International Journal of Engineering & Technology, 7 (4.28) (2018) 214-216

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Mediating Effect of Job Satisfaction on the Relationship between Work-Life Balance and Job Performance among Academics: Data Screening

Phathara-on Wesarat[1], A.H. Majid[2*], M. Y. Sharif[3], Afriva Khaidir[4], Perengki Susanto[5]

[1]Lecturer, Faculty of Humanities and Social Sciences, Prince of Songkla University, Thailand.
[2,3]Associate Professor, School of Business Management, Universiti Utara Malaysia, Kedah Malaysia.
[4,5]Lecturer, Faculty of Social Sciences, Universitas Negeri Padang, Indonesia.
**Corresponding author E-mail: ahalim@uum.edu.my*

Abstract

This paper highlights the data screening for the research on mediating effect of job satisfaction on the relationship between work-life balance and job performance among full-time academics. It had 354 samples from the public universities located in Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT). The data screening procedure was applied to identify problematic patterns within the data set of the study. It analyzed the missing values, outliers, normality test, and multicollinearity test. The results of the data screening showed that the data was ready for further multivariate analysis.

Keywords: *Data Screening; Job Performance; Job Satisfaction; Work-Life Balance.*

1. Introduction

University education has become important to students and to those people in societies concerned with university services (1). Over the last years, universities worldwide have aimed at achieving and improving quality standards. Academics' high performance is essential to successful quality university (2). The challenge of universities is to increase academics' performance and productivity. It can be noticed that the majority of studies on academics' job performance have been done in Western context, while the investigation of factors associated with job performance among academics in non-western countries was rarely seen.

Therefore, this study focused on job performance of full-time academics in non-western countries that include Indonesia, Malaysia, and Thailand. They are the member countries of Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), a subregional cooperation located in Southeast Asia. A quantitative method was adopted to measure the relationship between independent variable and dependent variable. This study considered the initial data screening as having an impact on the results of the study. It then applied data screening procedure to ensure data quality.

The importance of data screening procedure has been highlighted by the past literature (3, 4). Data screening process is used to check for any problem or abnormality in the data that may reduce the validity for further data analysis (5). The purpose of this article was to present data screening results of the research on the mediating effect of job satisfaction on the relationship between work-life balance and job performance. It presented the analysis of the missing values, outliers, normality test, and multicollinearity test.

2. Methodology

The research had been conducted in IMT-GT sub-region. It consists of provinces/states of three countries: 10 provinces of Sumatra, 8 Northern states of peninsular Malaysia, and 14 provinces in Southern Thailand. The data was collected from full-time academics at the public universities. Overall, this study had 354 samples.

2.1 Missing Values

There are several types of missing values. Acock (6) concluded that missing values can be classified into four types: missing by definition of the subpopulation, missing completely at random (MCAR), missing at random (MAR), and nonignorable (NI) missing values. Firstly, missing by definition of the subpopulation; some respondents are excluded from the analysis by the definition of the study population (6). These respondents are not in the subpopulation of the study. Secondly, MCAR; the probability of missingness does not depend on any variables (either observed or unobserved variables) (7). Thirdly, MAR; the missing values that may be occur if the likelihood of missing data on the variable is not related to the respondent's score on the variable (6). Fourthly, NI missing values; data may be missing in a way that the probability of missingness depends on unobserved information like the missing value itself (8).

Data screening procedure can be applied to explore the missing values and to respond to some missing values (4). There are several approaches to deal with missing values (9). The method of case deletion is to leave out the cases with missing values (10). But this method results in a decrease in the sample size of the study for further data analysis. This means the study will lose a lot of in-

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

formation when the rate of missing values is large (10). One of the acceptable approaches is to replace all missing values with its feature mean, mode or median (9). Hair et al. (11) stated that the use of value replacement can be done if there are less than 5% values missing per indicator. In this study therefore, missing values were replaced by median values using the software of IBM SPSS Statistics 20.

2.2 Outliers

Outliers refer to "responses that are substantively different from other responses" (12). The deletion of outliers is crucial for eliminating the impact of outliers. Methods of detecting outliers can be identified from a bivariate, univariate, or multivariate perspective based on the number of variables of the study (13). In this study, Mahalanobis D^2 was used for multivariate outliers (14). Mahalanobis D^2 was calculated using linear regression methods in the software of IBM SPSS Statistics 20. Given the nature of the statistical tests, it is suggested that conservative level of significance at .001 can be used as the threshold value for designation as an outlier (13). One of appropriate ways to handling influential outliers is to delete them (15). Due to the deletion of outliers (Mahalanobis distance < .001), 19 cases in this study were deleted (see table 1). They were excluded from data analysis of the study.

