

Service quality management, coach knowledge through achievement motivation, and pencak silat student satisfaction in Kazakhstan

Gestión de la calidad de los servicios, conocimiento del entrenador a través de la motivación de logro y satisfacción de los estudiantes de pencak silat en Kazajstán

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Abstract. This study aimed to (1) analyze the effect of service quality on satisfaction through motivation, (2) analyze the effect of knowledge on satisfaction through motivation, and (3) analyze the direct effect of motivation on satisfaction. A correlational quantitative approach was employed, utilizing Structural Equation Modeling (SEM) with Smart-PLS software. The subjects in the study amounted to 150 pencak silat athletes. The research instrument used a 1-4 Likert scale. Research Results indicated that the Average Variance Extracted (AVE) values were higher than 0.5 and 0.4, and composite reliability values were ≥ 0.7 . Hypothesis testing revealed that: (1) service quality did not significantly influence motivation (t-statistic < 1.96 , p-value > 0.05); (2) knowledge significantly influenced motivation (t-statistic > 1.96 , p-value < 0.05); (3) motivation significantly influenced satisfaction (t-statistic > 1.96 , p-value < 0.05); (4) motivation did not significantly mediate the effect of service quality on satisfaction (t-statistic < 1.96 , p-value > 0.05); and (5) motivation significantly mediated the effect of knowledge on satisfaction (t-statistic > 1.96 , p-value < 0.05). The R-square values indicated that the coefficient of determination for motivation was 0.548, suggesting that other variables in the study explained 54.8% of the variance in motivation. The coefficient of determination for satisfaction was 0.448, indicating that other variables explained 44.8% of the variance in satisfaction. *In conclusion*, this research provides in-depth insights into coach knowledge, student satisfaction, and motivation in Pencak Silat in Kazakhstan. The findings contribute to understanding the knowledge and qualifications of coaches, how to develop Pencak Silat in the region, and the impact of coach quality on tactics and strategies in Pencak Silat competitions.

Keywords: Service quality, knowledge, motivation, satisfaction

Resumen. El objetivo de este estudio era (1) analizar el efecto de la calidad del servicio en la satisfacción a través de la motivación, (2) analizar el efecto del conocimiento en la satisfacción a través de la motivación y (3) analizar el efecto directo de la motivación en la satisfacción. Se empleó un enfoque cuantitativo correlacional, utilizando el Modelado de Ecuaciones Estructurales (SEM) con el software Smart-PLS. Los sujetos del estudio fueron 150 atletas de pencak silat. El instrumento de investigación utilizó una escala Likert de 1-4. Los resultados de la investigación indicaron que los valores de Varianza Media Extraída (AVE) fueron superiores a 0,5 y 0,4, y los valores de fiabilidad compuesta fueron $\geq 0,7$. Las pruebas de hipótesis revelaron que (1) la calidad del servicio no influyó significativamente en la motivación (estadístico t $< 1,96$, valor p $> 0,05$); (2) el conocimiento influyó significativamente en la motivación (estadístico t $> 1,96$, valor p $< 0,05$); (3) la motivación influyó significativamente en la satisfacción (estadístico t $> 1,96$, p-value $< 0,05$); (4) la motivación no medió significativamente en el efecto de la calidad del servicio sobre la satisfacción (t-statistic < 1.96 , p-value > 0.05); y (5) la motivación medió significativamente en el efecto del conocimiento sobre la satisfacción (t-statistic > 1.96 , p-value < 0.05). Los valores de R-cuadrado indicaron que el coeficiente de determinación de la motivación era de 0,548, lo que sugiere que otras variables del estudio explicaban el 54,8% de la varianza de la motivación. El coeficiente de determinación para la satisfacción fue de 0,448, lo que indica que otras variables explicaron el 44,8% de la varianza en la satisfacción. En conclusión, esta investigación ofrece una visión en profundidad de los conocimientos del entrenador, la satisfacción del alumno y la motivación en Pencak Silat en Kazajstán. Los resultados contribuyen a comprender los conocimientos y las calificaciones de los entrenadores, cómo desarrollar el Pencak Silat en la región y el impacto de la calidad de los entrenadores en las tácticas y estrategias de las competiciones de Pencak Silat.

