

# AN ANALYSIS OF SCALES FOR MEASURING RELIABILITY OF LEADERSHIP, SOCIAL INTERACTION, PERCEIVED SUPPORT, SUBJECTIVE WELL-BEING, AND SELF-EFFICACY: A PILOT STUDY FROM A MALAYSIAN PUBLIC UNIVERSITY

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## **Abstract**

*This study assessed the reliability of scales used in measuring leadership, social interaction, perceived support, subjective well-being, and self-efficacy among staff in an academic institution—the research sample comprised 30 Malaysian staff members from a public university, including academicians and non-academicians. The respondents completed five instruments in questionnaire form. The instrument's internal consistency was based on alpha coefficient reliability or Cronbach Alpha. The results of taking the technology Self-Efficacy Scale, Subjective Well-Being Scales, Perceived Support Scale, Social Interaction Scale and MLQ 5X were .903, .461, .632, .902, .934, respectively. Almost all the tools revealed a Cronbach's alpha is 0.70, indicating that technology efficacy, social interaction and MLQ 5X and its dimension are highly reliable (with subjective well-being and perceived support being the only exceptions).*

**Keywords:** Reliability, Well-Being, Self-Efficacy, Leadership, Social Interaction, Perceived Support.

## **1. INTRODUCTION**

The spread of Covid-19 started in 2020 and has dramatically impacted various communities worldwide as the pandemic has adversely affected university life. It moves on happiness in such academic institutions remains unknown. Happiness is a reliable indicator of individual quality, well-being, and personal and societal development (Hirai *et al.*, 2016). Several instruments are available to measure happiness, such as the Global Happiness Scale (Bradburn, 1969) and the Satisfaction with Life Scale (Diener *et al.*, 1985). However, both instruments cannot prove their psychometric properties and have been criticised for evaluating different components of happiness. To address the limitations of these scales, Lyubomirsky and Lepper (1999) developed an instrument to assess globally if a person is happy or unhappy, namely the Subjective Happiness Scale (SHS). SHS reflects a broader classification of well-being, measured through global self-assessments. It has also been one of the tools most frequently used to gauge subjective happiness.

One of the topics that social psychology researchers frequently focus on is leadership. The wide range of strategies devised implies that there are also variations in how leadership is conceptualised as well as defined. One significant development in this area has been the formation of the transformational leadership theory. The leadership style associated with this theory has led to a shift in the attitudes and behaviours of groups, organisations, and, in some cases, whole civilisations toward work activities (Bass, 1998). The accomplishment has been mediated by forming deep professional bonds and communication ties between leaders and followers. The Multifactor Leadership Questionnaire, whose most recent version is MLQ 5X, was designed and developed later after years of cooperation between Bass and Avolio (1994). Empirical data from applying the questionnaire in various cultures and organisations have confirmed its psychometrics indices (Dimitrov & Darova, 2016). The instrument has been validated by a sample of over 7000 in

the USA and adopted in more than 22 countries in Europe, North America, Asia, and Oceania (Dimitrov & Darova, 2016).

Numerous facets of organisational behaviour are significantly impacted by support in the workplace (Yoon & Thye, 2000), and it has been discovered that social support is crucial for minimising employee intention to leave (Firth *et al.*, 2004). Three facets of perceived support have been identified to examine the various exchanges that may take place in an organisation, namely, perceived organisational support (POS), perceived supervisor support (PSS) and Perceived Co-Worker Support (PCWS) (Fuller *et al.*, 2006). Measures of POS, PSS, and PCWS were taken using the Survey of Perceived Organizational Support (SPOS) (Eisenberger *et al.*, 1986). Several researchers have utilised both the full and short versions of the SPOS questionnaire to measure POS with high reliability (Eisenberger *et al.*, 1986; Erdogan & Enders, 2007). Yoon and Thye (2000) also indicated that this approach had been used successfully in previous studies to measure co-worker and supervisor support.

In this study, “social interaction” refers to the degree to which organisational members engage with one another in terms of trust, coordination, and communication. Social contact offers corporate members a means of exchanging information (Tsai, 2002). Previous research has highlighted the value of interpersonal social contact for spreading new concepts inside multiunit organisations (Ghoshal *et al.*, 1994). To work efficiently, one must have good capabilities and the ability to perform tasks. Thus, Bandura (1997) invented the phrase “self-efficacy”, which denotes confidence in one’s ability to carry out the steps necessary to achieve specified goals. Various circumstances influence self-efficacy, but mastery experiences are the most significant (Bandura, 1997).

