CREATING BUSINESS MANAGEMENT GUIDELINES FOR THAI BOXING TRAINING: A CASE STUDY OF SAI-MA THAI BOXING GYM IN NONTHABURI, THAILAND

Supaksiri PRAKANCHAROEN[1] and Narin YUENTHON[1]

1 College of Hospitality Industry Management, Suan Sunandha Rajabhat University, Thailand; supaksiri.pr@ssru.ac.th (S. P.); narin.yu@ssru.ac.th (N. Y.)

Abstract

This research aims to create guidelines or strategies for the Thai boxing training case study of some Thai boxing gyms in Nonthaburi province, Thailand. The independent variables cover staff and trainer, training equipment, training program, and pricing and traveling of Thai boxing GYM, while satisfaction opinions are the dependent variables. The sample is four hundred eighty-six foreign trainee responders from the Western and Asian zones. Factor analysis and Structural equation modeling techniques seek the effective manifest variable, factor, and the relationship between latent factors. Statistical data processing shows that Westerners prefer fighting approach training programs while Asian trainees prefer strengthening their health. The findings are used to create training operation management guidelines that properly and directly serve the trainees in a particular nation. Three factors ("staff and trainer," "training program," and "pricing & traveling") have significant effects on the factor "trainee's opinion in training." The factor "training equipment" does not have a direct impact on "trainee's opinion in training" but has a direct effect on "staff and trainer" and "training program." The result of the fitted structural equation model provides the most significant attributes that should be used to *significantly* improve the Thai boxing training operation to increase trainee satisfaction. The mean magnitude of the relative error percentage of the model (MMRE) cross-validation is ±21%. The post-test of trainees' satisfaction with the proposed new training operation shows that trainees have more significance than the current ones.
Keywords: Thai Boxing Trainee's Opinion, Effective Factor in Satisfaction, Objective of Training, Foreigner Muay Thai Sport Tourism, Structural Equation Modeling

Introduction

Thai boxing (aka. Muay Thai) training business has operated traditional Thai boxing training for Thai citizens for a long time. The main objective is to create professional Thai fighter boxers. These fighter boxers will support boxing competitions against other camps. Moreover, Muay Thai also increases the health of those who regularly practice it (Edwards, 2021). Since Muay Thai sport is seen as a sport of harshness or gambling (Teerasukittima, 2020), these opinions cause many parents to choose their children to train in a Muay Thai Gym. These situations resulted in an economic crisis in the Thai boxing training business. Many Muay Thai training gyms try to escape the economic problem by creating other training programs such as strengthening health, self-defense, etc. (Yuvanont et al., 2010). These activities are accepted by many Thai citizens, especially young people. Since the rapidly growing cyber connections worldwide, many foreigners from Western and Asian who are impressed with the advantages of Muay Thai are traveling to earnestly practice in Muay Thai training programs (Ngaoprasertwong & Chandarasorn, 2019). The Muay Thai boxing training business must find significant trainee satisfaction attributes to keep these businesses operating long and provide high trainee satisfaction.

Literature Reviews

Since the Thai boxing training GYM context is quite similar to other businesses such as fitness centers, wellness service industries, health improvement GYM, and physical training GYM, literature reviews in other related research will be considered. The literature review shows many independent variables related to the trainee's satisfaction with Thai boxing training GYM, as shown in table (1). These various attributes will be selected by the five other Thai boxing training GYM experts. These attributes will be grouped into factors.

Table 1 The gathered attributes from related research

Attributes	(Wisipat & Gulthawatvichai, 2021)	(Indrawan et al., 2023)	(Jang & Baek, 2024)	(Jaatinen, 2015)	(Fernando et al., 2023)	(Teerasukittima, 2020)	(Ngaopraseertwong & Chandarasorn, 2019)	(Ong et al., 2021)	(Freitas & Lacerda, 2019)	(Setyorini & Yolandari, 2023)	(Klasens, 2020)	(Wittayakool, 2016)	(Goclowska et al., 2019)	(Piromchaikij, 2022)	(Khadka & Khadka, 2022)	(Kuśnierz, 2016)	(Sukiri et al., 2021)	(Erjavec et al., 2016)
Quality of service	✓			✓	✓					✓	✓			✓			✓	✓
Equipment	✓		✓											✓			✓	
Accommodation (locker, Bathroom, food service, car parking	✓		✓	✓					✓								✓	
Recreation activities	✓			✓														
Performance of the trainers and staff		✓		✓					✓	✓	✓							
Language Used in Communication		✓				✓												
Hygiene, safety			✓			✓			✓		✓						✓	
Staff lacks teacher ethics						✓												
Good source of Thai boxing equipment							✓											
Training program							✓					✓	✓			✓		
Parking space							✓						✓					
Language barrier																	✓	
Equipment Condition			✓										✓				✓	
Gym Room Condition			✓														✓	
Gym Location			✓										✓		✓		✓	
Infrastructure													✓				✓	
Officers staff													✓				✓	✓
Comfort, security		✓						✓						✓				
Center services								✓										
Price									✓					✓				✓
Facilities									✓									
Healthiness program														✓				

