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OPERATIONS IMPROVEMENT TO DESIGN WORK POLICY: PRIORITY IDENTIFICATION BY USING QFDF

P.L. Rika Fatimah and Abdul Aziz Jemain

Abstract. This paper discussed the improvement action for operations in the organization. The improvement shall value of designing work policy to be better and more effective. The new approach is taken by considering family performance of the human resource. Samples involved 1,213 respondents, who are married and have children, are selected from Peninsular Malaysia. Three dimensions that have been identified as important parameters for determining the family performance are family relationship, family growth and family maintenance. A quality based approach, also taken under Operations Management theory, is utilized to analyze the responses of respondent in determining the family performance. QFDF stands for Quality Function Deployment for Family is used to identify the priority action need to be taken to improve the operations in the organization. In addition, QFDF is applied to match the quality dimensions in the concept of organization to the dimensions under family life. The findings of QFDF are presented using House of Quality (HOQ) to project the family performance into quality of working in an organization.

1. INTRODUCTION

It is the essential need, for nowadays, that government and organization should put their concerned to improve their quality of manpower. Having

Received 12-05-2012, Accepted 01-06-2012.
2010 Mathematics Subject Classification: 90B25, 90B70
Key words and Phrases: QFDF; Operations Management; Human Resource Improvement; Work Policy.
the quality may strengthen the competitiveness of manpower in order to face the globalization. In most countries, especially in Asia, the smallest institution, where the manpower is being produced, is family. Therefore, it is necessary to take account of family performance as one of important indicator in designing public policy. One of important public policy is related to work policy. Considering that almost every aspect of life related to work environment then it is quite strategic to have a good consideration in designing this policy.

2. FAMILY PERFORMANCE DEPLOYMENT

We use Quality Function Deployment for Family (QFDF) to project the linkage between family performance of human resources into quality of working in organization [1]. QFDF is adapted the Quality Function Deployment (QFD) steps [2, 3] into appropriately to explain the Family Performance Deployment (FPD). The first step is to determine the Voice of Family (VoF) by using Affinity Diagram. Affinity Diagram is an appropriate tool which gathered large amount of language data (ideas, opinions, issues, etc) and organized them into groups based on the same characteristics between them [4].

The next step is to translate VoF into quality perspective called "Voice of Quality (VoQ)" by using Tree Diagram to map out path and task [5] of family in terms of quality perspective. The third step is to describe the relationship between Wolf and VoQ using certain symbols so that the relationship can be easily identified. We used L-Shaped Matrix to show every relationship for each variable [6].

Finally, we develop Family Performance Index to identify the respondent’s achievement level of family performance which will be discussed in section four. We analyze the results and run significance test in the background of the respondents. Considering the result analysis, we propose action to be taken to enhance the performance for family and extend the idea to design the work policy. The proposed action will be further discussed in section five.

3. DATA

3.1. Subject

This paper discussed the family performance by identifying and deploying its dimensions and variables. Samples involved 1,213 respondents, who are married and have children, are selected from Peninsular Malaysia.
Table 1: Distributions of Returned Questionnaires for the Different Regions

<table>
<thead>
<tr>
<th>REGIONS</th>
<th>SELANGOR</th>
<th>CENTRE</th>
<th>FEDERAL TERRITORY</th>
<th>SOUTHERN</th>
<th>NORTHERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATES CITY</td>
<td>Bangi</td>
<td>Kajang</td>
<td>Seremban</td>
<td>Kuala</td>
<td>Johor</td>
</tr>
<tr>
<td>Number</td>
<td>300</td>
<td>200</td>
<td>105</td>
<td>403</td>
<td>202</td>
</tr>
<tr>
<td>Scalling(%)</td>
<td>24.73</td>
<td>16.49</td>
<td>8.66</td>
<td>33.22</td>
<td>16.65</td>
</tr>
</tbody>
</table>

The distribution of questionnaires according to the different regions is given in Table 1. We received 500 questionnaires for the state of Selangor where 300 questionnaires were from Bangi and 200 questionnaires were from Kajang. For the state of Federal Territory, we received 403 questionnaires from Kuala Lumpur. The next state is Johor Darul Takzim with 202 questionnaires received from Johor Bahru. Followed by the state of Negeri Sembilan where we received 105 questionnaires from the city of Seremban. The last state is Kedah Darul Arman where we received 53 questionnaires from the city of Kedah.

The backgrounds considered for the respondent are gender, occupation, education, etc. According to gender, we have 51.6% male respondents and 48.4% female respondents who are married and have children. In terms of length of marriage, 34.3% of our respondents are married in the period of less than 10 years, 30.3% for the period of between 12 until 17 years and 35.4% for the period of more than 17 years. According to ethnic groups, 46.5% of our respondents are Malay, followed by 33.3% Chinese, and the rest is Indian. There are many types of occupation of the respondents; however, the two most common occupations are related to the private sectors (39.3%) and followed by conducting their own business (27.2%).

