

**MEASURING STUDENTS' SATISFACTION
TOWARDS THE CO-CURRICULAR TRAINERS: AN
APPLICATION OF STRUCTURAL EQUATION
MODELING TECHNIQUE**

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ABSTRACT

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This study measures the students' satisfaction towards the co-curricular trainers to grant them better quality of co-curricular service in boosting up their satisfaction level. The theoretical framework of measuring students' satisfaction (SSCT Model) was developed based on relevant literatures and theoretical considerations adopted from the American Customer Satisfaction Index Model (ACSI Model). 362 usable and completed questionnaires was collected from co-curricular students in Universiti Utara Malaysia (UUM) Kedah, Malaysia. Data was analyzed using Structural Equation Modeling (SEM) technique, to estimate the fit indices for all the latent variables (i.e. student's expectation towards the trainer, perceived quality, perceived value, students' satisfaction (SSCT), trainers image and students confidence). Results conjectured that students' satisfaction (SSCT Model) is analogous to the existing model (ACSI Model) as the model had a good fit. Thus, the SSCT Model can be implemented as a structured model for measuring students' satisfaction towards the co-curricular trainers.

Keywords: *Higher education, students, structural equation modeling, Malaysia*

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1. Introduction

Co-curricular course have been introduced in UUM since 1984 and it is a compulsory for UUM's students to register for the course. The Co-curricular Center is responsible to monitor the co-curricular activities, syllabuses, modules, full time trainers and to appoint part time trainers for conducting 16 co-curricular courses every semester (see Table 1). Thus, there is a need for the Centre to perform an evaluation on the trainer's service delivery rendered to the students because the input received can grant feedback for better service delivery. Then, the management can use it as a point of reference to make a decision regarding trainers' promotion and permanent status. The aim of this research is to measure student's satisfaction towards the co-curricular trainers in Universiti Utara Malaysia (UUM), Malaysia.

Table 1: Co-curricular courses by co-curricular units

No.	Co-curricular Unit	No.	Co-curricular Unit
1.	Emergency Aids Red Cross S. John Ambulance Fire Brigade Civil Defence	7.	Co-Mechanic Co-Mechanic Go Kart
2.	Living Skills Kembara Scouts	8.	Field, Water and Air Sports Soccer, Hand Ball, Softball, Hokey, Rugby, Golf, Archery, Lawn Bowling, Sepak Takraw, Volley Ball, Basket Ball, Futsal, Swimming, Tennis, Badminton, Ping Pong, Squash, Sprinting, Cycling and Para motor.
3.	Vocal Arts Choir Islamic Art Public Speaking Tarannum Bil Quran	9.	Science And Recreational Sports Sport Science Sport and Recreational Management
4.	Music Arts Traditional Music Orchestra Angklong Brass Band Cak Lempong Bagpipe Gamelan Keroncong	10.	Mass Technology and Creativity Media Technology Creativity
5.	Performance Arts Acting Panting Carving Malay Dance	11.	Social Work Community Development Women Development
6.	Martial Arts Silat Cekak Silat Gayong Silat Olahraga Karate Do Taekwondo (ITF) Taekwondo (WTF)	12.	Agro Business Aquaculture Horticulture Veterinary
		13.	Entrepreneurship Student Business Franchise Catering Beauty and Make up Interior Design
		14.	Apparel and Dressmaking Leadership Counseling Leadership Spirituality
		15.	PALAPES
		16.	SUKSIS's Corps

2. Literature review

Students' opinions about all aspects of academic life are now sought by educational institution worldwide, generally in the form of a satisfaction feedback questionnaire (Athiyaman, 1997; Douglas et al., 2006; Navarro et al., 2005a). Douglas et al. (2006) believe that keeping customer satisfied leads to customer loyalty. While Navarro et al. (2005b) have found that the teaching staff, enrollment and course organization are the elements that have an impact on student's satisfaction. Most of previous research papers on student's satisfaction are concentrated on the academic courses and using a discrete rating scale in their questionnaire to collect a data (Athiyaman, 1997). According to Martens and Prosser (1998), the high quality of teaching is fundamentally about affording high quality student learning. The quality of teaching and learning is now high on university agenda.

