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Estimating the Determinant Factors to Satisfaction of TASKA Services in Malaysia

Ku Faridah Ku Ibrahim [a,1], Azrul Fazwan Kharuddin [b,2]

[a] School of Education & Humanities, Universiti Tun Abdul Razak, (UNIRAZAK), Malaysia
[b] Graduate School of Business, Universiti Tun Abdul Razak, (UNIRAZAK), Malaysia

[1] kufaridah@unirazak.edu.my
[2] azrulfazwan@unirazak.edu.my

Abstract
This research shows the application of the Structured Equation Modeling (SEM) to obtain the best model for studying the relationship between the more efficient and accurate against the findings and the interpretation of the variables. For the purpose of this study, the main data of the survey has been used. A total of 61 TASKA were investigated around the East Coast of Malaysia and the responses from 273 parents/guardians were collected. Multiple linear regression and factors analysis is used to obtain the best SEM model. Analysis found that the combination of three mediators (facilities, cleanliness and safety) constitutes a strong association to estimate a complete structured equation model while supported by demographic factors such as education level, occupation, location, distance, medium of language used, fees and age of children to strengthen the TASKA selection factor.

Keywords - Structural Equation Modeling, Multiple Regression, Confirmatory Factor Analysis

1 Introduction

Structural equation modeling (SEM) can be used to evaluate models based on the variable goodness of fit (Anderson et al., 1982). The popularity of this approach is increasing among researchers, academics and students. This is due to the flexibility and coverage in producing accurate and fast estimates in making predictions (Anderson et al., 1988). Steps in the SEM analysis follow model specifications, data collection, budgeting, interpretation and modification of the model (Anderson et al., 1988). However, the validity of this index value must be obtained to assure the acceptance and rejection of the model (Anderson et al., 1982). In this study, the approach of the Structured Equation Modeling is used to evaluate the benefits of modeling through the acquisition of Multi Linear Regression (MLR). This acquisition is used in the assessment to improve the facilities offered at the early childcare center called TASKA throughout the east coast of Malaysia. The data obtained from this survey estimate the major contributing factor to consumer satisfaction from parents and guardian's eyesight.

2 Materials and Methodology

Samples of 273 parents/ guardians from various TASKA at the east coast of Malaysia (Pahang, Terengganu and Kelantan) were taken to fit the model in this study. The respondents of the survey were individuals who received the TASKA service directly with the various facilities offered. Identified mediating variables include the facilities provided, aspects of parenting, policy, nutrition, cleanliness and safety. All of these determinants are assessed to be the level of consumer satisfaction through parent/guardian perspectives. These different perspectives act as the intermediary variables that are keys of success to this study. The data were obtained from a survey conducted through a questionnaire that has been verified for its reliability. The stratified random sampling method is used because it has different population values by state and TASKA type. IBM SPSS® AMOS® v23.0 software has been used for model fitting and analysis purposes. The analysis used in this study was Confirmatory Factor Analysis (CFA), Discriminant Validity (DV), Path Analysis (PA) and Structured Equation Modeling (SEM).

2.1 Confirmatory Factor Analysis

The first step is to carry out the Confirmatory Factor Analysis (CFA) that is commonly used in social investigations. It is an advanced analysis of the Exploratory Factor Analysis (EFA) and is used to test whether the steps are in line with the investigators' objective or need to be justified. Therefore, the objective of the CFA is to rectify the data that corresponds to the hypothesized measurement model. Model fit measures are then obtained to assess the extent to which the proposed model has a covariance that links all items in the model.

Table 1: Fitness Indices Estimation

Name of Category	Level of Acceptance	Literature
Factor Loading	Weight > 0.5	Heir et al (2006)
Absolute Fit	P < 0. 05 RMSEA < 0.10	Wheaton et al. (1977) Browne and Cudeck (1993)
Incremental Fit	CFI > 0.7 TLI > 0.7	Bentler (1990) Bentler and Bonett (1980)
Parsimonious Fit	Chisq/df <5.0	Marsh and Hocevar (1985)

If there are excessive items in latent construction then the item should be removed or constrained. Indication of fitness estimation of the model is as follows according to previous studies (Table 1).