Palabras clave: Calidad del servicio, conocimientos, motivación, satisfacción

Fecha recepción: 16-07-24. Fecha de aceptación: 30-07-24

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Introduction

Changes in the rules of international pencak silat matches are a surge in the sport aiming to compete in the Olympics. The convenience factor in sports is one of the practices that bring benefits to the pencak silat organization. The martial arts federation in Kazakhstan in an effort to develop the organization towards achievement needs an understanding of the new Rules launched by PERSILAT. Sports organizations aim to produce athletes who excel, this cannot be separated from the responsibility of the organization in carrying out the suitability of its duties to realize athletes who excel (Dortan & Knoppers, 2016).

Athlete satisfaction is one of the important factors that will support the achievement of the athlete, according to

Mandan et al (2024) satisfaction is the feeling of pleasure or disappointment of an athlete towards the results obtained from the quality of service provided by the organization. Good service quality will have an impact on athlete satisfaction in achieving optimal performance (Felix, R., 2017). Good service quality affects the satisfaction received by athletes (Günel & Duyan, 2020; Aznar-Ballesta et al., 2022). So by providing good service will increase achievement in athletes (Dortan & Knoppers, 2016), the better the service provided to athletes will have a positive impact on improving the athlete's performance both in training and in matches, the forms of services that must be provided to athletes include qualified coaches, getting a decent and international standard training ground, getting insurance or health insurance, and getting various assistance

such as nutrition, gifts, monthly salaries, to life insurance (Mejía & Ramírez, 2021; Prabowo et al., 2024; Juita et al., 2024). Apart from service quality, motivation has a significant effect on improving athlete performance (Berhimpung et al., 2023; Dimiyati et al., 2023; Ilham & Dimiyati, 2021). One important aspect that affects achievement in sports is the psychological component, one of which is motivation. Motivation is divided into two, namely motivation that comes from within (intrinsic) and motivation that comes from outside (extrinsic) Intrinsic and extrinsic motivation greatly affects athlete satisfaction (Gillet et al., 2012). Athletes with high achievement motivation tend to choose challenging activities that will improve their abilities.

But in fact, conducting in-depth interviews with athletes, and coaches during visits, as well as student exchanges in Kazakhstan, shows that athletes and coaches do a lot of training independently, with the help of YouTube, as well as a lack of motivation in athletes, and inadequate training places. In addition, the lack of support from parents, regional administrators, a lack of organizational support in the implementation of training, a lack of financial support from the government, lack of competent trainers. Therefore, in an effort to improve pencak silat achievements, factors that encourage the advancement of pencak silat sports such as organizational factors, service quality, coach quality, in increasing athlete satisfaction while training (Napitupulu, et al., 2018). This is supported by previous research which explains that students give a positive assessment of loyalty caused by good organization and the quality of services provided (Nuviala et al., 2020).

Thus there is a suspicion that the quality of service and coach knowledge affect the achievement motivation and satisfaction of martial arts athletes. This study aims to analyze the relationship between service quality and coach knowledge on martial arts athlete satisfaction in Kazakhstan through achievement motivation as a mediator variable. The main problem is that there are no competent martial arts coaches, the quality of service is lacking. Therefore, this problem is the purpose of this study, namely whether there is a relationship between service quality, and motivation and satisfaction of martial arts athletes. This study will also discuss the direct effect and indirect effect through the achievement motivation variable. Hopefully, the publication of this research can be an insight and reference to the importance of good service quality and coach knowledge to increase the satisfaction of martial arts athletes (Nugroho et al, 2021). Achievement Motivation that an athlete must have not only before competing or has become a professional athlete, but at the first time of training (Pocan & Pasano, 2022). But in reality to produce athlete performance from the training process and increase achievement motivation requires many supporting factors such as coach competence. In addition, good facilities and infrastructure are also needed, paying attention to the needs of boxers, creating a sense of security and comfort, and maintaining boxer loyalty to the sport of boxing, so service quality is very important to pay attention to (Prabowo et al., 2022).

Method

Research Design

This research design was carried out using the descriptive analysis method with Explanatory (verification) and Explorative (descriptive) research design which aims to analyze phenomena and problems using numbers to explain the characteristics of individuals or groups, in this case, pencak silat students, who will be involved in this study. The independent variables in this study are service quality and coach knowledge. Then, the dependent variable is student satisfaction, and the mediator variable is achievement motivation. Thus, this study focuses on the research objectives, namely 1) the effect of service quality on pencak silat student satisfaction, 2) the effect of coach knowledge on pencak silat student satisfaction, 3) the effect of service quality on pencak silat student satisfaction through achievement motivation, 4) the effect of coach knowledge on pencak silat student satisfaction through achievement motivation.