Additionally, digital technology self-efficacy gauges a person’s confident ability to complete computer and ICT-related tasks. In a study of 25 outstanding technology-using instructors, Ertmer and colleagues (Ertmer, Ottenbreit-Leftwich and York (2006) discovered that teachers with higher self-efficacy were more likely to overcome challenges with technology integration. The measurement used in the study was adapted from Holcomb, King, and Brown (2004), who reported significantly high reliability. Based on the previous findings of mentioned variables, the variables are perceived to have crucial importance for institution staff. According to Al Issa and Jaleel (2021), academic and administrative staff at universities are now exposed to new technologies and environments, which leads to workers having varying degrees of preparation and experience, with different outcomes noted in the two groups (Leal Filho *et al.*, 2021). Devising a suitable instrument for use with university workers would help achieve more reliable data and result in individuals making more significant contributions to their institution and broader society.

Consequently, this study aims to analyse the reliability of the translated constructs when applied to a university population. It is significant for several reasons. Firstly, there are currently limited translated scales accessible in Malay, which makes it difficult for Malay-speaking persons to undergo psychological testing (Kim *et al.*, 2004). Secondly, the present study could address the fact that the psychometric qualities of the instruments have not been efficiently tested outside of North America and Europe. Thirdly, few prior studies have investigated how academic institutions responded to each tool. It is critical to examine the experiences of members of the university community to design and execute appropriate measurements (Odriozola-González *et al.*, 2020). It may aid in diminishing the potential negative impacts on education and university members.

## 2. OBJECTIVE

This study aims to analyse the reliability of the translated constructs when applied to a university population.

### 3. METHODOLOGY

#### a. Participants and Sample Size

Participants were university staff members working at Universiti Malaysia Sabah (UMS), including academicians and non-academicians. Through a list-based simple random sampling technique, 3UMS's workers were randomly selected. The selection of samples was determined using the flat sample size rules of thumb Machin *et al.* (2018). A simple random sampling procedure was used to choose the subjects from each group.

#### b. Instruments

The instruments and the participants are represented in the Appendix below. Information was gathered using several instruments, such as tests, scales, observational methods, questionnaires, and interview schedules (Isaac & Michael, 1995). The questionnaire was structured in this study, and the items were closed type. The questionnaire consisted of nine (9) parts. Refer to Table 1.

Table 1: The Questionnaire structure in this study

Parts/sections	Detail	Items	Source
1	A Consent Form,		
2	Information Sheets.		
3	Demographic Information.		
4	Technology Efficacy	17	Holcomb <i>et al.</i> (2004)
5	Subjective Well-Being	4	Lyubomirsky and Lepper (1999)
6	Perceived Support	9	Yoon and Thye (2000).
7	Social Interaction	7	Chen and Huang (2007)
8	Multifactor Leadership	45	Bass and Avolio (1994)
9	Suggestion Boxes.		

According to Table 1, this study used and adapted a questionnaire on digital technology self-efficacy by Holcomb *et al.* (2004) to analyse the technology self-efficacy of respondents. It consists of seventeen (17) items. It comprised a four (4) point Likert scale ranging from 1– strongly disagree to 4 – strongly agree. Some questions in this section were coded as reverse items. It should be noted that reverse codes for the Technology Efficacy Scale were items 2, 3, 4, 5, 6, 9, 10, 12, 13, 14, 15 and 17. Secondly is the subjective well-being instrument. In this study, The Subjective Happiness Scale (SHS) developed by Lyubomirsky and Lepper (1999) was also utilised to measure employees' subjective well-being. It consists of four items. Every item has a different response format, as item number one uses a seven-point Likert scale that ranges from 1– Not a happy person to 7 – A very happy person. Item number four on the scale was reverse-coded. Also utilised was Yoon and Thye (2000) perceived support scale, which consists of 9 items related to three dimensions: the supervisor, colleagues, and organisational support. Respondents completed the questionnaire on a five *Likert* scale, ranging from 1 – Strongly disagree to 5 – Strongly agree.