2.2 Discriminant Validity

The discrimination confirmation is the testing of the independent variable score on the research objective to assess the construction of the best model. The correlation coefficients are among the

conceptual modeling steps that are used as proof of the validity of discrimination. If the coefficient of correlation is high (> 0.85) then the validity of discrimination is considered weak, depending on the theory of association and the magnitude of the coefficient. On the other hand, if the correlation is low to moderate (<0.60), this shows that the measure has a validity discrimination.

$$Correlation\ coefficient = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$$

Where;
$r_{xy} = correlation\ between\ x\ and\ y$

$$r_{xx} = reliability\ of\ x$$

$$r_{yy} = reliability\ of\ y$$

2.3 Path Analysis

Path analysis is a measure of the importance of intermediary variables in associating independent variables to dependent variables. This statistical analysis technique is known as a mediational approach. It can be defined as the existence of direct and indirect effects of independent variables towards dependent variables either through or without mediators. Usually in SPSS-ANOVA, conventional regressions need to be analyzed separately to determine this intermediate impression. However, the use of AMOS allows regression equations to run simultaneously in a single framework model.

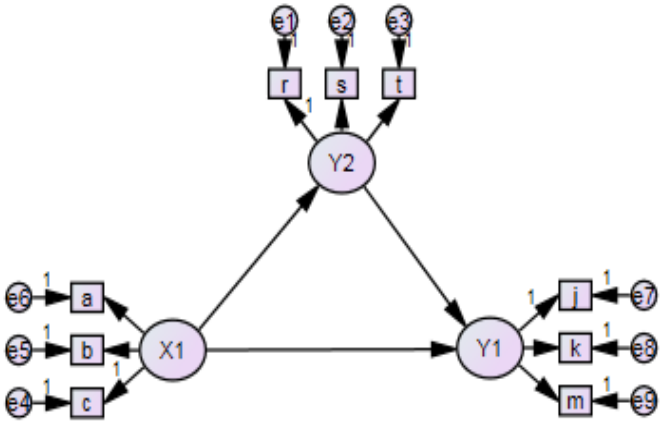

Figure 1 shows the example of mediator in a measurement model

The above figure shows the mediating statistical test. X1 acts as an independent variable, Y2 acts as a mediate variable and Y1 acts as a dependent variable. In this mediational approach, the direct, indirect and total effect of the best impression generated by X1 on Y1 can be determined through the significant value generated.

2.4 Structural Equation Modeling (SEM)

Research in social sciences has been used in statistical analysis for over a century. The decision-making through statistical methods has grown dramatically with the help of computer capabilities. The use of technology and user-friendly is one of the main reasons why access to statistical analysis has been widely practiced over recent years. In understanding data relationships, researchers must rely on univariate and bivariate analysis through advanced multivariate data analysis methods such as Structural Equation Modeling. Structural Equation Modeling or SEM is also a second generation statistical analysis technique developed for analyzing the association between multiple variables within a model framework. The relationship between variables can be expressed in a series of single or multiple regression equations. SEM techniques use quantitative combinations and correlation or causal assumptions into the model (Zainudin, 2012). SEM also can indirectly evaluate items under the latent construction individually. The latent construct is a variable that cannot be measured directly because it is just a concept of research hypothesized. Latent constructs are also known as variables that cannot be directly assessed or measured using a set of items in the questionnaire. The use of SEM can also model an association between constructions and simultaneously analyzed.

