Work Condition and Predictors of Quality of Work Life of Information System Personnel

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ABSTRACT

Dynamic and continuous developments of Information and Communication Technology (ICT) have brought significant changes to work condition. This revolutionary work condition has created pressure and led to various work consequences at workplace. Therefore, it is essential to examine the Quality of Work Life (QWL) among the Information System (IS) personnel those who are heavily involved in ICT work environment. Data from a sample of 453 IS personnel employed in Malaysian ICT organizations were gathered via self-administered mail questionnaire and analyzed using SPSS. This study utilized Job Demand-Control-Support Model to examine the work condition. The results were discussed based on the four types of work condition namely, passive, active, low strain and high strain work conditions and their consequences for QWL. The results show IS personnel fall in the active quadrant that allows them to experience better QWL. Based on regression analysis, it was found that variables of work condition, namely job demand, job control and social support were significant predictors of QWL among IS personnel.

Keywords: Quality of Work Life, Work Condition, Information System Personnel, Malaysia

INTRODUCTION

Many attempts have been made to gain insight of the interaction between the psychosocial work factors and Quality of Work Life (QWL) in information and communication technology (ICT) based work organizations (Le Blanc, De Jonge & Schaufeli, 2000). Psychosocial factors are the components of work and organizational characteristics that have an interaction with individual employees. Martinsons and Cheung (2001) stated that continuous changes in psychosocial work factors directly or indirectly affected the IS personnel because these changes demand them to perform. Therefore, it is a responsibility of the organizations to handle and take an effective measure of its consequences as this would attract or retain prospective IS personnel in the demanding employment trend in the ICT industries (Andries, Smulders, Peters and Dhont, 2002; De Jonge et al., 2000; Marmot et al., 1999).

ICT Development in Malaysia

ICT industries have proven to be the backbone of national development in many countries. Malaysia as a developing country is also experiencing a similar trend. Malaysia’s total ICT expenditure indicates that more and more local organizations are incorporating ICT into their business activities. The government has prioritized ICT as an issue of national importance and established new agencies and policy initiatives to accelerate its implementation and thereby transform Malaysia into a developed and knowledge-based country (Tipton, 2002). It also accelerates the economic development and quality of life of the society (Lu, 2001).

The rapid development in the ICT sectors beyond the expectation has created a vacuum in the employment trend. The ICT industry in Malaysia has enjoyed highest employment growth of 17.2% in 2003 and is expected to register 23% growth in 2004 compared to other industries (Employment Outlook, 2004). Beaumont et al. (2004), however, reported that there is an increase in shortage of skilled workforce in the country despite the increased demand for qualified IS personnel as more and more organizations continue to rely on ICT for their effectiveness and competitive advantages (World Employment Report, 2001).
An increasing demand against the limited supply of IS personnel has forced many organizations to capitalize on small and flexible IS workforce for maximum organizational performance (Duxbury, Higgins & Johnson, 1999). It has also created new types of jobs and skills required (Dhondt & Kraan, 2001), the way work is being carried out and the relationship between the employees-employers in the organizations (Jarvenpaa & Eloranta, 2001; Castells, 2000; Bradley, 2000). As a result, the employees are expected to undertake ever-expanding work responsibilities. Thus, they have to be responsible for multitasking with higher workload that demands long hours of physical appearance in front of computers. This trend appears to cause exerted pressure and, in certain cases, leads to a dehumanized work environment (Watson et al., 2003). This eventually influences the life style of IS personnel, which have substantial impact on their QWL (Dhondt, Kraan & Sloten, 2002; Bradley, 2001; Lau, et al., 2001).

Although the concepts of ICT, its antecedents and outcomes have been researched extensively, little attention has been devoted to understand the work conditions pertaining to QWL as perceived by the IS personnel particularly in ICT work environment. Work condition as operationalized in this research comprises two major components, namely, job control and job demand; and added with organizational support. Research questions arise such as, “What is the situation of work condition of the IS personnel? What is the contribution of the work condition factors to QWL? Therefore, this study examined the work conditions of IS personnel based on the job demand-control quadrants, and the contribution of the work condition variables to QWL.