In a study to evaluate the satisfaction collegiate student-athletes have with their athletic trainer(s) and the athletic training services provided at their institutions, it was found that athletic trainers would be the first to agree that the relationship and rapport built with an athlete are important to the care and prevention of injuries. Athletic trainers must be able to develop the social support system necessary for all athletes to feel secure with the treatment and service provided (Passman, 2000; Unruh, 1998). From the time of an injury until the athlete is released to play again, the athletic trainer plays a vital role. It is during this period that the satisfaction athletes have with their athletic training services and how they are treated in relationship to other athletes within the program come into focus (Barefield and McCallister, 1997; Cramer, 2001; Fisher and Hoisington, 1993; Passman, 2000; Unruh, 1998).

2.1. The student's satisfaction measurement framework

The theoretical framework of student's satisfaction was adapted from Rosna and Victor (2003) and is shown in Figure 1. Students' satisfaction measurement framework has three antecedents; perceived quality, perceived value and students' expectations.

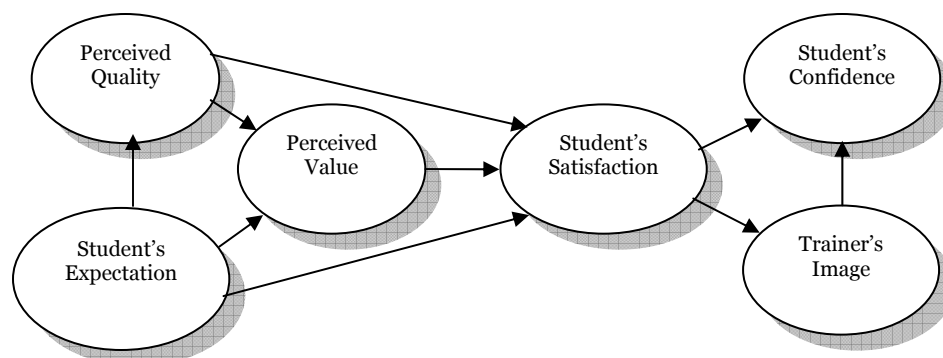


Figure 1: Student's satisfaction measurement framework (SSCT Model)

3. Methodology

The population for this research is all the registered co-curricular students in Semester 2 excluding (1) the first semester students, (2) PALAPES, and (3) SUKSIS's Corps students due the first semester students are unable to evaluate and voice out their opinion since they are still new and currently in six weeks of class lectures. 400 questionnaires has been distributed to the co-curricular trainers following stratified random sampling technique by referring to the data obtained from human resource department of the

University and 362 turned to be usable response with 90.5% response rate.

Questionnaire items were adapted from Rosna and Victor (2003). The continuous rating scale was used for the measurement items. Table 2 displays the questionnaire items. All items displayed composite reliabilities in excess of the 0.60 recommended value for exploratory studies. Proposed research framework was analysed using Structural Equation Modeling (SEM) technique i.e. a multivariate procedure that, as defined by Ullman (1996), "allows examination of a set of relationships between one or more independent variables, either continuous or discrete, and one or more dependent variables, either continuous or discrete." SEM deals with measured and latent variable. SEM grows out of and serves purposes similar to multiple regression, but in a more powerful way which takes into account the modeling of interactions, nonlinearities, correlated independents, measurement error, correlated error terms, multiple latent independents each measured by multiple indicators, and one or more latent dependents also each with multiple indicators. SEM is divided into two parts; a measurement model and a structural model. The measurement model deals with the relationships between measured variables and latent variables. The structural model deals with the relationships between latent variables only. One of the advantages to SEM is that latent variables are free of random error. This is because error has been estimated and removed, leaving only a common variance.