3 Results and Discussions

Table 2: Factor Loading

Construct	Item	Factor Loading	KMO and Bartlett's Test	
Demographic factor	EduF	0.852	Kaiser-Meyer-Olkin	
	EduM	0.896	Measure of Sampling	0.475
	EduG	0.515	Adequacy.	1800.674
	OccF	0.647	Approx. Chi-Square	55
	OccM	0.887	Df	0.000
	Distance	0.784	Sig.	
	Location	0.821		
	Language	0.808		
	Fees	0.844		
	Kid Age1	0.830		
	Kid Age2	0.729		
Reason	R1	0.884	Kaiser-Meyer-Olkin	
	R2	0.871	Measure of Sampling	0.693
	R4	0.693	Adequacy.	491,624
			Approx. Chi-Square	3
			Df	0.000
			Sig.	

Safety	S10 S12 S14 S16 S17	0.889 0.883 0.906 0.934 0.931	Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Approx. Chi-Square Df Sig.	 0.778 2274.067 10 0.000
Cleanliness	C1 C2 C4 C5	0.986 0.984 0.949 0.982	Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Approx. Chi-Square Df Sig.	 0.824 2656.243 6 0.000
Facilities	F1 F3 F6 F7 F8 F9	0.897 0.902 0.909 0.873 0.904 0.889	Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Approx. Chi-Square Df Sig.	 0.808 2722.445 15 0.000

Table 2 shows the Factor Loading (standardized regression weight), Kaiser-Meyer-Olkin Measure of Sampling Adequacy, Approximated Chi-square, degree-of-freedom and significance value of structural equation modeling for parent's satisfaction towards TASKA services.

According to Zainudin (2012), the load factor for the newly developed scale must be exceeding 0.5. In this study, all items with lower factor loading values of 0.5 are eliminated from 'construction' to ensure unidimensionality, parsimonious, incremental and absolute fit can be achieved. Analysis shows that 43 items were removed because they had a factor loading which was less than 0.5. Through observation of the researchers, the item is not too weak but has a modest factor loading of between 0.3 – 0.49.

Table 3: The Latent Constructs Fitness Summary

Construct				Incremental		Parsimonious	Absolute
	Chisq	Df	P value	TLI	CFI	Chisq / df	RMSEA
Facilities	70.372	19	0.000	0.780	0.868	3.704	0.084
Safety	22.986	5	0.000	0.766	0.883	4.797	0.043
Cleanliness	5.104	2	0.000	0.946	0.982	2,551	0.097
Reason	8.539	2	0.000	0.848	0.949	4.270	0.021

Table 3 above shows the fitness indices of all latent constructs in the model. Constructive mediators such as facilities, safety, cleanliness and reason have a value of ChiSq / df which is less than 5.0, so the benefits of parsimonious fitness tests have been achieved for the mediators. This construct model also has TLI and CFI values higher than 0.7 and RMSEA values less than 0.10. Therefore, additional and absolute fitness has also been achieved.