Study Participants

The population is made up of Kazakhstan martial arts athletes in Aktobe, Almaty, and Astana. The number of athletes who participated in this study was 150 athletes. The research subjects were all athletes who were actively practicing during the treatment with the Indonesian coach.

Instrumentation

The research instrument was a questionnaire with a 1-4 Likert scale, with the criteria "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree." Statements were developed based on previous research on service quality, coach knowledge, achievement motivation, and student satisfaction in Pencak Silat. After the questionnaire was constructed, it underwent validation through focus group discussions (FGDs) involving sports education lecturers, Pencak Silat organization officials, and coaches. The involvement of these three sectors is aimed at leveraging their expertise in analyzing the variables within the instrument, allowing them to provide feedback and revisions as needed.

Data Analysis

The Partial Least Squares Structural Equation Modeling (PLS-SEM) method was employed for data analysis using Smart-PLS software. This multivariate analysis technique allows for examining complex relationships between latent variables and their indicators.

Results

PLS Analysis Results

This study analyzed the influence of service quality and coach knowledge on achievement motivation and the

subsequent influence of achievement motivation on the satisfaction of Pencak Silat students in Kazakhstan. The analysis was conducted using structural equation modeling with Smart-PLS software. The Smart-PLS analysis consisted of two parts: outer model evaluation and inner model evaluation. The results of each model evaluation are presented below.

Outer Model Evaluation

The outer model evaluation aimed to assess the validity

and reliability of the measurement instruments in the research model. It was done to determine how well the questionnaire items measured the traits and concepts of the variables being studied and to assess the consistency of the questionnaire items in measuring the same variables over time and in different settings. The outer model analysis was based on convergent validity, construct validity, discriminant validity, composite reliability, and Common Method Bias (CMB). The results of the outer model evaluation in this study are as follows:

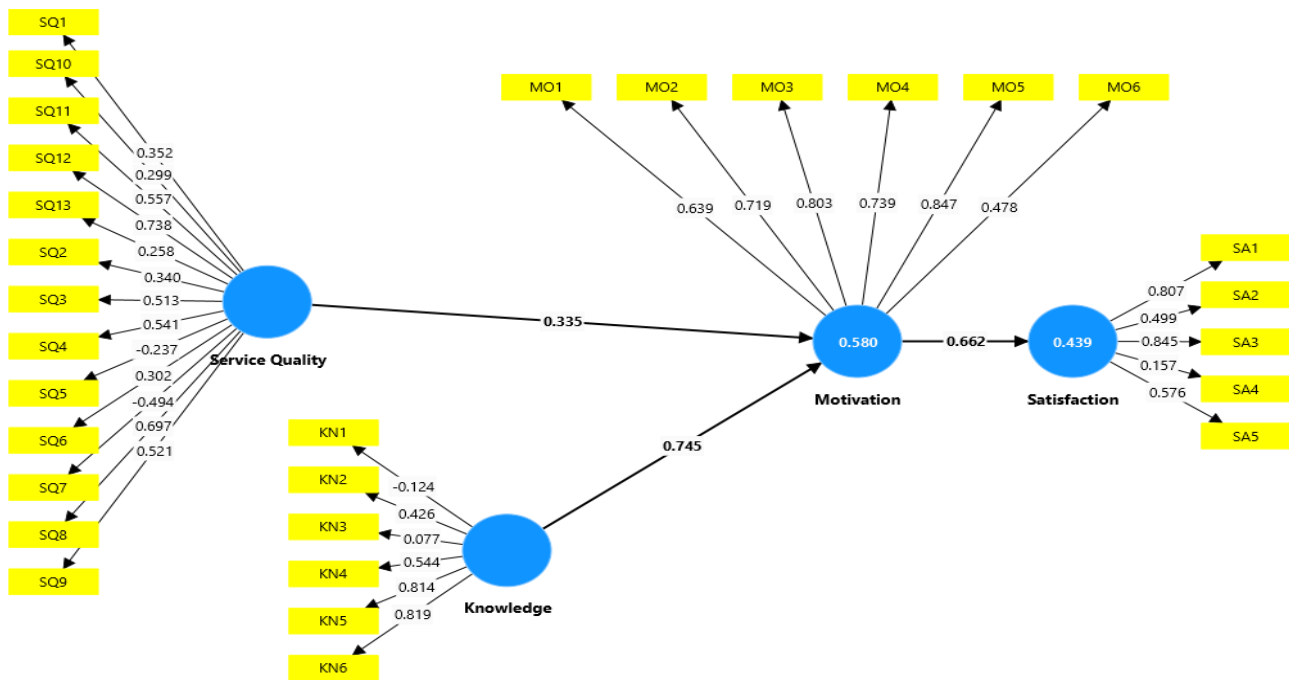


Figure 1. Output Outer Model

Convergent Validity

Convergent validity refers to the validity of the items that make up a latent variable with its reflective indicators. Convergent validity is related to the principle that measures (manifest variables) of a construct should be highly correlated. This study assessed convergent validity by examining the factor loading values. The commonly used criterion for assessing convergent validity in confirmatory research is a factor loading value greater than 0.5 (Hair et al., 2011).