LITERATURE REVIEW

Quality of Work Life

Quality of Work Life (QWL) is a multi-dimensional construct, made up of a number of interrelated factors. It is associated with job satisfaction, job involvement, motivation, productivity, health, safety and well-being, job security, competency development and balance between work and non work life (De Jonge & Landerweerd, 1993; Hood & Smith, 1994; European Foundation for the Improvement of Living and Work Conditions, 2002). QWL is also viewed as a wide-ranging concept, which includes adequate and fair remuneration, safe and healthy work conditions and social integration in the work organization that enables an individual to develop and use all his or her capacities. The definitions aim at achieving an effective work environment that meets the organizational and personal needs and values that promote health, well being, job security, job satisfaction, competency development and balance between work and non-work life. The definitions also emphasize good feeling perceived from the interaction between the individuals and the work environment.

With due consideration of the nature of work in ICT industry, this study operationally defines QWL as “the effectiveness of the work environment that meets the organizational and personal needs as well as the values of the employees that support and promote better health and well-being, job security, job satisfaction, competency development and balance between work and non-work life”. This definition is derived with the aim of gaining leverage in recruiting and retaining valuable workforce as the nature of work continues to diversify.

Job Demand-Control Support Model (JDCSM)

Job Demand-Control Model (JDCM) is a major theory in the field of work environment (Karasek, 1979; Karasek & Theorell; 1990). It is in a quadrant form, derived from the combinations of job demand and job control. The model emphasizes the interaction between a person and his or her immediate work environment; it is regarded as a social psychosocial model. Karasek’s JDCM implies that strain is caused by a combination of the level of psychological job demands and the amount of job control that one possesses. Social support at workplace is added by Johnson et al. (1997) thereby, creating the Job Demand Control Support Model (JDCSM). It refers to the total amount of ‘supportive’ social interaction between colleagues and supervisors. The inclusion of the social support in the quadrant model does not distinguish the original interpretation as it is only able to explain the function of buffering the physiological outcomes.

The components in the model represent a closer analysis of the psychosocial aspects of work and work condition. There are two mechanisms presented in this quadrant model. One mechanism that predicts the negative effects of high job demands with low job control, which also represents the health and well being of employee, indicating the stress
axis. The other mechanism predicts the motivation, learning and growth and only can be realized when both the psychological job demands and control of an employee are high. This two-dimensional model resulted to four types of work environment, namely, passive, low strain, high strain and active. A passive type of job is a job with a combination of low demands in terms of responsibility and a lack of control feature. Low strain jobs allow some freedom to employees to use their competencies. Although the control is high in this type of job, the nature of job that demands low intellectual capacity makes the control options redundant. The intellectual workload is high in the two remaining types of jobs. High demands with low degree of control resulting in high strain work condition. High demands combined with a high degree of control are represented as active job. Demands are high in terms of accountability, responsibility and information processing, therefore, sufficient job control is essential to prevent intellectual overload. The quadrant results in challenging and stimulating work condition with no risk of psychological strain. People in active jobs are also active in leisure activities and continuously self-improving. Managers and white-collar professionals like IS personnel make up this prominent group with active jobs (Dhondt, 1998).

METHOD

A self administered questionnaire was developed based on Karasek’s (1979) and Kristensen’s (1995) studies specifically to investigate the job demand, control and support in relation to QWL. The questionnaire was in English. Some minor changes to the questionnaire were made after pre-testing. Cronbach alpha values of more than .7 were shown in all the components tested in this study. Randomized cluster sampling was utilized to identify the personnel to represent the respective occupational grouping. A total of 600 questionnaires were issued together with a covering letter explaining the purpose of the study and a self addressed envelope. The data collection basically used the drop-and-pick method. A total of 453 completed questionnaires (83%) were used for analysis. The high return rate was obtained due to multiple follow-ups using telephone calls to the contact persons in each organization involved. The data were analyzed using SPSS, specifically the analyses on the profiles and work conditions used simple statistics, and the prediction on QWL used multiple regression technique.

RESULTS AND DISCUSSION

Socio-Demographic Profiles

Personal Characteristics of the Respondents

As shown in Table 1, gender distribution reveals that there were more male than female IS personnel (70%) participated in the study. This indicates only about one-third of the participants were female, even though evidence shows the trend that there is a shift in employment proportion within the ICT industry as female workforce are substituting male dominated jobs (Bruck et al., 2002). Age of respondents was within the range of 21-30 years which accounted for 72%. Almost 96% of the total respondents were within the range 21-40 years, with the mean age of 29 years. This distribution indicates that ICT industries are occupied by the young workforce. Almost 93% of the respondents obtained a tertiary education (including diploma and post-graduate) with slightly more than half of the respondents had obtained their bachelor degree.