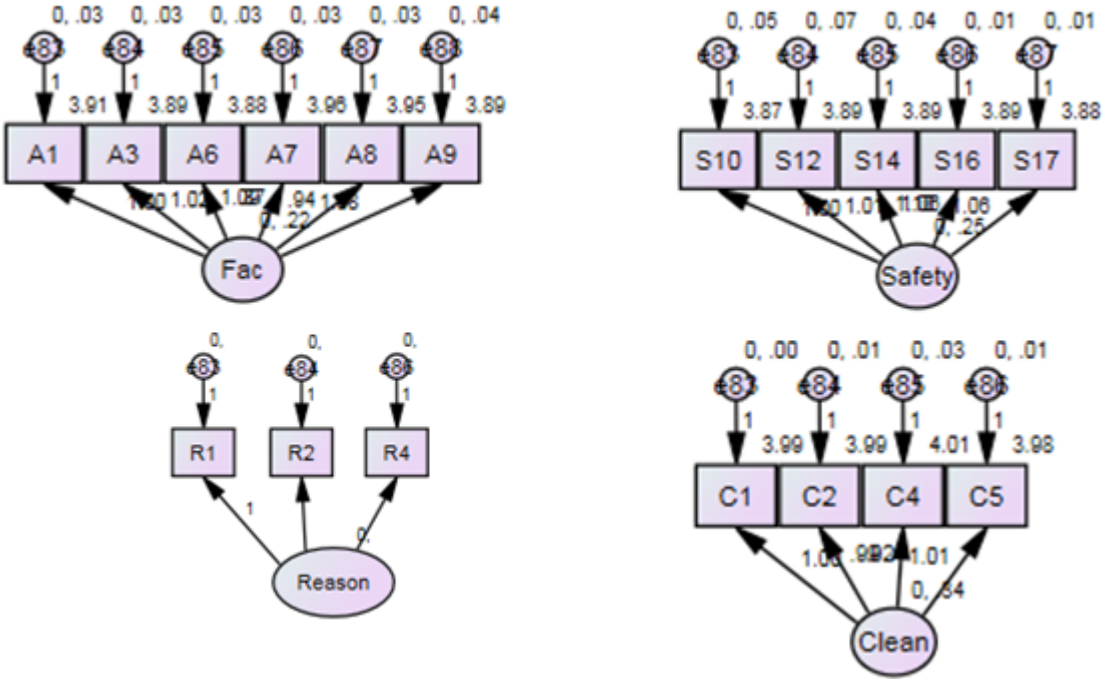

Figure 2 shows the strength of correlation between all constructs in the model.

All constructs have correlations of less than 0.80. It can be decided that discriminant validity had been accomplished and no finalized construct needs to be terminated from the model. It can be concluded that all four fitness requirements in this modeling had been achieved.

The ChiSquare / df and RMSEA value indicated in this model achieved a goodness of fit since the ChiSquare / df value is 2.409 which is lower than 5.0 and RMSEA value is 0.055 which is below 0.10 (Table 4).

Table 4: Model of Fitness

Model	CMIN	DF	CMIN / DF	CFI	TLI	RMSEA
Default model	888.761	369	2.409	0.823	0.895	0.055