Item-Objective Congruence (IOC10)

Item-objective congruence is a procedure used to detect whether the proposed variable is related to the research objective. A group of experienced research persons undertakes the judgments. The scores are classified as "+1" accept, "0" no opinion, and "-1" not accepted. The percentage of the "+1" score will be used to decide if the item is related to the questionnaire's objective. Usually, this percentage of "+1" should be greater than (≥) 0.60. After that, this questionnaire should be tested for reliability by a statistical method, Cronbach. The test will be pretested by sending the questionnaire to the pilot group to give their answer. The Cronbach's alpha (α) formula for the reliability questionnaire test should take the statistical values greater or equal to (≥) 0.70. (Rovinelli & Hambleton, 1977)

Normality

The primary assumption of many statistical methods is the requirement to compile variable regular distributions. Skewness (γ) statistics detect whether the variable is compiled on a normal distribution. The distribution of specific variables is assumed to be expected if the skewness statistics have the value of the boundary "±1.5." (Gillivray, 1992)

Factor Analysis

The exploratory factor analysis (EFA) is a statistical method used to investigate whether the observed variables are linearly related to the representative latent variable. The manifest is considered a member of a particular factor variable under the maximum factor loading magnitude criteria. The factor analysis validity statistics are Bartlett's test of sphericity (p-value α0.05) and Kaiser-Meyer-Olkin measure of sampling adequacy (≥0.50). (Tryfos, 2005)

Structural Equation Modeling-SEM

Measurement Model: The EFA technique detects whether the group of variables is statistically significant relative to the latent variable.

Confirm Structural Equation Model: The structure equation model detects the statistical significance and direction of the draft model of relation among many factors. SEM is used to confirm whether the proposed structural models are statistically acceptable.

Model Fit Index: The important model fit indices of model acceptance are: Relative/normed chi-square (χ2/df), acceptable if $\chi^2/df \leq 3.00$, Root mean square error of approximation (RMSEA), acceptable if RMSEA ≤ 0.08, and CFI (Comparative fit index), acceptable if CFI ≥ 0.90.

The Adequate Number of Sample Observations: The sample size in SEM analysis is calculated from 'n x q,' while 'n' is the number of estimated parameters, and 'q' is the researcher's subjective defined minimum number of observations needed for each parameter estimation. This research has twenty-four variables, while the research chose the 'q' value as equal to the moderate value (15). Thus, the minimum research required observations is at least three hundred and sixty (360) samples. (Brunner, 2022; Wolf, 2013)

Magnitude of Relative Error

The mean magnitude of relative error (MMRE) is widely used to measure the performance of model estimation, as shown in the equation: $MMRE = \frac{1}{n}\sum_{i=1}^{n}\frac{|actual_i - estimate_i|}{actual_i}$. Where the estimated value is the estimated value, and the actual is the true value of the cross-validation record i[th]. The value of the MMRE error in the prediction may be positive or negative. (Jørgensen et al., 2022)

Comparison of the Trainee's Opinion on the Objective of Training

The first research question that the Thai boxing gym wants to know is the trainees' training objective. The null hypothesis: The four categories of training objective means of Muay Thai boxing training between Western and Asian training objectives are similar, figure (1).
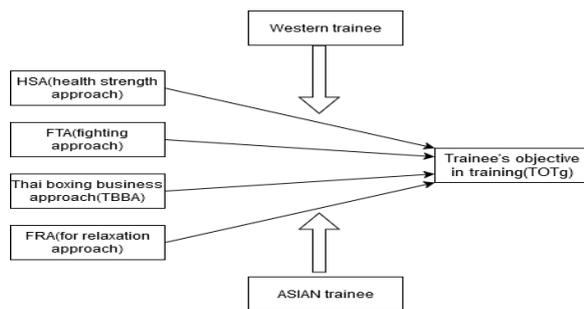
Figure 1 H_o1: Two Different Group t-Tests (Western and ASIAN Trainee) On A Trainee's Objective Is Equal

