MALAYSIAN ACADEMICIAN STRESS INDEX: CONSTRUCT VALIDITY AND RELIABILITY USING RASCH MODEL APPROACH

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ABSTRACT:

Stress can have an impact on academics performance in the workforce.This study aimed to generate empirical evidence on validity and reliability of the items of Malaysian Academician Happiness Index (MAHI) using Rasch Model by Winstep software version 3.69.1.11. The construct validity was examined by analysing the point-measure correlation index (PTMEA), infit and outfit MNSQ values; a survey technique was used in this preliminary study as the major method on the MAHI instrument on 30 academic leaders' at one of the Malaysian public universities. The result showed that the reliability of MAHI instrument item was 0.76 which is accepted to the real study. Statistical data implied that out of 100 items, 28 items or 28% of the instrument got index value less than 0.3 which were suggested to be omitted or reviewed. However, these items can be maintained by consulting the expert. This study is hoped to bring a new holistic dimension on the academic stress measurement index that can help university management to develop a program to reduce stress and improve the quality of academicians' life.

1.0 INTRODUCTION

Causes of working stress often identified since the 1970s. Work stressors in organization had been described as job qualities, staff relationships, organizational structure, physical qualities, career development, and role changes in the organization (Schuler, 1982). Job, work or workplace stress has become one of the most serious health issues in the present situation (Lu, et al., 2003). Stress at work caused from increasing diverging difficulties of work and its increased demand, has become a prominent and pervading feature of organizations. According to WHO (2003) stress at work can be a real problem to the organization as well as for its workers. Workers who are stressed more likely to be unhealthy, poorly motivated, less productive and less safe at work. Findings from Nekoranec and Kmosena (2013) revealed that as a result of stress, occupational accidents and wrong decision-making happen. The interpersonal relationships are disturbed by conflicts in the workplace. The

findings from Ismail and Noor (2016) demonstrated that 22.1% of academic staff were stressed. Their result was almost similar to a research that was done among medical lecturers in Universiti Sains Malaysia (USM) with a generality of 23.3%. They revealed that stress arising from teaching scope, which are mainly from development of course content, followed by collation of results, deciding on appropriate method of lesson presentation, marking the exam script and finally exam setting. Meanwhile, results from Mohamad Zaki, Zainudin and Abdul Rahman (2016) implied that 60.8% of respondents among academic staff of Universiti Putra Malaysia experienced job stress. Most (54.6%) of the academic staff experienced moderate stress and 2.6% of them experienced severe stress due to their job.

According to Meng and Wang (2018), academics have many responsibilities, such as conducting scientific research, teaching and learning, and

carrying out numerous types of social work. These tasks are placing an increasingly heavy burden to them. Academicians must also perform non-academic functions outside university that include family life, social life, and community assurances. Therefore, this research is intended to determine academician stress level using Malaysian Academician Stress Index and investigated the validity and reliability of construct using Rasch Model analysis.

2.0 STRESS

Stress can be defined by adapting or varying of organizational effort, flexibility and employee empowerment which led to changing of job specifications and uncertainty, moreover, losing job stability is a consequently increase possible for job role stress (Smith, 1997; Kalleberg, 2001; and Cooper & Dewe, 2004). Working stress also identified as the stress outcomes from the perception that the demands exceed one's capability to manage at work. Sources of working stress regularly identified since the 1970s. Raja Ali (2011) has described stress as an emotional response to certain things and it could be the real thing or not. It is a norm that can't be escaped if a person is involved in a professional job and is normal in life that always needs to be performed, but continuous and extreme stress can affect human physical and mental health. In this decade, stress is a 'global epidemic' where there are more than 50% of population in various countries who were reported to have stress related to work (Global Organization for Stress, 2014).

