it was found that there was significant positive correlation between job rotation and work method with job satisfaction. This is in agreement with Amrine et al. (1993) who stated that reducing the boring and monotonous jobs could lead to improved job satisfaction. This corresponds to the results of this study with more than 80% of the workers in both companies being satisfied with their job rotation and work method. Further, there were significant correlations between those factors with job satisfaction. Therefore, job rotation and work method were found to be significantly correlated to job satisfaction.

The results were also consistent with the findings by Gazioglu and Tanske (2002) and Hamermash (1977) who found that training opportunity was significant and positively correlated to job satisfaction. The results showed that the correlation was high in Auto 1 compared to Auto 2. This was because 85% respondents in Auto 2 felt that they had quite a number of training while only about 50% respondents in Auto 1 felt the same way. There were several training opportunities for respondents in Auto 2 because a majority of them were new as evidenced by their ages and experiences. The overall results indicated that training opportunity would lead to higher job satisfaction. However, if too much training is given lower job satisfaction might be expected.

The results also indicated positive significant correlations between goal setting and job satisfaction in both companies. This result differed from some other studies such as Umstod et al. (1976). The survey indicated that more than 90% of the workers were satisfied with their companies’ goal setting. Even though the results were different from those in the previous literature, these finding indicated that it was important for the management to consider the characteristics of individual subordinates before setting up goals. This could include the capability and limitation of the worker.

Fifty percent of the respondents in Auto 2 felt that the management was serious in encouraging them to be involved in problem solving. This increased their job satisfaction on par with other factors in Auto 2. On the other hand, only 40% respondents in Auto 1 felt the same way. This lead to lower job satisfaction compared to other factors in Auto 1. The results supported the studies by Ugboro and Obeng (2001) which found that involving workers in problem solving would improve or increase job satisfaction.

5. Conclusions

The results of the study indicated that there was significant correlation between job organization factors and job satisfaction. In summary, the conclusions derived from this investigation are

1. That job rotation, work method, problem solving and goal setting are outstanding factors in the study of job satisfaction for automotive industries with almost equal dominance and training being the least dominant.
2. The strength of correlation between job organization factors and job satisfaction was influenced by age, work experience and marital status.

References


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