Exploratory Factor Analysis of Each Factor with Their Observed Variables Member
The research attributes are selected from related research, which passed five experts' consideration and suggestions, with the IOC10 technique. These attributes are grouped as five factors: 1) Factor staff trainer (ST), 2) Factor training equipment (TE), 3) Factor training programs (TP), 4) Pricing and traveling (PT), and 5) Factor trainee's opinion in training (TOT). These factors are individual factor exploratory analyses tested to detect the validity of its component or member. The EFA of the factors concept model is illustrated in figures (2), (3), and (4), respectively.
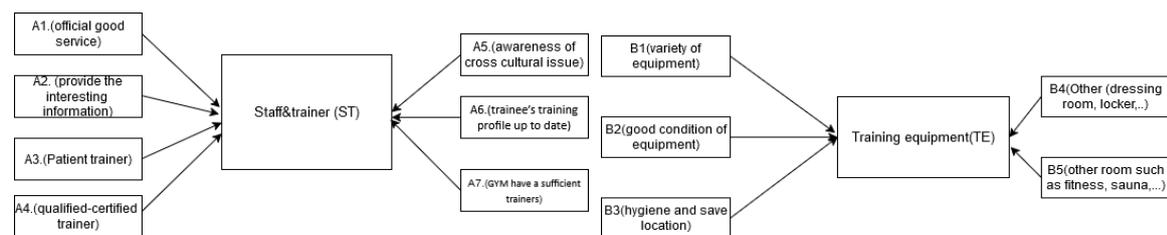

Figure 2 Factor Staff & Trainer (ST), Training Equipment (TE), And Its Components
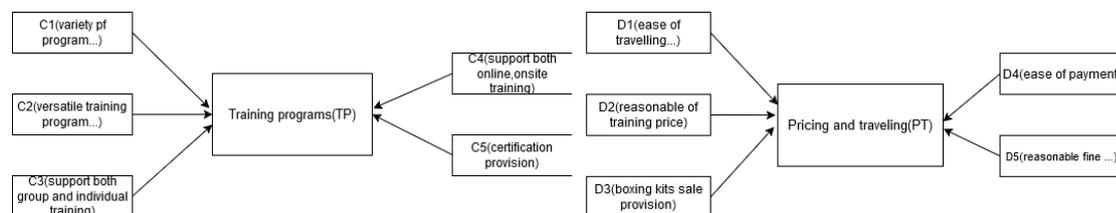

Figure 3 Factor Training Programs (TP), Pricing and Traveling (PT), and Its Components
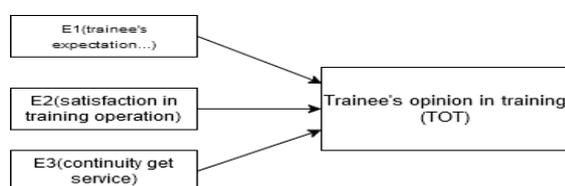

Figure 4 Factor Trainee's Opinion (TOT) And Its Components

Concept Model of Four Exogenous Factors (ST, TE, TP, and PT) in Relation with Endogenous Factor (TOT)
Figure (5) presents the conceptual research null hypothesis of a structural equation model of four factors.
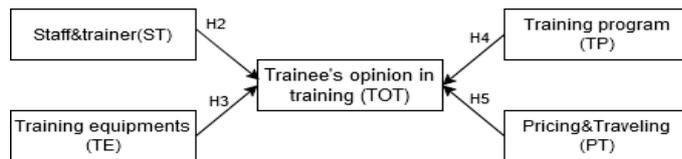
Figure 5 Structure Model of Exogenous Factors (ST, TE, TP, And PT) To Endogenous (TOT)

Hypotheses
The null hypotheses of this research are:

H_o1: The two means of Thai boxing training objectives between Western and Asian trainees are equal

H_o2: Factor "Staff and Trainer" (ST) directly affects factor TOT.

H_o3: Factor "Training and equipment" (TE) directly affects factor TOT.

H_o4: Factor "Training program" (TP) directly affects factor TOT.

H_o5: Factor "Pricing and traveling" (PT) directly affects factor TOT.

Research Methodology
Figure (6) presents the research steps for all activities and some additional explanations.