The definition of stress that is widely used in research comes from Lazarus and Folkman (1984) which stated that stress is a transactional process. They define stress as "any event in which environmental demands and/or internal demands exceed the adaptive resources of the individual, his or her tissue system, or the social system of which one is a part". Robbins (2003) suggested a model of stress that consisted of three potential facts: environmental factors, organizational factors and individual factors. These factors have influence not directly because of the high level of

job stress but moderation by individual differences such as perception, personality and social support. Workplace which is hazardous is one of the factors that may cause stress to certain people. The accumulated stress in an organization if not solved at the early stage may lead to less motivation and health problem which may lead to low productivity. Lack of control over work, workplace, and employment status recognized as bases of stress and a critical health risk for some workers (Othman, Che Lamin and Othman, 2014). Their findings found out that based on work environment of university, research from across the globe reports an increasing in the occupational stress experienced by academician. As a group, academic staff reported higher levels of stress than general staff. Five major factors of stress known were insufficient funding resources, work overload, poor management practice, job insecurity and insufficient recognition or reward.

Research from oversea in 2009 shows that about 40 percent of American adults reported that they feel worried and stressed out during a typical workday (American Psychological Association, 2010). Meanwhile, a survey conducted in the European Union in 2005 found that on average 22% of employees experienced stress at work, with significantly higher levels in some of the countries (European Agency for Safety and Health at Work, 2009). Ubangari and Bako (2015) opined that stress can have both positive and negative effects. Stress is a normal, adaptive response to risk. It indicates danger and prepares individuals to take defensive action. Fear of things that pose realistic threats motivates workers to deal with them or avoid them. Stress also motivates workers to achieve and fuels creativity. Although stress may hinder achievement on difficult tasks, reasonable stress seems to improve motivation and performance on less multi tasks.

According to Othman et. al. (2014) following list of influences on one's work environment reported to have a significant impact on how effectively stress is addressed: support from co-workers management, recognition achievement, high morale, flexible working conditions, and personal

coping strategies. These coping strategies include; stress management techniques, balancing professional and private expectations, clearly defined roles and establishing realistic standards and expectations. These findings provide a timely insight into the experience of stress within universities.

2.1 STRESS INDICATOR

The discussions of stress have not only focused on the aspect of life and the socioeconomic but also focused on the stress at the workplace. Previous research found that one of the fact that contribute to stress at the workplace is not able to meet a deadline re-organization of work positions and job insecurity, numbers of working hours or workload, exposure to unacceptable behaviour like bullying and harassment (Nekoranec and Kmosena, 2015); inadequate staffing, low pay (or low increases in pay), unclear or conflicting job expectations and organizational culture, including lack of teamwork, tendency to avoid accountability and assign blame to others (Panigrahi, 2017).In Malaysian context, stress can be due to physical demands of the work environment, feel insecure with the position they are holding, tired of the long working hours and interpersonal conflicts with co-workers or supervisors (Othman et al, 2014). They stressed out that research from world-wide reports an alarming increase in the occupational stress experienced by university staff. Academics testified higher levels of stress than administration staff. Five main roots of stress identified were insufficient funding resources, work overload, poor management practice, job insecurity and insufficient recognition or reward.

Various research has found that one of the factors of occupational stress is from working in extended hours and large workloads (Al-Aameri, 2003; Alexandros-Stamatios et al., 2003; Chan, Lai, Ko, and Boey, 2000). Time pressure is another aspect that affects stress in the workplace. Time pressure is directly correlated to the amount of time that have been given to the employees' to complete a task (Savage and Torgler, 2012;Haines,

Marchand, Genin and Rousseau,2012; Sonnentag, Arbeus, Mahn, and Fritz (2014). This factor is triggered by several different factors at the workplace such as role ambiguity, heavy job demand that can contribute to decreased job satisfaction. When exhausted employees will start to believe that they will not be able to meet the demands of their jobs and they will worry even more.

3.0 METHODOLOGY

A preliminary study was designed using a quantitative approach by distributing the study instrument to the respondents to gather the required data. A total of 30 academicians were selected as respondents from one of the Malaysian Public University as the sample of the study. According to Cooper and Schindler (2011), the appropriate number of respondents in the preliminary test was between 25 and 100 people. While Johanson and Brooks (2010) suggested that the minimum number of pilot studies for validating and developing a scale was 30 respondents.