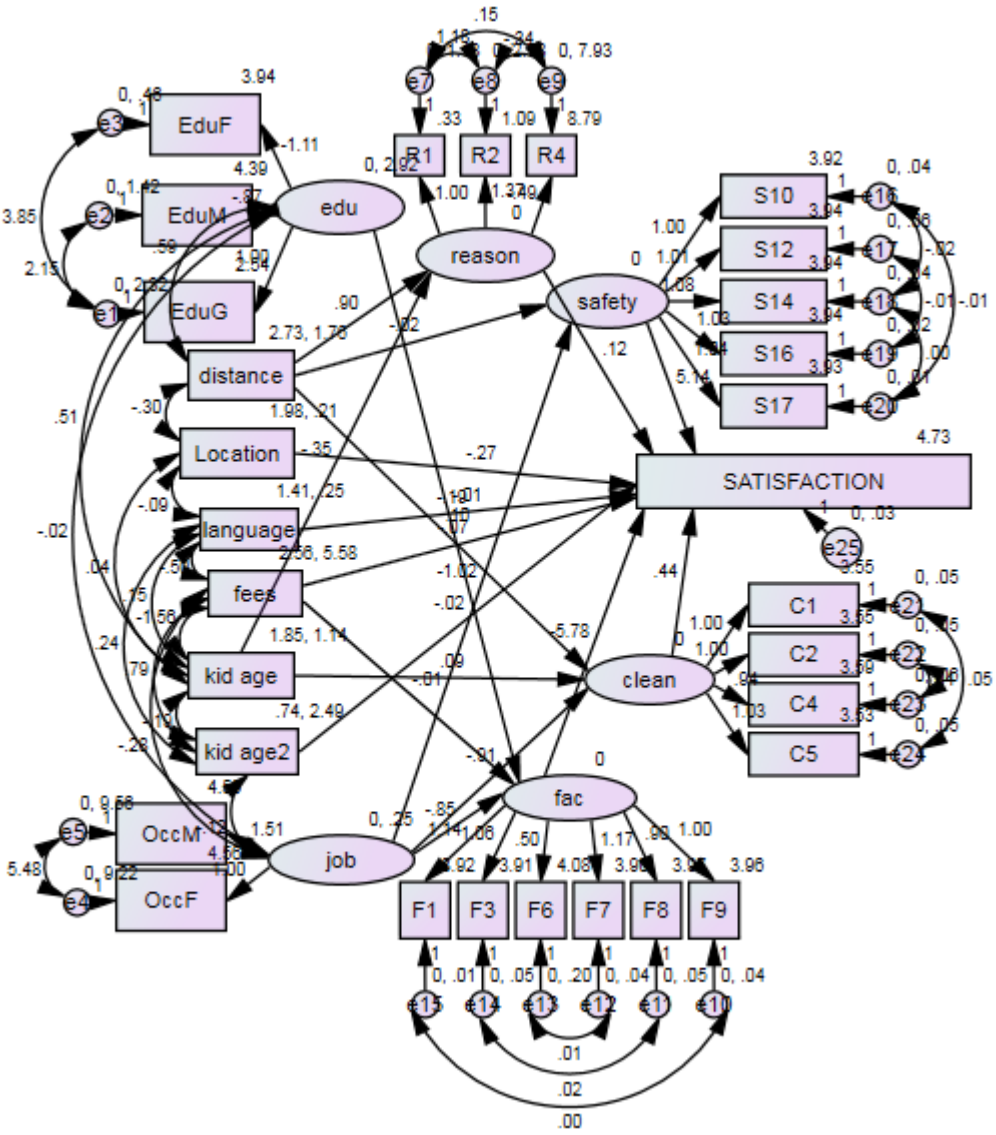

Figure 3 expresses the final model acquired when all fitness indexes have been achieved.

5 Conclusion

Based on the results obtained through the path analysis approach and SEM, more interesting results can be seen from the goodness of fit results through the chi-square/df values that meet the mediating requirements with the help of the CFI and TLI indices, as well as the significant values of the RMSEA precision level.

Through the SEM approach, not all the determinant factors in latent variables are taken into account. For facility determinants, items numbered F1, F3, F6, F7, F8 and F9 which have loading

factors of more than 0.5 are extended in the formation of the best model. Parents/guardians found that the level of TASKA service satisfaction in terms of facilities was depend on the activities of children in TASKA (F1), dressing room (F3), playroom (F6), sleeping space (F7), breastfeeding space (F8) and isolation space for the purpose of contagious disease to quarantine (F9).

Parents/guardians also emphasize safety matters throughout their children at TASKA. Among the factors determining their level of satisfaction are the preparedness of the achievable first aid kit by TASKA (S10), the existence of barrier doors that restrict children to the kitchen (S12), outdoor playground (S14) and outdoor games (S16).

In addition, the hygiene aspect is the main reason for the selection of the TASKA from the perspective of parents/guardians. The reasons are cleanliness around TASKA before operation time (C1), physical environment (C2), sensitivity to TASKA (C4) children and physical hygiene practices applied by TASKA (C5) personnel.

Parents/guardians have a special reason in the selection of a TASKA. The main factor that motivates the selection of TASKA was depend on TASKA distance from home, medium of language used, fees charged, curriculum provided and the age of their children. A significant satisfaction level for this parent/guardian can also be seen directly or indirectly where the total best effect of this route is 0.108 (0.9 x 0.12).

In addition to TASKA selection factors, fee indications are also a cause for the convenience offered by a TASKA. The fees charged also reflect the facilities provided. The significant direct and indirect impact illustrates the level of service satisfaction offered as a whole. This level of satisfaction is also indirectly influenced by the level of education and the parents/guardians occupation where the dependence of these significant decisions is assisted by three mediators; facilities, cleanliness and security.

In conclusion, the combination of these three mediators constitutes a strong consumer satisfaction (parent/guardian) to approximate a complete structured equation model while supported by demographic factors such as education level, occupation, location, distance, medium of language used, fees and age of children to strengthen the TASKA leverage factor.

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