Population and Sample Size
In 2023, there are four hundred and fifty Muay Thai boxing gyms in Thailand. The samples were selected by searching for Thai boxing training gyms on an active operating website. The research chose the three experimental gyms located in Nonthaburi province. All experimental GYMs have mainly operated their business and serve Thais and foreign trainees. Thus, the researcher informs them of the research objectives and asks for cooperation about related attributes, provisions, and judgment. The Google form questionnaires were sent to all GYM customers from October to November 2024. The research activities are shown in Figure 6.
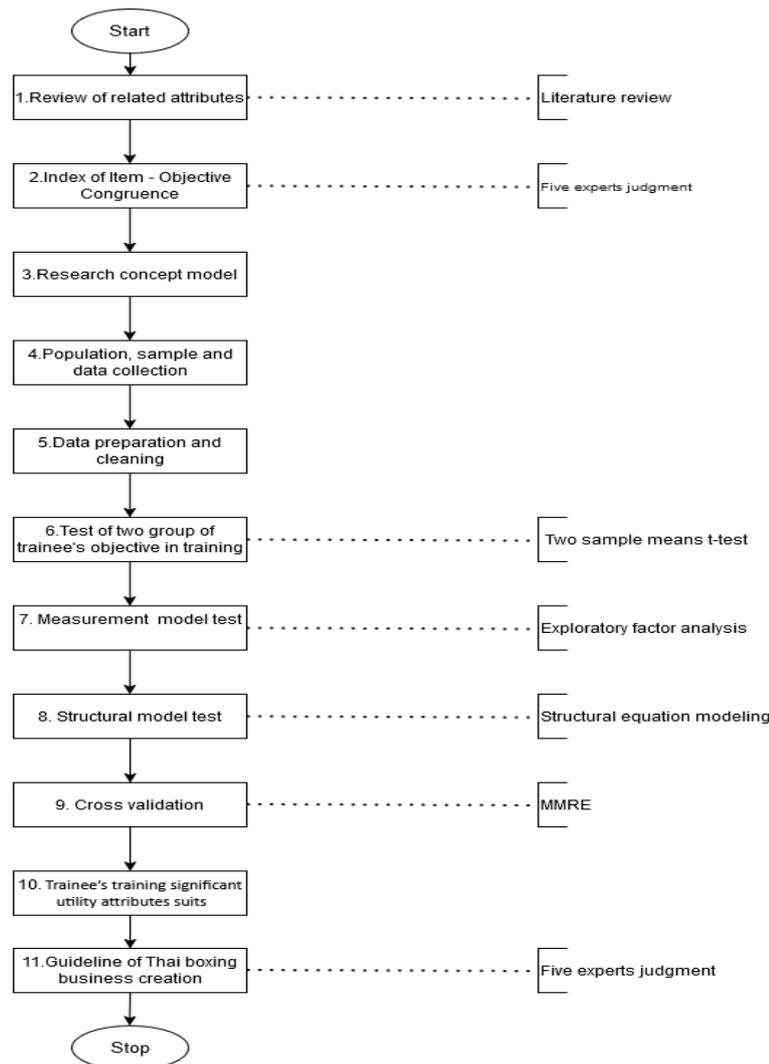
Figure 6 Research Steps

Questionnaire
The details of the Thai boxing training GYM questionnaire are shown as follows.
1) General information
1.1) Gender   □ Male   □ Female
1.2) Nationality   □ Western   □ Asian
1.3) Objective of Thai boxing training approach in
          □ Health strengthen   □ fighting   □ Thai boxing business   □ relaxation
2) Thai boxing training GYM operation topic

Topic	Detail	1	2	3	4	5
1) Staff & Trainer (ST)	A1. Officials should have good service					
	A2. Provide interesting information for trainees					
	A3. The trainer should be a patient character					
	A4. GYM has qualified-certified trainers					
	A5. Have an awareness of cross-cultural issues					
	A6. Trainee training profile up to date					
	A7. GYM has sufficient trainers					
2) Training Equipment (TE)	B1. Provide a variety of training equipment					
	B2. Good condition of training equipment					

	B3. Hygiene and safe equipment & location
	B4. Provide other supporting rooms (restroom, dressing room, etc.)
	B5. Provide other types of equipment (fitness, sauna room, etc.)
3) Training Program (TP)	C1. Provide a variety of training programs (e.g., fighting, wellness, basic, professional)
	C2. Versatile Training program for trainee
	C3. Support both group and individual training
	C4. Support both online, onsite, and on-demand training
	C5. Provide certificate for training
4) Pricing & Traveling (PT)	D1. Ease of traveling to training GYM
	D2. Reasonable training price
	D3. Provide Thai boxing kit for sale
	D4. Ease of training fee payment
	D5. Reasonable fine in case of postponing the trainee's appointment
5) Trainee& Opinion in training (TOT)	E1. Your level of trainer expectation was reached in the overall Thai boxing training operation
	E2. Your level of satisfaction with the overall Thai boxing training operation
	E3. Your level of continuity of getting into service

Ethics in Human Research

Since this research is a social science study that uses a survey method with questionnaires, which poses little or no risk to the volunteers participating in the research, a request for expedited ethical review of human research was submitted to the Research in Human Ethics Committee of the Association of Legal & Political Studies (ALPS-IRB) and a received certificate number ALPS-IRB-2024-10-0004

Research Results

IOC-10

The IOC-10 criterion for item passing equals and exceeds ($\geqslant$) 0.60. The result shows that many attributes were accepted, except "Provide another type of equipment (fitness, sauna room, etc.)" was rejected. Therefore, this attribute will be deleted from further research steps, as shown in Table (2).