Table 2: Questionnaire items

Code	Description	Latent Variable
QG1	listen carefully to what you want	Perceived quality
QG2	is positive in helping me understanding	Perceived quality
QG3	provides suitable response to student questions	Perceived quality
QG4	helps students to sort our problems with understanding	Perceived quality
QG5	shows genuine interest in and concern for student progress	Perceived quality
OG6	is sensitive to and concern with different students needs	Perceived quality
QT7	starts the lecture on time	Perceived quality
QT8	postpones or cancel lectures without any advanced notice	Perceived quality
C1	has good vocal delivery	Students expectation
C2	teaches with the appropriate intonation	Students expectation
C3	makes clear explanations	Students expectation
C4	injects appropriate humor	Students expectation
S1	state lesson objective clearly	Students expectation
S2	has a thorough knowledge, basic and current of the subject	Students expectation
S3	teaches in a systematic manner	Students expectation
S4	present materials in an interesting manner	Students expectation
M1	encourage class to participate	Students expectation

M2	show great confidence in the subject matter	Students expectation
M3	is able to stimulate my interest in the lessons	Students expectation
M4	helps increase my self confidence	Students expectation
O1	make good use of examples and illustrations to get across difficult points	SSCT
O2	make it easy for me to remember lessons as lecture contents as well summarized	SSCT
O3	is among the best trainer I have ever met	SSCT
V1	give full commitment in conducting this course	Perceived value
V2	knowledge and experiences given is valuables	Perceived value
V3	this course is very helpful and assist my self development	Perceived value
I1	has a good image and reputation	Trainer Image
I2	is innovative and forward looking	Trainer Image
I3	imagine that you have to complaint to your trainer because of his/her bad quality of services, do you think that your trainer will care about your complaint?	Trainer Image
L1	I am very confidence with his/her ability	Student Confidence
L2	I would recommend this course to other students	Student Confidence
L3	I would like to continue this course in the future	Student Confidence
L4	I would register this course again even I did not get an 'A' for this semester	Student Confidence

4. Data analysis and discussions

From 362 usable and completed questionnaires, concerning the demographic profile of the respondents, majority of them were males (70%). A big number of respondents came from encirclement age of 20-23 years old, which is 80%. Majority of the respondents participated in the study was Malays with 72%, followed by the Indians (10%) and minority of the respondents was the Chinese with 18%. Through SEM technique, the values shown in Table 3 indicate that the model had good fit where fit indices such as RMSEA and CMINDF were below than the recommended value. Similarly, the AGFI, AFI, CFI, NFI, TLI values were all above 0.90. Thus, the model is eligible to proceed to the next level of analysis.

Table 3: Fit indices for the SSCT Model

Fit measures	Suggested values	Author	SSCT Model
<i>Chi-square</i>	-		9.858
<i>df</i>	-		4
<i>p-value</i>	≥ 0.05		0.043
<i>CMINDF</i>	≤ 2.496	Bentler (1990)	2.465
<i>RMSEA</i>	≤ 0.08	Byrne (2001)	0.064
<i>GFI</i>	≥ 0.90	Chau (1997)	0.991
<i>CFI</i>	≥ 0.90	Bentler (1990)	0.988
<i>NFI</i>	≥ 0.90	Bentler & Bonett (1980)	0.997

The correlation coefficient in Table 4 illustrates the correlation between the latent variables in theoretical measurement framework for students' satisfaction (SSCT Model) corresponds to the existing model (ACSI Model). Based on Table 4, student's expectation has a strong positive correlation with perceived quality, perceived value and student's satisfaction, with r values 0.893, 0.899 and 0.909 respectively. Perceived quality also has a significantly strong correlation with the perceived value and student's satisfaction with r -value of 0.816 and 0.834 correspondingly. Further, perceived quality and students' satisfaction also has a strong positive correlation ($r = 0.927$). Thus, the students' satisfaction was correlated with the students' expectation, perceived quality and perceived value. The r value for students' satisfaction significantly correlated with the trainers' image and the student's confidence with a value 0.904 and 0.848 respectively. The final correlation was between trainers' image and students' confidence with $r = 0.842$. In sum, all variables in the correlation matrix provides evidence for both discriminant and convergence validity.