Table 1: Detection of Influential Outliers

Number	Observation Cases
1	2
2	40
3	94
4	105
5	153
6	188
7	190
8	198
9	199
10	201
11	232
12	233
13	248
14	286
15	298
16	322
17	329
18	348
19	354

After deletion of influential outliers, 335 samples (354 – 19 = 335) were retained for further data analysis. Detection of outliers is important process because this study used PLS-SEM (Partial least squares structural equation modeling) which is sensitive to outliers (12).

2.3 Normality Test

The purpose of normality test is to measure the fit of the data to a normal distribution (16). Basically, statistical test of significance requires a set of data to be normally distributed (17). In this study, normality of the data set was tested. The normality of residuals can be analyzed using statistical software (18). This study considered Shapiro-Wilk test as the most appropriate normality test procedure because it is the most powerful test for all types of distribution and sample sizes (18).
The result of Shapiro-Wilk test showed $p > 0.05$, thus confirmed that non-significant deviation from normality (19). This result showed that the residuals are normally distributed (see table 2).

Table 2: Tests of Normality of Residuals

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized residual	.050	335	.042	.993	335	.154
Standardized residual	.050	335	.042	.993	335	.154

Note: a. Lilliefors significance correction

2.4 Multicollinearity Test

Multicollinearity is a kind of problems that is often faced by researchers (20). The term "multicollinearity" refers to a phenomenon in which two or more independent variables of the study are highly correlated with each other (20). The variance inflation factor (VIF) is used to measure multicollinearity of the independent variable with the other independent variables in the model (21).
The values of VIF are seen as the indicators of multicollinearity (22). If VIF value equals 1, it means there is no multicollinearity (21). If VIF value ranges from 1 to 4, predictors are moderately correlated (21). If VIF value is > 4, it means multicollinearity exists (21). In this study, all VIF values are < 4 that means multicollinearity does not exist (see table 3).

Table 3: The Result of Multicollinearity Test

Variables	Collinearity Statistics	
	Observations	Mean
Work-Life Balance	0.756	1.324
Job Satisfaction	0.756	1.324

3. Discussion and Conclusion

Normally, the quality of the data should be assessed before further data analysis. In this study, the results of data screening analysis demonstrated that the data was ready for further multivariate analysis. To deal with missing values, the study used the value replacement (all missing values were replaced by median values) that is known as acceptable method (11). Besides that, the influential outliers were deleted to ensure that all cases were reasonable representatives of the samples (15, 23).
However, some studies may decide not to delete outliers because outliers can actually provide meaningful information (24). Davidson (24) suggested that future research should explore meaningfulness of outliers by gathering additional information from respondents to reveal about why outliers exist. To make a clearer understanding of meaningfulness of outliers, further methodological exploration and discussion need to be done.
To assess normality of residuals, the study used Shapiro-Wilk test and the result confirmed that there was normality of residuals. The study also measured multicollinearity and it was found that multicollinearity did not exist. Meanwhile, researchers should find suitable solution to the presence of multicollinearity, for example, Cheung & Law (22) suggested that a possible solution was to remove some variables. The data screening techniques revealed in this paper may be applicable to future research. Henceforth, each data screening techniques should be discussed further in terms of its strengths and weaknesses.

References

[1] Guthrie, J., Evans, E. & Burritt, R. (2014). Australian accounting academics: Challenges and possibilities. *Meditari Accountancy Research, 22*(1), 20-37.

[2] Cardoso, S., Rosa, M.J. & Santos, C.S. (2013). Different academics' characteristics, different perceptions on quality assessment? *Quality Assurance in Education, 21*(1), 96-117.

[3] Hayat, M.J., Schmiege, S.J. & Cook, P.F. (2014). Perspectives on statistics education: Observations from statistical consulting in an academic nursing environment. *Journal of Nursing Education, 53*(4), 185-191.

[4] Kainth, J.S. & Verma, H.V. (2011). Consumption values: Scale development and validation. *Journal in Advances in Management Research, 8*(2), 285-300.

[5] Salem, M.A., Shawtari, F.A., Shamsudin, M.F. & Hussain, H.I. (2016). The relation between stakeholders integration and environmental competitiveness. *Social Responsibility Journal, 12*(4), 755-769.

[6] Acock, A.C. (2005). Working with missing values. *Journal of Marriage and Family, 67*(4), 1012-1028.