Professional Characteristics of the Respondents

The mobility and flexibility of the ICT usage have changed the nature of work. Forty percent of the respondents have carried out work related activities in an average of 3 hours/day at home. This indicates that the IS personnel need additional hours at the expense of the family time to accomplish their work. Another study comparing between Korean and American IS personnel reveals similar results that Korean or Asian IS personnel would make use of their free time for job-related activities. Hofstede (1990) interpreted that the integrity and loyalty to organization is high among Asian in comparison to the American IS personnel. Bradley (1999) has commented that such flexibility has created disadvantages to employees particularly the IS personnel in the Asian countries.
Table 1: Personal Profile of the Respondents (n= 453)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
<th>(\bar{x})</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>315</td>
<td>69.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>138</td>
<td>30.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>275</td>
<td>60.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>178</td>
<td>39.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\leq 20)</td>
<td>5</td>
<td>1.1</td>
<td>29</td>
<td>5.45</td>
</tr>
<tr>
<td>21- 30</td>
<td>325</td>
<td>71.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31- 40</td>
<td>111</td>
<td>24.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41- 50</td>
<td>8</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\geq 51)</td>
<td>4</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short term courses</td>
<td>6</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certificates</td>
<td>24</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>97</td>
<td>21.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>255</td>
<td>56.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Graduate</td>
<td>71</td>
<td>15.6</td>
<td></td>
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</tr>
</tbody>
</table>

A total of 58.7% of IS personnel have less than 5 years of total work experience with a mean of work experience of 5.16 years. However, 79% of the respondents have shown to have less than 5 years of work experience in current work position. This indicates that only 21.5% of respondents in the ICT industry were those with more than 5 years work experiences. This means that the current workforce in ICT organization is a mixture of new and senior workforce with a ratio of 4:1. For the latter, they would have been working as technical personnel in other field and promoted to IS personnel in the current organizations.

Forty-seven percent of IS personnel engaged in a conventional way of daily working hours (8am to 5pm), 20.1% with shift work (8-9 hours/day), 17.9% with comprehensive work (5 days/week) and 5.3% with extended working hours (12 hours/day). ICT has been used to increase the flexibility in working hours in the contemporary organization; the
conventional practice of the minimum man-hours/day is still emphasized. Only 10% of the respondents have involved in flexible working hours. Thus, the majority of the IS personnel were based in the workplace engaging in the conventional working hours.

**Work Condition**

The physical work condition was derived based on the interaction between the means of job demand and job control. Four types of physical work condition, namely, passive (low demand, low control), active (high demand, high control), low strain (low demand, high control) and high strain (high demand and low control) are described in the model. Whereby the physiological work conditions, namely, learning and stress are derived based on the consequences of the level of demand and control in work. Figure 1 reveals physical and physiological conditions of work. The means for job demand ($\bar{x} = 4.37$) and job control ($\bar{x} = 4.67$) indicate that ICT related jobs fall in the active quadrant that grouped the IS personnel within an active quadrant. This finding was similar to Dhondt’s (1998) finding from his study.

The shortage of skilled personnel, forces the organizations to capitalize on the current IS workforce for maximum output. They are responsible for multitasking with higher workload that demand long hours at workplace. However, the substantial control over their job enables the IS personnel to make their own decision on the time, choice of place and method to accomplish the work. The highly demanding with substantial control work condition allows the IS personnel to experience continuous learning process (Carayon et al., 2001). This is accompanied by a higher support level ($\bar{x} = 4.67$) in the ICT industry.

Jobs combining high demands, high control and high support would provide the highest level of competence and productivity as they lead to active learning condition. Therefore, IS personnel reported the highest level of personal accomplishment. The finding indicates that high demands are not necessarily harmful if it is accompanied by compatible degree of control and support. This dimension is important among the IS personnel as their jobs are challenging and require new learning and an active response. The major implication from this study is that a better work condition could be achieved with job redesign not necessarily by decreasing work demands, but by increasing the levels of control and support by the organizations. Given the projected increase in demands for IS jobs coupled with the current government initiatives, the scope of work should focus in providing sufficient control and support. It is also consistent with many other studies which found that job control and support at work were very important dimensions of the psychosocial work environment (Maureen et al., 2000). Both variables act as a buffer to the demanding work condition. Therefore, the findings show that all the IS personnel fall within the active work conditions.