Table 2 The Result of IOC10 Value (value ≥0.60 Acceptance Criterion) Consideration

Topic	Detail	-1	0	+1	IOC	Result
General information	1) Gender	-	-	5	1	accept
	2) Nationality	-	-	5	1	accept
	3) Objective of training	-	-	5	1	accept
Factor-endogenous	Observed variable					
1) Staff & Trainer (ST)	A1. Officials should have good service	-	-	5	1	accept
	A2. Provide interesting information for trainees	-	-	5	1	accept

	A3. The trainer should be a patient character	-	-	5	1	accept
	A4. GYM has qualified-certified trainers	-	-	5	1	accept
	A5. Have an awareness of cross-cultural issues	-	-	5	1	accept
	A6. Trainee training profile up to date	-	-	5	1	accept
	A7. GYM has sufficient trainers	-	1	4	0.8	accept
2) Training Equipment (TE)	B1. Provide a variety of training equipment	-	-	5	1	accept
	B2. Good condition of training equipment	-	-	5	1	accept
	B3. Hygiene and safe equipment & location	-	-	5	1	accept
	B4. Provide other supporting rooms (restroom, dressing room, etc.)	-	-	5	1	accept
	B5. Provide other types of equipment (fitness, sauna room, etc.)	3	-	2	0.4	**delete**
3) Training Program (TP)	C1. Provide a variety of training programs (e.g., fighting, wellness, basic, professional)	-	-	5	1	accept
	C2. Versatile Training program for trainee	-	-	5	1	accept
	C3. Support both group and individual training	-	-	5	1	accept
	C4. Support both online, onsite, and on-demand training	-	-	5	1	accept
	C5. Provide certificate for training	-	-	5	1	accept
4) Pricing & Traveling (RT)	D1. Ease of traveling to training GYM	-	-	5	1	accept
	D2. Reasonable training price	-	-	5	1	accept
	D3. Provide Thai boxing kit for sale	-	-	5	1	accept
	D4. Ease of training fee payment	-	-	5	1	accept
	D5. Reasonable fine in case of postponing the trainee's appointment	-	1	4	0.8	accept
Factor-endogenous	Observed variable					
5) Trainee& Opinion in training (TOT)	E1. Your level of trainer expectation was reached in the overall Thai boxing training operation	-	-	5	1	accept
	E2. Your level of satisfaction with the overall Thai boxing training operation	-	-	5	1	accept
	E3. Your level of continuity of getting into service	-	-	5	1	accept

Attributes Details

The research attributes are given variable names, data type, data range, and skewness, as shown in Table (3). The skewness of each attribute represents that all observed variables are nearly compiled on the normal distribution. Some observations were presented as outliers in some attributes, so all of these (twelve records) were deleted. Finally, the number of complete clean observations is counted as four hundred and eighty-six.

Table 3 The Details of Every Research Attribute

General		Variable name	Data type	Data range
1) Gender		G1	1) Male, 2) Female	1-2
2) Nationality		G2	1) Western, 2) ASIAN	1-2
3) Objective of training		G3	1) Health strengthen, 2) Fighting 3) Thai boxing business, 4) Relaxation	1-4

Exogenous factor				
Factor Name	Variable name	Observed variable	Data range	Skewness (-1.5≤sk≤+1.5)
1) Staff & Trainer (ST)	A1	Officials should have good service	1-5	1.01
	A2	Provide interesting information for trainees	1-5	0.89
	A3	The trainer should be a patient character	1-5	1.12
	A4	GYM has qualified-certified trainers	1-5	0.92
	A5	Have an awareness of cross-cultural issues	1-5	1.02
	A6	Trainee training profile up to date	1-5	0.96
	A7	GYM has sufficient trainers	1-5	0.87
2) Training Equipment (TE)	B1	Provide a variety of training equipment	1-5	1.24
	B2	Good condition of training equipment	1-5	1.17
	B3	Hygiene and safe equipment & location	1-5	1.22
	B4	Provide other supporting rooms (restroom, dressing room, etc.)	1-5	0.88
	B5	Provide other types of equipment (fitness, sauna room, etc.)	1-5	1.01
3) Training Program (TP)	C1	Provide a variety of training programs (e.g., fighting, wellness, basic, professional)	1-5	0.98
	C2	Versatile Training program for trainee	1-5	0.76
	C3	Support both group and individual training	1-5	1.15
	C4	Support both online, onsite, and on-demand training	1-5	0.75
	C5	Provide certificate for training	1-5	1.03
4) Pricing &Traveling (RT)	D1	Ease of traveling to training GYM	1-5	0.69
	D2	Reasonable training price	1-5	0.74
	D3	Provide Thai boxing kit for sale	1-5	1.21
	D4	Ease of training fee payment	1-5	0.99
	D5	Reasonable fine in case of postponing the trainee's appointment	1-5	1.21

Exogenous factor				
Factor Name	Variable name	Observed variable	Data range	Skewness (-1.5≤sk≤+1.5)
5) Trainee& Opinion in training (TOT)	E1	Your level of trainer expectation was reached in the overall Thai boxing training operation	1-5	0.89
	E2	Your level of satisfaction with the overall Thai boxing training operation	1-5	1.25
	E3	Your level of continuity of getting into service	1-5	1.24

Exploratory Factor Analysis

Exploratory factor analysis examined each factor and its proposed component (attributes) for the significance of the relationship. The result of exploratory factor analysis shows that all attributes belonging to the factor passed the criteria, as shown in Table (4).