3.2. Measure and Scale Reliability

The questionnaires consist of 107 questions. Two main parts were contained in the questionnaire. The first part is about respondent background with 15 questions asking for gender, race, education and etc. The second part is about a family which consists of three sub-part: (1) Family Relationship with 10 questions using Likert Scale of 1 = almost never and 5 = always, (2) Personal Growth with 11 questions using the same Likert Scale and (3) System Maintenance with 12 questions using Likert Scale of 1 = very disagree and 5 = very agree.

In this study, the most common measure of reliability which is Cron-
bach's alpha ($\alpha$), based on Cronbach [9], had been used. The value of 0.7 – 0.8 above is an acceptable value for Cronbach's alpha, values substantially lower indicated an unreliable scale. The questionnaire in this study to be acceptable in terms of scale of reliability since we found the Cronbach's alpha ($\alpha$) value of 0.95.

4. QFDF ANALYSIS FOR FAMILY PERFORMANCE INDEX

To identify the level of achievement of performance in family practices, we develop Family Performance Index. The index aggregated value between VoF and VoQ (see Fig. 1). The aggregation value is given from the respondent opinion regarding their level of satisfaction and importance of performance in family practices. The family practices are represented in VoF. By using Likert Scale, five levels of satisfaction and importance with five for very satisfied/importance and one for very unsatisfied/unimportance is utilized.

![Figure 1: Relationship Matrixs of QFDF and notation applied](image)

The relationship matrix consists of relevancies strength ($R_{ijj'}$) be-
tween performance of \( i \)-th of dimension of \( i \)-th \( (P_{ii}) \) and quality of \( j \)-th of dimension \( j \)-th \( (Q_{jj}) \). The aggregation of each relevancies in rows is represented by the Voice of Family of \( j \)-th of dimension \( i \)-th \( (VoF_{ii}) \) and in columns is represented by the Voice of Quality of \( i \) of dimension \( j \) \( (VoQ_{jj}) \).

Referring to the matrix and notation applied, it is given Family Performance Index as \( (PI) \) in the following manner:

Family Performance Index,

\[
PI = f(PID_1, \ldots, PID_i, \ldots, PID_n)
\]
\[
= \frac{1}{n} (PID_1 + \ldots + PID_i + \ldots + PID_n)
\]  

(1)

and the index of each dimension of \( i \)-th as \( (PID_i) \) where \( PID_i \) is Performance Index of Dimension \( i \)-th, \( i = 1, \ldots, n \) in the following manner,

\[
PID_i = \sum_{i' = 1}^{n_i} VoF_{ii'} \times wp_{ii'}
\]  

(2)

The \( VoF_{ii'} \) represents Voice of Family of the \( i' \)-th of dimension \( i \)-th in the following manner:

\[
VoF_{ii'} = \sum_{j=1}^{m} \sum_{j'=1}^{m_j} \frac{Q_{jj'} \times R_{ijji'}}{MaxLikert \sum_{j=1}^{m} \sum_{j'=1}^{m_j}} \times 100
\]  

(3)

where,

\[
Q_{jj'} = \frac{1}{d} \sum_{l=1}^{d} A_{jj'i}
\]  

(4)

Whereas the value of \( wp_{ii'} \), which is weighted correlation of VoF of \( i' \)-th of dimension of \( i \)-th can be obtained:

\[
wp_{ii'} = \frac{\sum_{l=1}^{n_i} \rho_{ii'l}^2 - 1}{\sum_{i'=1}^{n_i} \sum_{l=1}^{n_i} \rho_{ii'l}^2 - n_i}
\]  

(5)

where,

\( \rho_{ii'l}^2 \) = correlation between VoF of \( i' \)-th with VoF of \( l \) of dimension of \( i \)-th
After we develop the Family Performance Index, we applied four levels of respondent’s achievement of family performance by using normal distribution of two sigma (σ) and average (X) value. The four levels of achievement are excellent, good, moderate, and bad.

We analyze the respondent’s level of achievement with the respondent’s background. We used significance test for \( p \leq 0.05 \) is significant. The discussion emphasized only to those with significant results. The test identified level of achievement of respondent on family performance and their different backgrounds respectively.

5. RESULT AND DISCUSSION

A quality based approach is used to analyze the responses of respondent in determining the family performance. The approach is based on the theory of organizational performance for assessing the level of achievement on family performance by utilizing the dimension of the family. Three dimensions that have been identified as important parameters for determining the family performance are family relationship, family development \([8]\) and family sustainability \([9]\).

Having identified the dimension using the quality based approach, QFD methodology was applied to match the quality dimensions in the concept of organization to the dimensions under family life. The findings of QFD are presented using House of Quality (HOQ) for FPD. Adjustments were made on QFD methodology and HOQ, so that it is applicable in the context of family. The relationship matrix of HOQ for FPD is as shown in Figure 2.