Table 1. Loading Factor Values for All Indicators

| Variable | Indicator | Item | Outer Loading | Validity | |
|--------------|----------------|------------|---------------|----------|-------|
| Knowledge | Education | KN1 | -0.124 | Invalid | |
| | | KN2 | 0.426 | Invalid | |
| | | KN3 | 0.077 | Invalid | |
| | Certification | KN4 | 0.544 | Valid | |
| | | Experience | KN5 | 0.814 | Valid |
| | | | KN6 | 0.819 | Valid |
| Motivation | Extrinsic | MO1 | 0.639 | Valid | |
| | | MO2 | 0.719 | Valid | |
| | | MO3 | 0.803 | Valid | |
| | Intrinsic | MO4 | 0.739 | Valid | |
| | | MO5 | 0.847 | Valid | |
| | | MO6 | 0.478 | Invalid | |
| Satisfaction | Recommendation | SA1 | 0.807 | Valid | |
| | | SA2 | 0.499 | Invalid | |

Table 1. Loading Factor Values for All Indicators

| Variable | Indicator | Item | Outer Loading | Validity |
|-----------------|----------------|-------|---------------|----------|
| Service Quality | Attitude | SA3 | 0.845 | Valid |
| | | SA4 | 0.157 | Invalid |
| | | SA5 | 0.576 | Valid |
| | Tangible | SQ1 | 0.352 | Invalid |
| | | SQ2 | 0.340 | Invalid |
| | | SQ3 | 0.513 | Valid |
| | Empathy | SQ4 | 0.541 | Valid |
| | | SQ5 | -0.237 | Invalid |
| | | SQ6 | 0.302 | Invalid |
| | Reliability | SQ7 | -0.494 | Invalid |
| | | SQ8 | 0.697 | Valid |
| | | SQ9 | 0.521 | Valid |
| | Responsiveness | SQ10 | 0.299 | Invalid |
| SQ11 | | 0.557 | Valid | |
| SQ12 | | 0.738 | Valid | |
| Assurance | SQ13 | 0.258 | Invalid | |

Source: Processed Primary Data, 2024

Table 1 indicates several items were deemed invalid due to factor loadings below 0.5. Invalid items did not adequately measure the intended construct and were removed from the research model. After removing invalid items, the model was re-evaluated, with results in Table 2 and Figure 2.