Table 4: Coefficient of correlations for SSCT Model

	SE	PQ	PV	SS	IMAGE	SC
SE	1.000					
PQ	0.893**	1.000				
V	0.899**	0.816**	1.000			
SS	0.909**	0.834**	0.927**	1.000		
IMAGE	0.889**	0.805**	0.934**	0.904**	1.000	
SC	0.836**	0.773**	0.870**	0.848**	0.842**	1.000

Note: ** Significant at the 0.01 level

Figure 1 displays that student's expectation, perceived quality and perceived value were the cause variables for the measurement of student's satisfaction towards co-curricular trainers. On the other hand, student's satisfaction and trainer's image were the effect variables towards student's confidence. The beauty of SEM is that it can be used to measure the direct-indirect effect between all the latent variables. Table 5 enumerates that student's expectation has a **direct** effect on perceived quality and perceived value but the perceived quality **does not have direct** effect on perceived value as the p -value = 0.191. The results are summarized as follows:

- i. Student's Expectation and Perceived quality have a **direct** effect on Student's Satisfaction.
- ii. Student's Satisfaction has effect on Student's Confidence and Trainer's Image **directly**.
- iii. Trainer's Image has a **direct** effect Student's Confidence.
- iv. Student's Expectation **does not have indirect** effect on Perceived Value through Perceived Quality.
- v. Student's Expectation has an **indirect** effect on Student's Satisfaction through Perceived Value.
- vi. Perceived Quality **does not have an indirect** effect on Student's Satisfaction through Perceived Value.
- vii. Student's Satisfaction **indirectly** affects Student's Confidence through Trainer's Image.

Table 5: Regression weight for SSCT Model

	Estimated	S.E	C.R	<i>p</i>	Results
PQ <- SE	0.957	0.025	37.63	0.000	Significant
PV <- SE	0.918	0.056	16.451	0.000	Significant
PV<- PQ	0.068	0.052	1.306	0.191	Not significant
SS <- PQ	0.198	0.029	6.841	0.000	Significant
SS <- SE	0.311	0.042	7.452	0.000	Significant
SS <- PV	0.650	0.031	21.126	0.000	Significant
Image <- SS	0.913	0.022	40.989	0.000	Significant
SC <- SS	0.531	0.066	8.017	0.000	Significant
SC <- Image	0.502	0.072	6.934	0.000	Significant

Note: SE = Student's expectation; PQ = Perceived quality; PV = Perceived value; SS = Student's Satisfaction; Image = Trainer's image; SC = Student's Confidence

Students found that co-curricular trainers portrays good behavior while conducting training such as they starts the lecture on time, has a thorough knowledge, basic and current. Indeed, they teaches in a systematic manner of the subject, show great confidence in the subject matter, present materials in an interesting manner, and shows genuine interest in and concern for student progress. Co-curricular trainers also give full commitment in conducting the course as they are very knowledgeable and his experiences given during the training are valuables. Students also highly satisfied with the trainers seeing that they make good use of examples and illustrations to get across difficult points to make it easy for the students to remember lessons and the lecture contents are well summarized. From students' perspectives, they hold strong confidence in undertaking the co-curricular training course as they are very confidence with their co-curricular ability. In fact, they would register the course again even if they did not get an 'A' for the current semester and would like to continue the course in the future. Interestingly, they would recommend the course to other students as they find excitement in the course. At this point, the SSCT Model can be implemented as a structured model for measuring students' satisfaction towards the co-curricular trainer since the fit indices of the model is having a good fit.

4.1. Index of the SSCT Model

The expected value of students' expectation was computed based on standardized regression weight in CFA analysis, while the other factors were determined using standardized regression weight in SEM analysis. Hence, the regression equation for SSCT Model are as follows:

$$E(SE) = 0.952 (C2) + 0.968 (C3) + 0.945 (C4) + 0.969 (M1) + 0.936 (M2) + 1.058 (M3) + 0.999 (M4) + 1.016 (S1) + 1.000 (S2) + 1.008 (S3) \quad \dots(1)$$

$$E(PQ) = 0.893 (SE) \quad \dots(2)$$

$$E(PV) = 0.839 (SE) + 0.067 (PQ) \quad \dots(3)$$

$$E(SS) = 0.639 (PV) + (0.278) SE + (0.053) PQ \quad \dots(4)$$

$$E(Image) = 0.997 (SS) \quad \dots(5)$$

$$E(SC) = 0.500 (SS) + 0.434 (Image) \quad \dots(6)$$

Table 6 illustrates the index score of SSCT Model. It can be clearly seen that all of the index for SSCT are "Good" as the value exceed the cut off point of 0.70 except for the Student's expectation which merely scored "Moderate" grade as the value is 69.83.