The development of questionnaire was adopted from Kanner, Coyne, Schaefer, & Lazarus (1981).This research used a self-developed questionnaire with four Likert scales as the research instrument along the lines of respondents' demographic and stress indicators. There were 350 items with three main constructs including the university (refer to organisation), social and individual. Each construct contained three to four sub constructs and five items for each sub constructs. The details of the constructs are as per stated in Table 1.

Table 1: The Details of MALSI Construct

Number	Construct	Sub construct
1	University	Workload and Job Activities
		Work environment and Work Station
		Salary and compensation
		Leadership

2	Social	Family support
		Friendship
		Networking
3	Individual	Religious
		Financial
		Healthy and personal

The data were analysed descriptively using the Statistical Package for Social Science (SPSS) program version 26 before being analysed using Winstep version 3.69.1.11 software using Rasch Measurement Model Approach.

4.0 FINDINGS AND DISCUSSION

This section discusses the validity and reliability of the items to measure the happiness among the academicians in Malaysian University. The identification of reliable items will be used as an instrument to study the level of happiness among Malaysian academicians. The number of respondents of this pretest was 30 academicians from one of Malaysian Public University. They were selected randomly and the questionnaire was distributed using Google form. A total of 60% (N=18) respondents were male while the rest of 40% (N=12) were female.

4.1 STATISTICAL SUMMARY

In the statistical summary, three main things that need to be considered are the Cronbach alpha, person/item reliability and person/item separation index. Results of the analysis showed that the Cronbach's Alpha reliability coefficient was 0.95, which was a very high (excellent) and acceptable reliability coefficient (Piaw, 2014). This value shows that the instrument used for this preliminary has good items and is acceptable with a medium degree of consistency and can be used in actual research.

In this study, the person reliability (0.94) was excellent, while the item reliability coefficient (0.76) was fair (Fisher, 2007). These results express that the range of respondents and items participating in this study was sufficient. The value of the respondent separation index (3.94) was very good and the value of item separation index (1.79) was fair and the value still can be used even if it is less than 2 because it has new items.

4.2 ITEM FIT

Item fit is an important type of analysis that helps confirm the construct validity of items. The items that fit are likely to be measured by a single dimension intended by the construct theory (Abdul Karim et al., 2018). Table 2 shows the fit item interpretation.

Table 2: Interpretation of Fit Item

Item	Range of Index infit MNSQ	Range of Index outfit MNSQ	Interpretation
B98, B86, B97, B92, B71, B55, B53, B96, B58	1.77 to 1.30	2.22 to 1.21	There are 9 (4.5%) items whose MNSQ value is more than 1.4 logit, so it means the item is misleading. Items that are outside this range can be considered for removal or omission.

B83, B75, B51, B89, B52, B88, B87, B60, B100, B64, B74, B57, B62, B56, B79, B90, B69, B65, B99, B68, B63, B66, B67, B72, B91, B80, B73, B93, B70, B54, B76, B94, B78, B77, B95, B82	0.64 to 1.35	0.65 to 1.33	There are 36 (18%) items whose MNSQ infit and oufit values are in the fit range.This item is retained because it can measure the construct to be measured.
B61, B85, B84, B81, B59	0.45 to 0.59	0.45 to 0.55	There are 5 (2.5%) items whose infit value and MNSQ outfit is less than 0.6 logit, so it means that the item is too easily expected by the respondent (Linacre, 2007). Items that are outside the range of fit can be considered for removal or purification by looking at the needs of researchers and the views of experts.

5. CONCLUSION

A standardized instrument must be established before applying it in the actual research. By applying the Rash measurement model, several iterations were carried out until there were no misfit items or persons identified. Removal and improvement of items must be done based on the result of the PTMEA analysis and fit statistical analysis as well the experts' advice. Based on the results, it shows that 2.5% (or a total of 5 out of 50 items in this construct) does not meet the needs of the construct and should be eliminated. Meanwhile, the items with a positive value greater than 0.30 and successfully measured need of construct will be retained for the actual study.

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