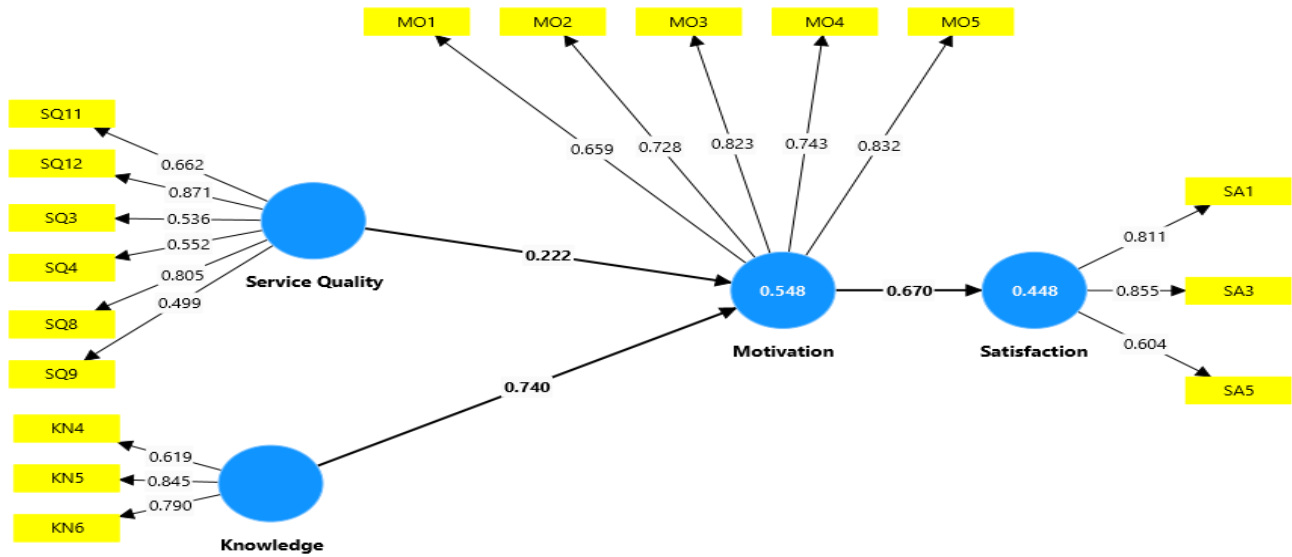


Figure 2. Outer Model Output After Dropping Invalid Items

Table 2. Factor Loadings After Dropping Invalid Indicators

| Variable | Indicator | Item | Outer Loading | Validity |
|-----------------|----------------|------|---------------|----------|
| Knowledge | Experience | KN4 | 0.619 | Valid |
| | | KN5 | 0.845 | Valid |
| | | KN6 | 0.790 | Valid |
| Motivation | Extrinsic | MO1 | 0.659 | Valid |
| | | MO2 | 0.728 | Valid |
| | | MO3 | 0.823 | Valid |
| | | MO4 | 0.743 | Valid |
| | | MO5 | 0.832 | Valid |
| Satisfaction | Recommendation | SA1 | 0.811 | Valid |
| | | SA3 | 0.855 | Valid |
| | | SA5 | 0.604 | Valid |
| Service Quality | Tangible | SQ3 | 0.536 | Valid |
| | | SQ4 | 0.552 | Valid |
| | Empathy | SQ8 | 0.805 | Valid |
| | | SQ9 | 0.50 | Valid |
| | Reliability | SQ11 | 0.662 | Valid |
| | | SQ12 | 0.871 | Valid |

Table 2 demonstrates that all indicators in this study exhibit AVE values ≥ 0.5 . Therefore, all indicators can be considered statistically valid and suitable for the research construct.

Discriminant Validity

Discriminant validity refers to the principle that measures (manifest variables) of different constructs should not be highly correlated. In this study, the discriminant validity of the reflective indicators was assessed using two methods:

1) Cross-Loading Analysis: Discriminant validity was assessed by comparing each construct's square root of the Average Variance Extracted (AVE) to the correlations between the latent variables. Additionally, cross-loading values were examined (Jogiyanto, 2015). The cross-loading table should demonstrate that each indicator within a construct is more strongly associated with its intended construct than with other constructs in the model. The results of this analysis are presented in Table 3 below:

2) Table 3 demonstrates that the cross-loading value of each indicator for its respective variable is greater than the cross-loading values for other variables. It indicates that the indicators possess good discriminant validity.

Table 3. Results of Cross-Loading Calculation

| | Knowledge | Motivation | Satisfaction | Service Quality |
|------|-----------|------------|--------------|-----------------|
| KN4 | 0.619 | 0.398 | 0.535 | 0.502 |
| KN5 | 0.845 | 0.631 | 0.588 | 0.355 |
| KN6 | 0.790 | 0.617 | 0.422 | -0.034 |
| MO1 | 0.612 | 0.659 | 0.543 | 0.297 |
| MO2 | 0.386 | 0.728 | 0.416 | 0.034 |
| MO3 | 0.610 | 0.823 | 0.482 | 0.128 |
| MO4 | 0.545 | 0.743 | 0.490 | 0.328 |
| MO5 | 0.602 | 0.832 | 0.577 | 0.031 |
| SA1 | 0.595 | 0.582 | 0.811 | 0.327 |
| SA3 | 0.501 | 0.550 | 0.855 | 0.495 |
| SA5 | 0.419 | 0.377 | 0.604 | 0.016 |
| SQ11 | 0.112 | 0.054 | 0.265 | 0.662 |
| SQ12 | 0.363 | 0.232 | 0.457 | 0.871 |
| SQ3 | 0.138 | 0.075 | 0.315 | 0.536 |
| SQ4 | 0.157 | 0.043 | 0.303 | 0.552 |
| SQ8 | 0.191 | 0.205 | 0.163 | 0.805 |
| SQ9 | 0.208 | 0.040 | 0.111 | 0.499 |