**Contributors of QWL**

The knowledge on the significant contributors of QWL would help to derive specific recommendations to improve the QWL among IS personnel in Malaysia. Table 3 depicts the results of the regression analysis (Stepwise method). Three psychosocial variables (as the independent variables) were regressed with QWL (as the dependent variable). Among the three psychosocial variables, organizational support shows the strongest contributor of QWL with a standardized beta of .415, followed by job control (beta = .370) and job demand (beta = -.141). Organizational support contributes 33% to QWL. Job control and demand contribute 6.3% and 1.5% to QWL, respectively. All the selected psychosocial variables in this research were included in the regression model. This shows that the selected variables were able to significantly predict the variance in QWL.

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>Beta</th>
<th>Adj. R^2</th>
<th>R^2 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Support</td>
<td>2.025</td>
<td>.415</td>
<td>.332</td>
<td>.334</td>
</tr>
<tr>
<td>Job Control</td>
<td>1.428</td>
<td>.370</td>
<td>.394</td>
<td>.063</td>
</tr>
<tr>
<td>Job Demand</td>
<td>-.387</td>
<td>-.141</td>
<td>.408</td>
<td>.015</td>
</tr>
<tr>
<td>Constant</td>
<td>178.396</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R= .642  R^2 = .412  Adj. R^2 = .408  F = 114.437  Sig. F = .000
The R =.642 shows moderate correlations between the independent variables and dependent variable as recommended by Guilford rule of thumb. All the three psychosocial variables were able to explain 40.8% of the variance in the QWL among IS personnel. The significant F value of 114.44 at a probability of .000 indicates that the variables used in the model are significant.

**DISCUSSION, CONCLUSION AND IMPLICATION**

The combination of high demand and high control is defined as the active work situation, which creates conducive work environment that heightens the level of motivation and personal growth. When control on the job is high and psychological demands are also high but not overwhelming, learning and growth are the predicted behavioural outcomes (Karasek & Theorell, 1990; 1991). It helps them to learn new things, be creative and develop special abilities. The higher job demand provides an opportunity to experience hands-on skills in problem solving, managing uncertainty, coping strategies and balancing between demand and control. IS personnel with this combination of work environment factors have turned out to be the most active group outside of work in social and political activity, in spite of heavy work demands. The active quadrant, allows the IS personnel to mobilize more energy to overcome the demand, thus translated into direct action such as problem solving. The situation also predicts the growth and learning stimuli of IS personnel which results in high productivity.

It is also consistent with many other studies which found that support at work was a very important dimension of the psychosocial work environment (Maureen et al., 2000). Both job control and support act as a buffer to the demanding work condition. Viswesvaran, Sanchez & Fisher (1999) provide evidence that organizational support may directly reduce stressor or moderate the stressor-strain relationship. Job demand-control support model also highlighted the similar phenomenon for a demanding work environment. For example, if IS personnel experience a high demand on the job but experience a fair amount of support from management and work-peers, the resulting conflict or strain may not occur or it may be reduced. As mentioned in the previous section, IS personnel’s jobs are highly demanding; thus it is appropriate that the organizations take proactive measures to buffer the negative effects of the work environment. This is supported by what Allen (2001) reported that a high level of organizational support manages to reduce work-family conflict, produce greater job satisfaction and develop greater organizational commitment which would lead to greater QWL.

The moderate to higher level of variety in job dimension is also another factor that can contribute towards QWL among IS personnel. Physically, the nature of IS personnel’s job is sitting in front of the computer and repetitively using
the keyboard and mouse. The nature of active work condition requires them to have continuous improvement and utilization of various new skills and cognitive capability. The nature of job among the IS personnel that associates with greater task variety, task discretion and opportunity to skill development fosters their cognitive and behavioural competency. This is similar to the argument posed by job characteristic model by Hackman & Oldhan (1975). Indeed, the nature of IS related job is complex which includes a substantial amount of task variety in an uncertain work environment. The complexity which is the common feature of ICT jobs would be one of the sources that provide opportunity for self-development. It is also reported to provide opportunity for competency development and creativity in the work (Cairncross, 2000; Coyle, 2000; Economist Intelligent Unit, 2000; Leadbetter, 1999). This nature of work leads the IS personnel to experience a better QWL.