Table 6: Index of the SSCT Model

	Index	Grade
Student's expectation	69.83	Moderate
Perceived quality	71.29	Good
Perceived value	72.24	Good
Student's satisfaction	80.32	Good
Trainer's image	77.53	Good
Student's confidence	74.10	Good

The highest index among the SSCT factors is student's satisfaction with a score of 80.32% followed by the trainer's image (77.53%) and student's confidence (74.10%). The other factors i.e. perceived value and perceived quality have score of 72.24% and 71.29% respectively. The lowest index of the SSCT Model is students' expectation with a score of 69.83%, where the grade falls in the "Moderate" group.

4.2. Benchmark of students' satisfaction

Figure 2 demonstrates the benchmark of students' satisfaction across the Co-curricular Units. 70% has been identified as the lowest index to be classified as "Good" and it will be the lowest benchmark to determine the trainers' performance in UUM by following Mokhtar (2006)'s benchmark. The coordinator or more specifically, the management of Co-curricular Centre is suggested to 'polish' the "Moderate" trainer if their index score fall in between 60% to 70%. It is a more serious case for trainers acquiring index value below than 60% because it fall under warning limit mark/indicator and is classified as "Low". Thus, a rectification needs to be implemented in this category. Evidently, all Co-curricular Units index are above 70% which give a precursor of "Good" grade except for the Music Arts Unit (refer Figure 2).

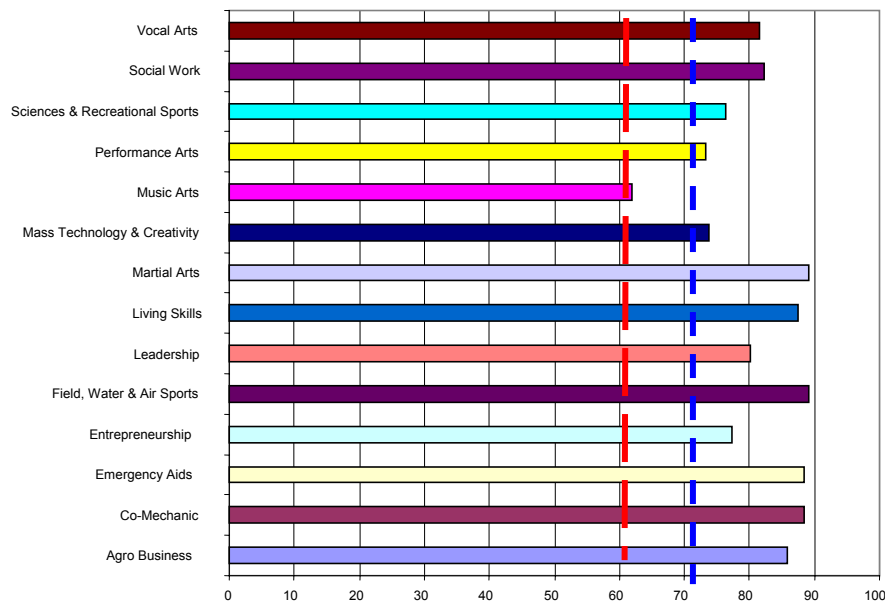


Figure 2: Benchmark of student's satisfaction

5. Conclusion

The result of this study shows that the relationship between the latent variables in the theoretical measurement framework for students' satisfaction (SSCT Model) is corresponds to the existing model (ACSI Model) but perceived quality does not have direct or indirect effect with the other factors. Overall, students' felt that co-curricular trainers renders good service delivery while conducting co-curricular training. As far as this study is concerned, the management of UUM can use the index score of SSCT Model as one of the tool to evaluate the trainer's performance in particular to understand student perception towards UUM's co-curricular trainer service delivery.

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