The results show that in general, 40.0% respondents in a good level of achievement in family practices. They are who in a high level of performance, are those who have undergraduate education and above. While 37.1% respondents who their family level of education is elementary school, have the lowest level of achievement of family performance. It is clear that education background is important to improve family performance. They who are in low level of education could not be able to perform as competitive as others who are in higher level of education. The low level group has found in bad performance of family practices which may effect to their work performance \([10]\). The result may utilize for those who develop or improve work policy. Considering that the educational issues have a significant impact of the level of achievement of family performance, it is necessary to
have a policy regarding to provide adequate education or as equal, such as courses, skills, and etc, for competitive manpower.

Furthermore, it is found that 19.2% respondents who the husband works for the government is found in excellent level. It implies that those who work with the government have a better family life. Therefore, it is appropriate if the government may increase the work policy regarding to the vacancy quota which is enable more people to work in government institutions. Beside the husband’s occupation, the length of marriage is also found to be significant to the level of achievement with 36.1% respondents who have married for 12 years until 17 years in moderate level. Most family in the period of 12 years until 17 years marriage life are entering critical phase of their family life. In this period, family expenses are increasing with the growth of the children respectively [11]. Since financial issue is priority for the family in this period, the breadwinner of the family should works hard in order to able to fulfill the family need. Therefore, it is appropriate if the work policy may consider this situation by providing more priority and opportunities for those who need added income. For example, the work policy gives priority regarding over time work for those who are married and have children rather than for those who are singles.
We study the level of achievement not only in general but also specifically with respect to dimensions. By studying the respondent’s level of achievement per dimensions, we identify the improvement priority and propose some consideration matters to be noted. Priority given is based on the lowest level of achievement and the lowest percentage of respondent for family dimension respectively. Family sustainability is found in the excellent level with 52.7% respondents. Family relationship is found in the good level of achievement with 36.2% respondents while family development with 38.4% in the same level. Based on the level of achievement and the percentages, the first priority is family relationship, development, and the third priority is family sustainability.

Having the priority result, the policy maker may utilize the result to design or re-evaluate work policy by considering relationship matters in the family as the first priority. It has identified earlier, in the second step of QFD, which family relationship is correspond to service strategy as deployed in Figure 2. The deployment shows three variables under ‘family relationship’ are correspond to two variables under ‘service strategy’. Three variables under family relationship represent practices of cohesion, expressiveness, and conflict in the family. The practices of these variables may influence the family member in terms of their behavior regarding collaboration and strategy information. Therefore, work policy which accommodates improvement in the practices of cohesion, expressiveness, and conflict in the family, may also improve the family member in terms of their ability in workplace to collaborate with other workers and to obtain information needed to develop strategy to achieve the goals targeted by the organization where he/she works. For example, variable of family expressiveness shows that improvement action to family can be achieved by providing opportunities to express oneself and room for fair discussion for each family member to openly deliver their opinion [12]. The improvement in the family may be extended to the working environment through the practice of collaboration which enables people to work together to find solutions for any problem and to facilitate transfer of knowledge and skill among the workers.

Next, the policy maker should take account of family development as the second priority. The deployment shows five variables under ‘family development’ are correspond to three variables under ‘innovation’. Five variables under family development represent the practices of achievement orientation, intellectual cultural orientation, independence, creative orientation and moral emphasis on the family. The practices of these variables may influence the family member in terms of their behavior in the work-
place regarding competencies, job design, and role design. For examples, independence and creative orientation in the family promotes a self effort in planning, controlling, and inculcate the attitude of being responsible for each action and decision [13]. This orientation could motivate the family member to improve their skills, particularly the skill required at the job.

The third priority should be considered is family sustainability. Four variables under 'family sustainability' comprise practices of roles, position, norm, and policy in the family. The practices of these variables may influence the family member’s performance in the workplace regarding variables under ‘technical measurement’ are layout, capacity and facilities. For example, the last variable is a norm which corresponds to capacity in the organization. Having the knowledge of rules and acceptable behavior as expected by the family will support any family member to play his roles effectively [14]. The ability of family member to follow the norms in the family could help him to satisfy the capacity of the organization by fulfilling the plan and schedule as required by the management of the organizations.

6. CONCLUSION

The approach of using family performance as one of the necessary indicator in designing work policy can be considered as an original contribution. The results give new perspective among decision maker and policy maker in government then extended to the organization as well. They may able to identify which variables need to be considered in relation to design better work environment. By having a good work policy which meets the public need, will support a better quality of work then enhancing the competitiveness strength to face the global competitions.

QFD can be widely applied in many areas of research, apart from the manufacturing and service industry, in which QFD is commonly applied. The QFD technique can be adopted in assessing performance of the family. It can be seen that QFD is quite flexible since the complexity in the family can be easily portrayed in the form of several sets of variables. It produces a friendly interpretation of a highly complex and intangible matters around family life thus making the assessment of a family easier. The idea of this assessment can be extended to the government and organizations with reference to those having similar characteristics to the family.
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