[7] Rhoads, H. (2012). Problems with tests of the missingness mechanism in quantitative policy studies. *Statistics, Politics, and Policy, 3*(1), 1-23.
[8] Siddique, J., Harel, O., Crespi, C.M. & Hedeker, D. (2014). Binary variable multiple-model multiple imputation to address missing data mechanism uncertainty: Application to a smoking cessation trail. *Statistics in Medicine, 33*(17), 3013-3028.
[9] Zurada, J. (2012). Does removing/replacing missing values improving the model's classification performance? *International Journal of Management & Information Systems, 16*(3), 215-220.
[10] Zhang, S. (2011). Information enhancement for data mining. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 1*(4), 284-295.
[11] Hair, J.F., Jr., Hult, G.T.M., Ringle, C.M. & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.)*. Thousand Oaks: SAGE Publications.
[12] Lujja, S., Mohammad, M.O. & Hassan, R. (2016). Modelling public behavioral intention to adopt Islamic banking in Uganda: The theory of reasoned action. *International Journal of Islamic and Middle Eastern Finance and Management, 9*(4), 583-600.
[13] Hair, J.F., Jr., Black, W.C., Babin, B.J. & Anderson, R.E. (2010). *Multivariate data analysis – A global perspective (7th ed.)*. Upper Saddle River: Pearson Education.
[14] Chan, X.W., Kalliath, T., Brough, P., O'Driscoll, M., Sue, O. & Timms, C. (2017). Self-efficacy and work engagement: Test of a chain model. *International Journal of Manpower, 38*(6), 819-834.
[15] Aguinis, H., Gottfredson, R.K. & Joo, H. (2013). Best practice recommendations for defining, identifying, and handling outliers. *Organizational Research Methods, 16*(2), 270-301.
[16] Yan, J.H., Rodriguez, W.A. & Thomas, J.R. (2005). Does data distribution change as a function of motor skill practice? *Research Quarterly for Exercise and Sport, 76*(4), 494-499.
[17] Siddiqi, A.F. (2014). An observatory note on tests for normality assumptions. *Journal of Modelling in Management, 9*(3), 290-305.
[18] Razali, N.M. & Wah, Y.B. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics, 2*(1), 21-33.
[19] Anwer, M.A., Esichaikul, V., Rehman, M. & Anjum, M. (2016). E-government services evaluation from citizen satisfaction perspective: A case of Afghanistan. *Transforming Government: People, Process and Policy, 10*(1), 139-167.
[20] Farooq, R. (2016). Role of structural equation modeling in scale development. *Journal of Advances in Management Research, 13*(1), 75-91.
[21] De Marco, A., Mangano, G. & Zou, X.Y. (2012). Factors influencing the equity share of build-operate-transfer projects. *Build Environment Project and Asset Management, 2*(1), 70-85.
[22] Cheung, C. & Law, R. (2001). Determinants of tourism hotel expenditure in Hong Kong. *International Journal of Contemporary Hospitality Management, 13*(3), 151-158.
[23] Winston, B. & Fields, D. (2015). Seeking and measuring the essential behaviors of servant leadership. *Leadership & Organization Development Journal, 36*(4), 413-434.
[24] Davidson, M.J., Wood, G.J. & Harvey, J.T. (2012). A cross-cultural study in the UK and Australia of pay expectations and entitlements: A case of vanishing differences? *Gender in Management: An International Journal, 27*(3), 165-185.

Appendix 1

The Model Constructs of the Study
The model constructs include work-life balance, job satisfaction, and job performance.

Work-life balance had 7 items:
1. "I am satisfied with both work and non-work life"
2. "My work is negatively affected by my family responsibilities"
3. "My work demands have negatively impacted my family life"
4. "Work demands have negatively impacted my relationships withmy family/friends"
5. "My organization really cares about my well-being"
6. "My organization fulfills my work-life balance needs"
7. "Family demands have made me less productive at work"

Job satisfaction had 8 items:
1. "I am generally satisfied with the kind of work I do in this job"
2. "I find real enjoyment in my work"
3. "I am satisfied with the working conditions (e.g. working hours, rest periods, and work schedules)"
4. "I like the people I work with"
5. "I would recommend this university as a place to work"
6. "I feel a great sense of personal satisfaction when I do a job well"
7. "Those who do well on the job stand a fair chance of being promoted"
8. "I like doing the things I do at work"

Job performance had 14 items:
1. "I never neglect aspects of the job that I am obligated to perform"
2. "I have achieved overall quantity of work performed"
3. "I maintain acceptable level of work output"
4. "I usually meet deadlines given to me"
5. "I solve problems faster"
6. "I achieve overall performance against work expectations"
7. "I fulfill all responsibilities required by my job"
8. "I effectively manage my job tasks"
9. "My efficiency is very high"
10. "I am willing to work extra hard when requested"
11. "I have achieved overall quality of work performed"
12. "I complete work accurately to specifications"
13. "I meet all the formal performance requirements of the job"
14. "I utilize my working time to deliver a quality output"