In addition, a social interaction scale was adapted from Chen and Huang (2007) to evaluate the degree of interactions among organisation members. The seven-item instrument was incorporated to measure three aspects of social interaction: trust, communication, and coordination. The tool was based on a seven-point *Likert*-type scale ranging from “strongly disagree” to “strongly agree”. The final scale employed in this research was the MLQ (5X) (Bass & Avolio, 1994), a 45-item questionnaire that measures leadership behaviour on a five-point Likert scale. Idealised influence (attributes), idealised influence (behaviour), inspirational motivation, intellectual stimulation, individualised consideration, constructive transaction, management by exception (active), management by exception (passive), laissez-faire, extra effort, effectiveness, and satisfaction are the 12 subscales used to measure leadership behaviour.

### ***c. Procedure***

The procedure for this study involves the following steps:

- *Step 1:* researcher clearly defines the objective of this study to analyse and measure the reliability of leadership, social interaction, perceived support, subjective well-being, and self-efficacy among university staff members.
- *Step 2:* researcher identifies and selects relevant scales and picks previous studies that relate to the measure the leadership, social interaction, perceived support, subjective well-being, and self-efficacy among university staff members.
- *Step 3:* researcher selects and does a back-translated process. The English version was translated into Malay and then back-translated translator to ensure comparability and equivalence in meaning (Brislin, 1970).
- *Step 4:* researcher randomly contacts UMS workers to participate in this study.
- *Step 5:* researcher collect data through appropriate methods, such as online surveys.
- *Step 6:* researcher analyses the collected data using statistical techniques. For each scale, calculate descriptive statistics, such as means, standard deviations, and frequency distributions. Assess the reliability of the scales by calculating internal consistency measures, such as Cronbach’s alpha, for each construct.
- *Step 7:* researcher does interpret the findings from the data analysis.
- *Step 8:* researcher writes a research report summarising the study’s objectives, methodology, findings, and conclusions.

### ***d. Data collection***

The study ensures confidentiality. The data were collected electronically through e-mail and WhatsApp. The forms also stated clear instructions and guidelines for completing the scales. To demonstrate their voluntary involvement in the study, the respondents must sign an informed permission form attached to the questionnaire before responding. The study was conducted electronically by distributing the self-report survey (Qualtrics) through e-mail and WhatsApp. In assessing the usability of the instruments, it was necessary to ask the respondents questions regarding the wording, timing, and understanding of the items during the surveys. They were encouraged to offer suggestions for data that they felt would be more pertinent. The data collection process was completed in March 2022.

### ***e. Data analysis***

The data analysis used the Statistical Package for Social Sciences (SPSS) version 28. This research verified the reliability using Cronbach’s alpha, an internal consistency reliability measure administered once to all the respondents. A Cronbach’s alpha of 0.70 indicates that the measurement scale used to measure a construct is reliable (Taber, 2018).

#### 4. RESULTS

The study was conducted on 30 UMS employees—15 academic and 15 non-academic workers. All 30 respondents consented to answer the questionnaire, of which 60% respondents were male, and 40% were female. The study was conducted to test the reliability of the Technology Efficacy Scale, Subjective Happiness Scale, Perceived Support Scale, Multifactor Leadership Questionnaire 5X (MLQ 5X), and Social Interaction Scale. The data obtained from the samples were analysed using Cronbach's alpha. Cronbach showed that Cronbach's alpha of the technology self-Efficacy Scale and the Subjective Happiness Scale were 0.903 and 0.462, respectively. At the same time, the cores for the Perceived Support Scale were 0.632. For the Social Interaction Scale, the s, followed2 and followed by a Cronbach's alpha of MLQ 5X is .934. Refer to Table 1.

Table 1: Reliability statistics for each construct

Scale	No. of items	Cronbach's alpha
Technology self-Efficacy	17	.903
Subjective Happiness Scale (SHS)	4	.462
Perceived support	9	.632
Social interaction	7	.902
Multifactor Leadership Questionnaire (MLQ 5X)	45	.934

Meanwhile, the reliability of variables (Self-Efficacy, Subjective Happiness Scale (SHS), Perceived support, social interaction, and Multifactor Leadership Questionnaire (MLQ 5X)) by subscales is as follows. This study found the reliability of perceived support by subscales are Cronbach's alpha (0.692), co-workers support (0.472), and Organisation Support (0.823). Refer to Table. 2.