The discussion suggests that the psychosocial factors are able to predict the QWL among IS personnel. The selected socio-demographic variables also play an important role in discussing the relationship and the contribution of the work condition factors to QWL. The findings generally indicate that the Malaysian IS personnel were experiencing a high level of QWL compared to the IS personnel in the developed countries. The contemporary ICT work environment in Malaysia provides more meaningful work to the IS personnel compared to the advanced countries. This is indicative of a positive physiological work condition that applies the principles and practices of the concept of QWL. Therefore, it enables the IS personnel in Malaysia to experience good QWL. The constant review of the changes in the work condition factors due to the advancement in ICT would enable the maintenance and enhancement of the existing level of QWL. Therefore, it is essential for the human resource practitioners to be alert to the changes of work environment in relation to QWL.

It is concluded that IS personnel are enjoying their profession as they have substantial control and support in their job although the nature of their job is demanding. The selected work condition factors show that to some extent they have influence on QWL. Organizational support, job control and job demand are the significant predictors of QWL. Therefore, if these components of work environment are ignored by the management, there would have substantial impact on the QWL of IS personnel. If the IS personnel’s QWL is left unresolved, it would have substantial negative impacts on the overall development of ICT sector. Worst still are the mission and vision of the country would remain on the blue-print and the transformation process from the industrial to the knowledge-based society would not be in smooth sailing. Therefore, this type of work practices, even though they are new for Malaysia, as the country is still in the early stage of ICT development, the predictive components should be taken as a precautionary measure in the strategic management planning for the IS personnel. This is important since according to the national data (Government of Malaysia, 2000) the employment demand in the ICT industry in the country is expected to increase to 0.3 million in 2010 from its number of 0.14 million in 2004.

**Theoretical Implications**

The JDSCM model used in this study was a part of larger and more complicated psychosocial theories. QWL was considered as a complex phenomenon because it varies according to individual characteristics. Therefore it could not be explained by one single theory. In relating to this fact, this asserts that there is a need to incorporate numerous theories and models in improving the understanding of QWL among IS personnel. The usage of various theories that has been repeatedly proven in industrial psychology would enable us to understand the differences in the nature of work environment. This study is an example of such a situation that utilizes the various sources of knowledge to understand the nature of QWL among the new workforce based on Malaysian context.

Three major independent variables were adapted from numerous models of psychosocial work factors in understanding the QWL. The result indicates that the model was able to explain 40.8 % of the variance in QWL. The findings represent the actual nature of work condition in the ICT industry. Thus it could be deduced that the theoretical framework was reasonably useful in providing a workable research framework in predicting QWL among IS personnel in this country.

Since the findings and the conclusions of the present study were consistent with the existing theories, the major theoretical implication was that the underlying theories of the study were found to be relatively comprehensive in explaining the QWL among IS personnel. Therefore, these theories could be construed as having a high degree of
stability, particularly based on the context of this study. Further investigations based on specific models are needed in validating and supporting the current generalization.

From the methodological perspective, the validation of the combination of numerous established instruments with some modification of items were found to be useful in ensuring a high degree of reliability and validity. Therefore, this study would be a platform for future research to consider the significant contributors as their main component of study.

**Practical Implications**

In real life, QWL is an inevitable phenomenon and it exists in all kinds of occupational categories although the magnitude varies depending on location. If the IS personnel’s QWL is left unresolved, it will have substantial negative impacts on the overall development of the ICT sector. Worst still are the mission and vision of the country will remain on the blue print. There will not be a meaningful transition from the industrial to the knowledge-based society.

The contribution of organizational support, job dimension, job demand and job control in QWL show that these psychosocial factors would help the practitioners to understand the nature of work environment. The imbalance of the factors would result in stressful work conditions. Therefore, restructuring of work environment is necessary for them to have good work outcomes.

Other socio-demographic variables namely, age, gender, educational level, monthly income, total years of working experience, occupational category, work practices, years of operations and nationality of workforce were not considered in the analysis. It is, therefore, suggested that these personal and professional factors should be taken into account as other antecedents of QWL of IS personnel. This is necessary as the results would help in developing HR policy for the fastest growing workforce in the country.

**REFERENCES**