Table 4 The Result of Exploratory Factor Analysis for Each Factor

Exogenous factor			
Factor Name	Variable name	Factor loading	Result (accept if loading ≥ 0.30)
1) Staff & Trainer (ST) (KMO 0.851, Bartlett test sig 0.00)	A1	0.581	accept
	A2	0.679	accept
	A3	0.676	accept
	A4	0.647	accept
	A5	0.639	accept
	A6	0.821	accept
	A7	0.723	accept
2) Training Equipment (TE) (KMO 0.676, Bartlett test sig 0.00)	B1	0.774	accept
	B2	0.831	accept
	B3	0.562	accept
	B4	0.696	accept
	B5	*delete*	
3) Training Program (TP) (KMO 0.853, Bartlett test sig 0.00)	C1	0.792	accept
	C2	0.885	accept
	C3	0.874	accept
	C4	0.791	accept
	C5	0.647	accept
4) Pricing & Traveling (RT) (KMO 0.788, Bartlett test sig 0.00)	D1	0.667	accept
	D2	0.715	accept
	D3	0.836	accept
	D4	0.779	accept
	D5	0.798	accept

Exogenous factor			
Factor Name	Variable name	Observed variable	Data type
5) Trainee & Opinion Training (TOT) (KMO 0.695, Bartlett test sig 0.00)	E1	0.846	accept
	E2	0.878	accept
	E3	0.812	accept

Comparison of Trainee's Training Objective Testing

Two means independent sample t-test: Null hypothesis Ho1: Training objectives of Western nationality are equal to Asian objectives. The result of the absence of equivalence variance was assumed. Levene's test p = 0.001 gave the t-value = 4.307, p = 0.000 (two-tailed). The descriptive statistics in Table 5 show that the Western nationality's (1) primary training objective is to be interested in the fighting approach, while the Asian nationality's (2) interest is in the first objective, health strengthening.

Table 5 Descriptive Statistic of Nation of Trainee Vs. Objective of Training

| | Objective | | | | |
	1	2	3	4	Total
1) Western	75	202	19	25	321
2) Asian	103	46	7	9	165
Total	178	248	26	34	486

Structural Equation Modeling

Four measurement models (or models of each factor) were used to construct the structural model based on the proposed research model, as shown in Figure (9). After that, this model will estimate its coefficients and the significant relationship between factors. The try-out will consider changing the relationship direction, deleting some relations, adding some connections, or deleting some observed variables and even factors. The work will be finished if the structural model fitting criteria are met, as shown in Figure (10). This fitted model may be illustrated in various constructions. The researcher has to consider choosing the most matching one that is satisfied in their research context.

Draft SEM Research Model

Based on the research concept model and EFA results, all factors and their components are connected, as illustrated in the draft structural model in Figure (7-left).
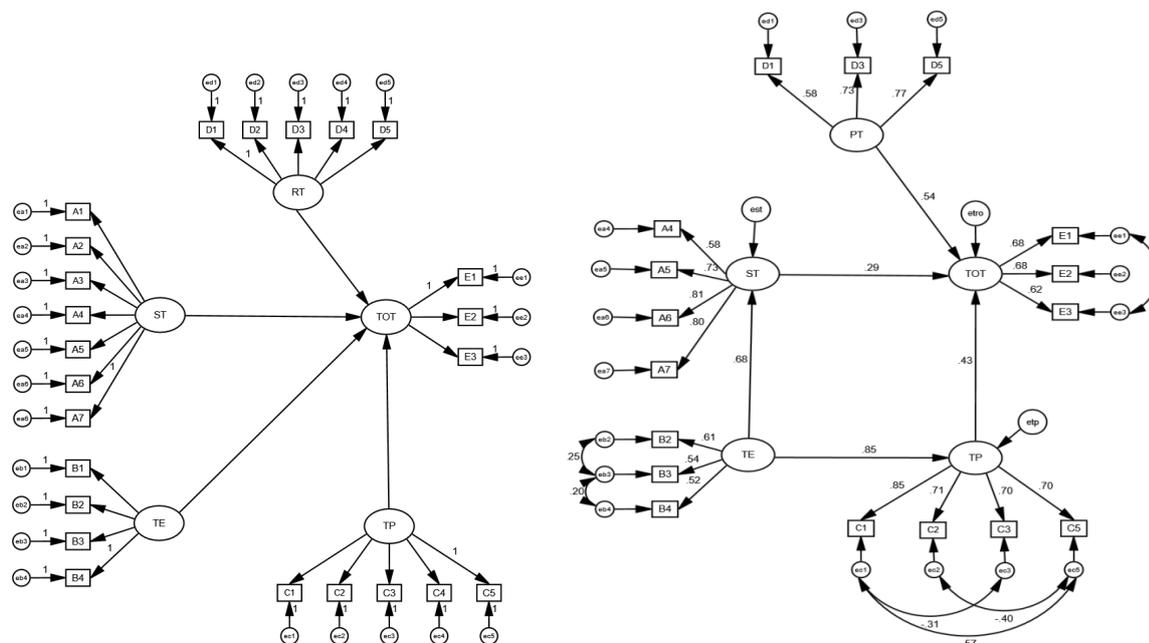