Table 2: Reliability of Perceived Support subscales

Subscales	No. of items	Cronbach's alpha
Cronbach's support	3	.692
Co-workers support	3	.472
Organisation support	3	.823

Next is the reliability of social interaction by subscales. The internal consistency of each subscale (trust, communication, and coordination) was 0.952, 0.960, and 0.860, respectively. Refer to Table. 3.

Table 3: Reliability of Social Interaction subscales

Subscales	No. of items	Cronbach's alpha
Trust	3	.952
Communication	2	.960
Coordination	2	.860

Last is the reliability of MLQ5X by subscales. The value of Cronbach's alpha for contingent reward is 0.815, the intellectual stimulation is 0.794, the management-by-exception (passive) is 0.794, the management-by-exception (active) is 0.603, the laissez-faire leadership is 0.912, the idealised influence (behaviour) is 0.719, the idealised influence (attributed) is 0.736, the

inspirational motivation is 0.854, the individual consideration is 0.839, the extra effort is 0.751, the effectiveness is 0.883, and the satisfaction is 0.717. Refer to summarise MLQ5X in Table 4.

Table 4: Reliability of MLQ 5X subscales

Subscales	No. of items	Cronbach's alpha
Contingent reward	4	.815
Intellectual Stimulation	4	.794
Management-by-exception (passive)	4	.794
Management-by-exception (active)	4	.603
Laissez-faire leadership	4	.912
Idealised influence (behaviour)	4	.719
Idealised influence (attributed)	4	.736
Inspirational Motivation	4	.854
Individual Consideration	4	.839
Extra Effort	3	.751
Effectiveness	4	.883
Satisfaction	2	.717

All the instruments obtained Cronbach's alpha values by subscales ranging from 0.472 to 0.960. This study indicates that technology efficacy, social interaction, MLQ 5X and its dimension are highly reliable, except for subjective happiness and perceived support.

#### 4. DISCUSSION

A small sample of the university's staff population was asked to evaluate the reliability of the Subjective Happiness Scale (SHS), MLQ-5X, Technology Self-Efficacy, Social Interaction Scale, and Perceived Support Scale. The current study's findings demonstrate that the translated version of the instruments was reliable for use with the Malay-speaking staff members. Most of the Cronbach Alpha values in this study were between 0.603 and 0.960. It is considered quite acceptable, as Muijs (2004) and Nunnally (1978) concur that for a test to be internally consistent, the value must be greater than 0.70. The Cronbach's alpha values of SHS (Table 1) and co-workers' support (Table 2) were lower than those of previous studies with more significant sample sizes. A low alpha value could be due to a low number of questions, a small sample size, poor correlation between items, or heterogeneous constructs (Tavakol & Dennick, 2011). Past studies have suggested that certain items be revised before being considered for inclusion in the analysis – or even discarded. The minimum number of samples indicated for a pilot study varies among researchers. Based on previous literature by Birkett and Day (1994), a minimum of 20 respondents for sample size is needed to conduct a study. Nonetheless, the optimum sample size for a pilot study remains unclear as there is no consensus across studies (Lewis *et al.*, 2021).

Conversely, the reliability tests on the MLQ-5X, technology self-efficacy, social interaction, and perceived support scales yielded Cronbach's alpha values more significant than the cut-off value of 0.70, indicating coherency and agreement between the items and constructs (Nunnally, 1978). Earlier investigations reported the excellent reliability of instruments from various samples, such as those from the National Defence Academy (Dimitrov & Darova, 2016), Korea University Hospital (Yoon & Thye, 2000), and a United States University (Hughes, 2013). Overall, the study's findings complement those of the existing literature supporting the reliability of the respective tools. However, it should be noted that the study has some limitations, such as a small sample size and the limited scope of the reliability test, which only examined the trustworthiness and consistency of the scales across the research. The findings need to be replicated with a larger sample to validate the methodology and results of this study.

## 5. CONCLUSION

The findings conclude that most of the instruments used in this study, except subjective happiness, have acceptable reliability and can provide a reliable measurement of the scales relating to the university's employees. The translated instruments demonstrated solid internal consistency when applied to samples of university employees and Malay-speaking groups. The tools give researchers several advantages: they are easy and quick to use, put little strain on respondents, and ensure measurement accuracy.

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