DETERMINING AND PRIORITIZING THE MEASURES OF NURSES QUALITY OF WORK LIFE IN QAZVIN HOSPITALS

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ABSTRACT
The aim of this study was to explore how nurses in an Iranian state rate the quality of their work life. This descriptive survey study was performed at the Qazvin hospitals, Iran, during summer 2013. Data collection was through questionnaires. The population consists of 20 experts in the field of nursing is and fuzzy DEMATEL & ANP techniques has been used for data analysis has been used. This study considered only the quality of work life of nurses in hospitals. Its geographical scope is limited to hospitals and other health centers in Qazvin province have been raised. The result shows that a fair and adequate compensation, Working conditions, occupational safety and physical and psychological safety in the workplace, The rule of law, Organizational integrity, were identified as effective Criteria also, Improve the ability of individual, Balance between work and life, Social roles were identified as impressionable Criteria. Both in terms of importance and Influence priority criteria is as follows: The rule of law, Organizational integrity, Working conditions, occupational safety and physical and psychological safety in the workplace, Social roles, Improve the ability of individual, Balance between work and life, A fair and adequate compensation.

KEYWORDS: QUALITY OF WORK LIFE, ANP, FUZZY DEMATEL.
1- INTRODUCTION

In recent decades, interest in work and organizational psychology in relation to the quality of working life (QWL), has increased (Art, et al., 2001). QWL is essentially a multidimensional concept, and is a way of reasoning about people, work and the organization. It seems that the relationship between QWL and the degree of the nurse’s involvement work is a critical factor in achieving higher levels of quality of care delivery (Hsu and Kernohan, 2006). In health care organizations, QWL factors have recently been recognized to significantly influence the performance of staff members, and QWL also refers to strengths and weaknesses in the total work environment (Knox and Irving, 1997). Quality of Nursing Work Life (QNWL) focuses on the degree to which registered nurses are able to satisfy important personal needs through their experiences in the work organization, while achieving the organization’s goals, to make meaningful contributions to their organization (Brooks and Anderson, 2005). An assessment of quality of nursing work life in acute care in a Midwestern state, concluded that nursing workload was too heavy, and that there was not enough time to do the job well. Respondents had little energy left after work, were unable to balance their work and family lives and stated that rotating schedules negatively affected their lives (Rafii, et al., 2006). Preliminary evidence suggests that improvement of QNWL is a prerequisite to increasing productivity in hospitals. Thus, QNWL is in need of scholarly investigation (Mirfakhredini, 2011). A study was conducted at one of the largest factories in northern part of Malaysia. With a respond rate of 70%, Pearson correlation indicates that job satisfaction, job involvement and job security have significant relationship with quality of work life. The study contributes to the mainstream knowledge of the work life study as it delineates the situation from the perspectives of locals working in multinational firm (Muhamad Noor and Adli Abdullah, 2012).