Figure 7 The Draft Structural Model (left) and Saturated Structural Model (right)

Saturated SEM Research Model

The estimation technique is "maximum likelihood, mean, and intercept estimation." The output is configured to generate a standardized estimation output form and five hundred bootstrap

iterations. The fitted structural model is illustrated in Figure (7-right). This alternative structural model meets the minimum criteria of an acceptable model that fits the importance index. (χ^2/df = 2.896, CFI = 1.02, RMSEA = 0.049, n = 486). From the discovery, the hypothesis of the concept model of the structural model shows that three relations follow the statistical significance in the same direction as the research conceptual model. However, one relation is not significant to the proposed research hypothesis. The null hypothesis Ho3 does not have statistical significance. Therefore, the relation "TE -> TOT" is deleted. In order to push the structural model to an acceptable fit, the relation "TE -> ST," "TE -> TP," and "TE -> PT" are tested for the statistically significant relation. The testing result shows that the first two relations are significant directions while the relation TE -> PT is not significant, statistics detail as shown in table (6). The summary information about the significant direction of the relationship is illustrated in Figure (10).

Table 6 The Result of The Hypothesis of Structural Model Testing

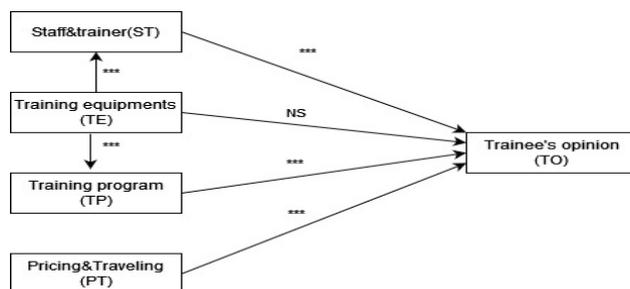| Hypothesis	Relation	P-Value	Result
Ho2:	ST ->TOT	0.000	kept
Ho3:	TE ->TOT	NS	deleted
Ho4:	TP ->TOT	0.000	kept
Ho5:	PT ->TOT	0.000	kept
-	TE -> ST	0.000	new added
-	TE -> TP	0.000	new added
-	TE -> PT	NS	deleted

Figure 10 Result of Structured Model Significance Null Hypothesis Testing

Model Cross-validation
The fitted SEM was tested for its mean magnitude of relative error (MMRE) on fifty-two additional observations for the model cross-validation test. These new observations were additionally collected during October-November 2024. The Model's MMRE percentage value was about ±21%.

Trainee's Training Significant Utility Attributes Paths
According to a best-fitted structural model in Figure 7, the total utility (or standardized regression weight) can be found from the multiplication of all the λ I, j (regression weight of factor with its component) and φ l, m (regression weight of factor to another factor). Simply, the utility of a particular path is the multiplication of all standardized coefficients of relationship from some dependent origin variable to some destination dependent variable. For example, Path Y1 -> X1 utility is:

$\lambda_{(F1-Y1)}$x $\varphi_{(F1-F2)}$x $\lambda_{(F2-x1)}$ = 0.4 x 0.8 x 0.7 = 0.224
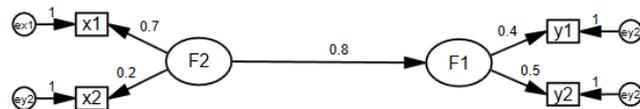
Figure 8 Utility of Attributes Path

The factor score is calculated from the summation value of all standardized values of each observed variable multiplied by its factor loading (UCLA, n.d.). For example (a reference to figure11.), F1 = 0.4 x standardized Y1 + 0.5 x standardized Y2, F2 = 0.7 x standardized X1 + 0.2 x standardized X2, and F1 = 0.8 x F2. If Y2, X1, and X2 are given, then Y1 = (0.8 x (0.7x standardized X1 + 0.2xstandardizedx2) - 0.5xstandardized Y2) / 0.4

This calculation example can specify the level of importance of a particular independent variable that is considered a target improvement variable. Table (7) presents the most utility paths.