2- BACKGROUND

The questions of research of Abdul Aziz, et al. (2011) focus on the relationship between work and non-work variables and quality of work life. It applied a quantitative research design as well as descriptive and correlation approach. Respondents are all librarians working in government academic libraries in the Klang Valley, Malaysia. An online survey was used to gather data for each participating library. The questionnaire was divided into two sections: Section A, the socio-demographic information; and Section B, the seven questions related to the study. The data were analyzed using Pearson Correlation Analysis. Findings from this study indicated that both work variables and non-work variables do matter in determining the quality of work life. The findings of this research also can be beneficial in Human Resource Management issues and trends in libraries administration. Khani, et al. (2008) has shown: Nurses’ job satisfaction, salary, workload, staffing issues, skill mix, communication, autonomy, recognition and empowerment remain problematic. These findings provide information for policy makers and nursing managers on areas that need to be addressed, to retain nurses within community nursing and for important implications for nurse education administrators. Also needed is outcome-driven research examining the effectiveness, efficacy, and cost-benefit of specific strategies aimed at improving the QNWL and organizational productivity. The aim of the research of Shahbazi, et al. (2011) was to investigate the relationship between Quality of Work Life and performance of Department Chairpersons of Esfahan University. Research methodology was descriptive and based on correlation. In this study 60 Department Chairpersons were selected by proportional stratified sampling method. Results indicate that: 1) Results of Pearson Correlation showed that QWL has positive relations with performance. 2) Result of Regression analysis demonstrates that Developing human capabilities, Constitutionalism in the work organization, Total life space and Social integration in the work organization predict the performance. 3) Result of One Sample T-Test showed that there isn’t significant difference between QWL of Department Chairpersons in Esfahan University and Esfahan Medical Science University. Tavari, et al. (2008) used AHP, SAW, TOPSIS and ELECTRE methods for the ranking Labor productivity criteria. According to the results of the above methods were not compatible with, Integration techniques were used to answer. Management factors were the most important factors and Personal, cultural, social - psychological, and environmental factors that were next in the rankings. According to research of Zare (2012), the findings are the relative supremacy of Job Content =0.334; Work-Life Balance=0.273; Social Factors=0.210 and Economic Factors=0.183. So, that can say the importance of identified aspects of QWF in terms of priority is Job content, Work-Life Balance, Social Factors and Economic Factors. Data gathering tool was questionnaire. Data were analyzed by AHP.
method and Expert Choice software. Lu, et al. (2005) analyses 100 papers relating to job satisfaction among hospital nurses derived from systematic searches of seven databases covering English and Chinese language publications. Finding of that show: Despite varying levels of job satisfaction across studies, sources and effects of job satisfaction were similar. Hospital nurse job satisfaction is closely related to working conditions and the organizational environment, job stress, role conflict and ambiguity, role perception and role content, organizational and professional commitment. Wu and Lee (2007) proposed an effective method that combining fuzzy logic and DEMATEL approach to segment required competencies for better promoting the competency development of global managers. Then they applied their method to an empirical study to show the application of it. When we investigated their results, we found that the results related to applying their method to an empirical study, are not consistent with definitions given in Wu and Lee (2007). In this note, we express a flaw in aforementioned paper and correct it (Mokhtarian, 2011). Shahraki and Jamali Paghaleh (2011) showed Organizations and large companies consider “voice of customer” is an important factor for growth. The aim of our study is to achieve defined and suitable models of ranking the key criteria of the voice of customer. The method is based upon Fuzzy multiple criteria decision making (FMCDM). Fuzzy decision making trial and evaluation laboratory (Fuzzy DEMATAL) method, a useful group decision making tool, has been used to transform the complex interactions between the criteria of the problems of practical life into a visible structured model. The results indicate that in the presented case study, we could apply Fuzzy DEMATAL method to estimate the quantity of the effects of direct and indirect relations of elements with each other and promote the quality of relations and interrelations of the group. Sadegh Amal, et al. (2010) identify criteria influencing the quality of working life from the perspective of human capital employed nurses as the largest group in the complex environment of hospital, Priority measures, effects of these measures on the quality of work life and Impact on other criteria, Improve our knowledge about the quality of work life for nurses. This study was conducted to identify and prioritize the criteria in Qazvin hospitals. Previous studies have failed to identify the parameters of fuzzy logic. Fuzzy logic was used in this study to better understand the linguistic variables. Also, Previous researches problem solved by employing a combined ANP&DEMATEL method.

3- MATERIAL AND METHODS

This descriptive study was performed at the Qazvin hospitals Iran during 2012 winter. The expert panel consisted of 20 experts in nursing. Several questions were designed to achieve:

1) What are measures affecting the quality of work life for nurses?
2) How is the network structure of these criteria?
3) What is the measures effect on the quality of working life and each other?
4) What are the criteria ranking in Qazvin hospitals?

First, a content analysis of previous studies was discussed and criteria were derived from previous studies. The experts were asked in a questionnaire about the approval criteria. Then experts were asked in a questionnaire about Impact on other criteria and degree of importance of each criterion. By using DEMATEL & ANP in Fuzzy environment effect measures were calculated and criteria are divided into two categories: effective and Impressive. Also, was found effect on other criteria and most effective measure was identified. In this study, a fuzzy approach is used to Dyml. Dyml phased manner and procedure is as well based on the exact situation. Except that in this case applying fuzzy values, the fuzzy calculations we are required to perform the operation. Table (1) shows the paired comparisons of linguistic scales.

<table>
<thead>
<tr>
<th>Linguistic variables / numbers corresponding</th>
<th>Value Of the linguistic variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>(No) No impact/0</td>
<td>(0, 0, 0.25)</td>
</tr>
<tr>
<td>(VL) Very low impact/2</td>
<td>(0, 0.25, 0.5)</td>
</tr>
<tr>
<td>low impact (L)/2</td>
<td>(0.25, 0.5, 0.75)</td>
</tr>
<tr>
<td>(H) High Impact/3</td>
<td>(0.5, 0.75, 0.1)</td>
</tr>
<tr>
<td>Very High Impact (VH)/4</td>
<td>(0.75, 1, 1)</td>
</tr>
</tbody>
</table>
This approach solves some studies observed that at the end of January operations are fuzzy (Wu, 2008). If \( Z_{ij} = (l_{ij}, m_{ij}, u_{ij}) \) is a fuzzy triangular number, assuming the research model = \( (C_i | i = 1, 2, \ldots, n) \), the problem is solved in the following way. Initial direct relation fuzzy matrix calculation:

**First**, we calculate the average arithmetic mean of the experts:

\[
\bar{Z} = \left( \frac{Z_{12} + Z_{22} + \ldots + Z_{n2}}{p} \right) 
\]

(1)

The initial direct relation matrix is:

\[
\mathbf{Z} = \left[ \begin{array}{cccc}
Z_{12} & \ldots & Z_{1n} \\
Z_{21} & 0 & \ldots & Z_{2n} \\
\vdots & \vdots & \ddots & \vdots \\
Z_{n1} & Z_{n2} & \ldots & 0 \\
\end{array} \right]  
\]

(2)

**Second**, Normalized direct relation fuzzy matrix calculation:

\[
\bar{a}_{ij} = \frac{\sum_{i=1}^{n} Z_{ij}}{s} = \frac{\sum_{i=1}^{n} l_{ij} + \sum_{i=1}^{n} m_{ij} + \sum_{i=1}^{n} u_{ij}}{s} 
\]

(3)

\[
s = \max_{j=1}^{n} \left( \sum_{i=1}^{n} Z_{ij} \right) 
\]

(4)

Normalized fuzzy direct relationship matrix is:

\[
\mathbf{X} = \left[ \begin{array}{cccc}
\bar{x}_{11} & \bar{x}_{12} & \ldots & \bar{x}_{1n} \\
\bar{x}_{21} & \bar{x}_{22} & \ldots & \bar{x}_{2n} \\
\vdots & \vdots & \ddots & \vdots \\
\bar{x}_{n1} & \bar{x}_{n2} & \ldots & \bar{x}_{nn} \\
\end{array} \right] = \mathbf{X} = \frac{\bar{Z}_{ij}}{s} = \left( \frac{l_{ij}}{s}, \frac{m_{ij}}{s}, \frac{u_{ij}}{s} \right) 
\]

(5)

**Third**, calculate the fuzzy matrix equations:

\[
\bar{T} = \lim_{z \to \infty} \left( \bar{X}^{1} + \bar{X}^{2} + \ldots + \bar{X}^{z} \right) 
\]

(6)

\[
\bar{T} = \left[ \begin{array}{cccc}
\bar{t}_{11} & \bar{t}_{12} & \ldots & \bar{t}_{1n} \\
\bar{t}_{21} & \bar{t}_{22} & \ldots & \bar{t}_{2n} \\
\vdots & \vdots & \ddots & \vdots \\
\bar{t}_{n1} & \bar{t}_{n2} & \ldots & \bar{t}_{nn} \\
\end{array} \right] 
\]

(7)

\[
\bar{t}_{ij} = (l_{ij}, \bar{m}_{ij}, u_{ij}) 
\]

(8)

\[
[l_{ij}] = X_{i} \times (1 - X) 
\]

(9)

\[
[m_{ij}] = X_{m} \times (1 - X_{m}) 
\]

(10)

\[
[u_{ij}] = X_{u} \times (1 - X_{u}) 
\]

(11)

**Fourth**, calculation of \( \bar{D}_i + \bar{R}_i \) and \( \bar{D}_i - \bar{R}_i \):

\[
D = \left[ \sum_{i=1}^{n} \bar{t}_{ij} \right]_{n \times 1} 
\]

(12)

**Fifth**, calculation of \( (\bar{D}_i + \bar{R}_i)^{def} \) and \( (\bar{D}_i - \bar{R}_i)^{def} \):

At this stage, we attempted defuzzification of fuzzy numbers. The value of \( (\bar{D}_i + \bar{R}_i)^{def} \) Indicators that reflect the extent and degree of importance and, the \( (\bar{D}_i - \bar{R}_i)^{def} \) Indicate the effectiveness and impact of the vulnerability. If \( (\bar{D}_i - \bar{R}_i)^{def} > 0 \) Indicator of the impact takes place and if \( (\bar{D}_i - \bar{R}_i)^{def} < 0 \) then we have an effectiveness index.

4- COMBINED ANP AND DEMATEL

For this purpose, after the third step in the methods DEMATEL should be normalized columns of the matrix \( T \) and the internal weighting factors are weighted super-matrix. Then we calculated independent importance of each criterion. An individual weight of each criterion according to “the degree of importance of each criterion” quality of working life is achieved. To this end, the experts were asked to give their opinions as follow (Very low: 1, low: 2, Average: 3, High: 4, Very High: 5).

Moreover, The mean weights for each criterion are achieved. Independent of each criterion: average weight of each criterion divided by the sum of the average criteria. The weights are the “goal column entries in super matrix; that Shown the importance of these values are independent of each criterion with respect to the target. Finally, the weighted super matrix powered to \( (2k+1) \) where \( k \) is an arbitrary number. In addition, final matrix or limited matrix will be obtained. In the Limited matrix all entries in each row are equal and final weight of the same row and the final weight of each criterion involving both the importance and interrelationships criteria (Sadegh Amal, et al., 2010).

5- RESULTS

Experts have confirmed the following criteria that shown in Table (2). Moreover, Table (3) shows the final prioritization of criteria. This ranking obtained by combined ANP and DEMATEL method. The value of \( (D - R)^{def} \) for criteria calculated by the DEMATEL method and Table (4) contain this value.
### Table 2: Criteria of the Measures of Nurses Quality of Work Life in Qazvin Hospitals

<table>
<thead>
<tr>
<th>Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 - fair and adequate compensation</td>
<td></td>
</tr>
<tr>
<td>C2 - Working conditions</td>
<td></td>
</tr>
<tr>
<td>C3 - Improve the ability to create individual</td>
<td></td>
</tr>
<tr>
<td>C4 - Occupational safety and physical and psychological safety in the workplace</td>
<td></td>
</tr>
<tr>
<td>C5 - Organizational integrity</td>
<td></td>
</tr>
<tr>
<td>C6 - Legalism in the organization</td>
<td></td>
</tr>
<tr>
<td>C7 - Balance between work and life</td>
<td></td>
</tr>
<tr>
<td>C8 - Social roles</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: The Final Prioritization of Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>The final weight of the criteria</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 - fair and adequate compensation</td>
<td>0.11041</td>
<td>8</td>
</tr>
<tr>
<td>C2 - Working conditions</td>
<td>0.13583</td>
<td>3</td>
</tr>
<tr>
<td>C3 - Improve the ability to create individual</td>
<td>0.11408</td>
<td>6</td>
</tr>
<tr>
<td>C4 - Occupational safety and physical and psychological safety in the workplace</td>
<td>0.1297</td>
<td>4</td>
</tr>
<tr>
<td>C5 - Organizational integrity</td>
<td>0.13649</td>
<td>2</td>
</tr>
<tr>
<td>C6 - rule of law</td>
<td>0.14106</td>
<td>1</td>
</tr>
<tr>
<td>C7 - Balance between work and life</td>
<td>0.11112</td>
<td>7</td>
</tr>
<tr>
<td>C8 - Social roles</td>
<td>0.1213</td>
<td>5</td>
</tr>
</tbody>
</table>

### Table 4: The Value of \((D - R)^{def}\)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>((D - R)^{def})</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 - fair and adequate compensation</td>
<td>0.4696</td>
</tr>
<tr>
<td>C2 - Working conditions</td>
<td>0.2884</td>
</tr>
<tr>
<td>C3 - Improve the ability to create individual</td>
<td>-0.619</td>
</tr>
<tr>
<td>C4 - Occupational safety and physical and psychological safety in the workplace</td>
<td>0.0699</td>
</tr>
<tr>
<td>C5 - Organizational integrity</td>
<td>0.3528</td>
</tr>
<tr>
<td>C6 - rule of law</td>
<td>0.4168</td>
</tr>
<tr>
<td>C7 - Balance between work and life</td>
<td>-0.695</td>
</tr>
<tr>
<td>C8 - Social roles</td>
<td>-0.283</td>
</tr>
</tbody>
</table>

### 6- Conclusions

Based on the findings of this research; the Legalism in the organization was the most effective measures and the form an adequate and fair compensation was recognized as the least important criterion. According to above tables, a fair and adequate compensation, Working conditions, occupational safety and physical and psychological safety in the workplace, The rule of law, Organizational integrity, were identified as effective Criteria also, Improve the ability of individual, Balance between work and life, Social roles were identified as Impressionable Criteria. According to the criteria of legalism in terms of both effectiveness and priority is placed in the highest rank; these managers need to focus more than ever it brings. Since factors such as compensation, working conditions, job security in those standards have been effective, Managers picks up on it considering all limitations and conditions needed to create decent working conditions, Wages and salaries and compensation, either monetary or otherwise securing nurses have to face their effort and Factors such as the development of interpersonal skills, work-life balance individual and social roles of the organization not to provide favorable conditions influencing factors should not suffer loss. Also, researchers will be able to identify the criteria in the wider regional level.
REFERENCES