Table 7 The Most Utility Attribute Suit Path

Path	Utility	Rank
E1-A6	0.68 x 0.29 x 0.81 = 0.16	3
E1-A7	0.68 x 0.29 x 0.80 = 0.16	3
E1-C1	0.68 x 0.43 x 0.85 = 0.25	2
E1-D5	0.68 x 0.54 x 0.77 = 0.28	1*
E2-A6	0.68 x 0.29 x 0.81 = 0.16	3
E2-A7	0.68 x 0.29 x 0.80 = 0.16	3
E2-C1	0.68 x 0.43 x 0.85 = 0.25	2
E2-D5	0.68 x 0.54 x 0.77 = 0.28	1*
E3-A6	0.62 x 0.29 x 0.81 = 0.15	3
E3-A7	0.62 x 0.29 x 0.80 = 0.15	3
E3-C1	0.62 x 0.43 x 0.85 = 0.23	2
E3-D5	0.62 x 0.54 x 0.77 = 0.24	1*

The summary of statistical significance attributes tests the acceptable structural and measurement model, as shown in Table (8). These present the exogenous factors component, which has a statistical significance related to the endogenous factor Training and opinion in Training (TOT).

Table 8 The Summary Result of The Significance Attributes Belong to Its Factor

		Exogenous factor	
Factor Name	Variable name	Observed variable	Result
1) Staff & Trainer (ST)	A1	Officials should have good service	NS
	A2	Provide interesting information for trainees	NS
	A3	The trainer should be a patient character	NS
	A4	GYM has qualified-certified trainers	***
	A5	Have an awareness of cross-cultural issues	***
	A6	Trainee training profile up to date	***
	A7	GYM has sufficient trainers	***
2) Training Equipment (TE)	B1	Provide a variety of training equipment	NS
	B2	Good condition of training equipment	Indirect
	B3	Hygiene and safe equipment & location	Indirect
	B4	Provide other supporting rooms (restroom, dressing room, etc.)	Indirect

	B5	Provide other types of equipment (fitness, sauna room, etc.)	N/A
3) Training Program (TP)	C1	Provide a variety of training programs (e.g., fighting, wellness, basic, professional)	***
	C2	Versatile Training program for trainee	***
	C3	Support both group and individual training	***
	C4	Support both online, onsite, and on-demand training	NS
	C5	Provide certificate for training	***
4) Pricing & Traveling (RT)	D1	Ease of traveling to training GYM	***
	D2	Reasonable training price	NS
	D3	Provide Thai boxing kit for sale	***
	D4	Ease of training fee payment	NS
	D5	Reasonable fine in case of postponing the trainee's appointment	***
Exogenous factor			
Factor Name	Variable name	Observed variable	Data type
5) Training & Opinion (TO)	E1	Your level of trainer expectation was reached in the overall Thai boxing training operation.	***
	E2	Your level of satisfaction with the overall Thai boxing training operation	***
	E3	Your level of continuity of getting into service	***

Post-Test of Trainees' Satisfaction
The revised questionnaire was created based on only the chosen significant attributes from Table 8 to test the trainees' satisfaction. The details of each significant attribute, exogenous attributes, were presented in the new operation, which raised the attention of Muay Thai Boxing Gym services. The endogenous Training & Opinion attributes (E1, E2, and E3) were unchanged. The research randomly selected the sixty trained observations for trainees' satisfaction in the Thai boxing training Gym post-testing. The revised questionnaire and their prior questionnaire answers were both sent. There were forty-one questionnaires delivered back. The Training & Opinion attributes (E1, E2, and E3), pretest, and post-test results are in Table 9. The trainees are more satisfied with the newly proposed operation than the current operation.

Table 9 Result of paired t-test H1: $0 < \mu$ difference (post-prior)

Training-opinion (Endogenous attribute)	Prior preference		Post preference		post-prior (true mean difference)		t-score (df = 41)	p-value
	x̄ prior	SD	x̄ post	SD	$\bar{d}$	SD		
E1	3.19	0.80	3.76	0.68	0.57	0.77	4.81	0.000
E2	3.14	0.75	3.67	0.61	0.52	0.67	5.057	0.000
E3	3.19	0.80	3.52	0.71	0.33	0.53	4.11	0.000

Conclusion and Discussion
The research result could give insights into trainee opinions on the experimental samples. For more accuracy, the empirical research should be extended to study the GYM samples. The structural model presents the trainees' nationality overall. The guidelines may not be correct for specific groups of trainees. Even though the source of the Muay Thai training gym case study sample was three Sai-Ma Thai Boxing Training GYM in Nonthaburi, Thailand, five

experts from other Muay Thai gyms gave a lot of information and suggestions. Therefore, the result of the research should be considered adaptation by another Muay Thai boxing Gym.

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