Source: Processed Primary Data, 2024

3) Discriminant validity is assessed by comparing the Average Variance Extracted (AVE) square root for each construct with the correlation values between constructs in the model. Good discriminant validity is indicated when the square root of the AVE for each construct is greater than the correlations between constructs in the model (Gozali & Latan, 2012)

Table 4. Discriminant Validity of Research Variables

| | Knowledge | Motivation | Satisfaction | Service Quality |
|-----------------|-----------|------------|--------------|-----------------|
| Knowledge | 0.757 | | | |
| Motivation | 0.740 | 0.760 | | |
| Satisfaction | 0.667 | 0.670 | 0.764 | |
| Service Quality | 0.318 | 0.222 | 0.401 | 0.669 |

Source: Processed Primary Data, 2024

As shown in Table 4, all research variables demonstrate high discriminant validity, as their square root of Average Variance Extracted (AVE) values are higher than their correlations with other variables.

Composite Reliability

Uji reliabilitas dilakukan untuk membuktikan akurasi, konsistensi dan ketepatan instrumen dalam mengukur konstruk. Pada penelitian ini pengukur reliabilitas suatu konstruk adalah dengan conbach's alpha dan composite reliability. Ketentuan yang digunakan dalam menilai reliabilitas konstruk yaitu nilai composite reliability lebih besar dari 0,7 untuk penelitian yang bersifat confirmatory.

Table 5.
Composite Reliability (CR)

| | Composite reliability |
|-----------------|-----------------------|
| Knowledge | 0.799 |
| Motivation | 0.871 |
| Satisfaction | 0.805 |
| Service Quality | 0.823 |

Source: Processed Primary Data, 2024

Table 5 demonstrates that all research variables exhibit Composite Reliability (CR) values exceeding 0.7. It indicates that the measurement model possesses high accuracy consistency and that the instruments are appropriate for measuring the intended constructs.

Common Method Bias (CMB) Test

The CMB test aims to identify and mitigate potential sources of error in data measurement or testing. One such source is method variance, which can be detected using the Single Factor Test technique. This test involves incorporating all items from all research constructs into a factor analysis to determine if a single general factor can explain the majority of the variance.

In the context of PLS-SEM, CMB is assessed through the full collinearity assessment approach, which examines the variance inflation factor (VIF) values (Kock, 2015). A VIF value below the threshold of 3.3 indicates that the model is free from common method bias. (Kock, 2015). The results of the CMB test are presented in Table 6.

Table 6.
VIF Value

| Item | VIF | Item | VIF |
|------|-------|------|-------|
| KN4 | 1.180 | SA1 | 1.381 |
| KN5 | 1.421 | SA3 | 1.548 |
| KN6 | 1.276 | SA5 | 1.170 |
| MO1 | 1.387 | SQ11 | 1.803 |
| MO2 | 1.709 | SQ12 | 1.770 |
| MO3 | 2.058 | SQ3 | 1.620 |
| MO4 | 1.815 | SQ4 | 2.048 |
| MO5 | 2.155 | SQ8 | 1.847 |
| | | SQ9 | 1.549 |

Source: Processed Primary Data, 2024

Inner Model Evaluation

The inner or structural model was assessed to predict causal relationships between variables and test the hypotheses. This evaluation involved examining the coefficient of determination (R^2), predictive relevance (Q^2), goodness of fit (GoF), path coefficients, and parameter coefficients. Once significant relationships between variables were identified, conclusions could be drawn regarding the hypotheses related to the variables used in this study. Hypothesis testing was conducted using bootstrapping.

Coefficient of Determination for Endogenous Variables

The coefficient of determination (R-square) was analyzed to assess how the model explains the variance in the dependent variables (Ghozali, 2008). The R-square value ranges between zero and one, with smaller values indicating a limited explanation of the dependent variable's variance and values closer to one indicating that the independent variables account for a more significant proportion of the variance in the dependent variable. In the inner model of the structural equation, the endogenous variables were Motivation and Satisfaction.

Table 7.
R-square Values for Endogenous Variables in the Inner Model

| | R-square |
|--------------|----------|
| Motivation | 0.548 |
| Satisfaction | 0.448 |

Source: Processed Primary Data, 2024

As shown in Table 7, the coefficient of determination for motivation was 0.548, indicating that 54.8% of the variance in motivation was explained by other variables included in the study. The coefficient of determination for satisfaction was 0.448, suggesting that 44.8% of the variance in satisfaction was explained by other variables in the model.

Interpretation of the Structural Equation Model

This study tested five hypotheses within the inner model, with the following results:

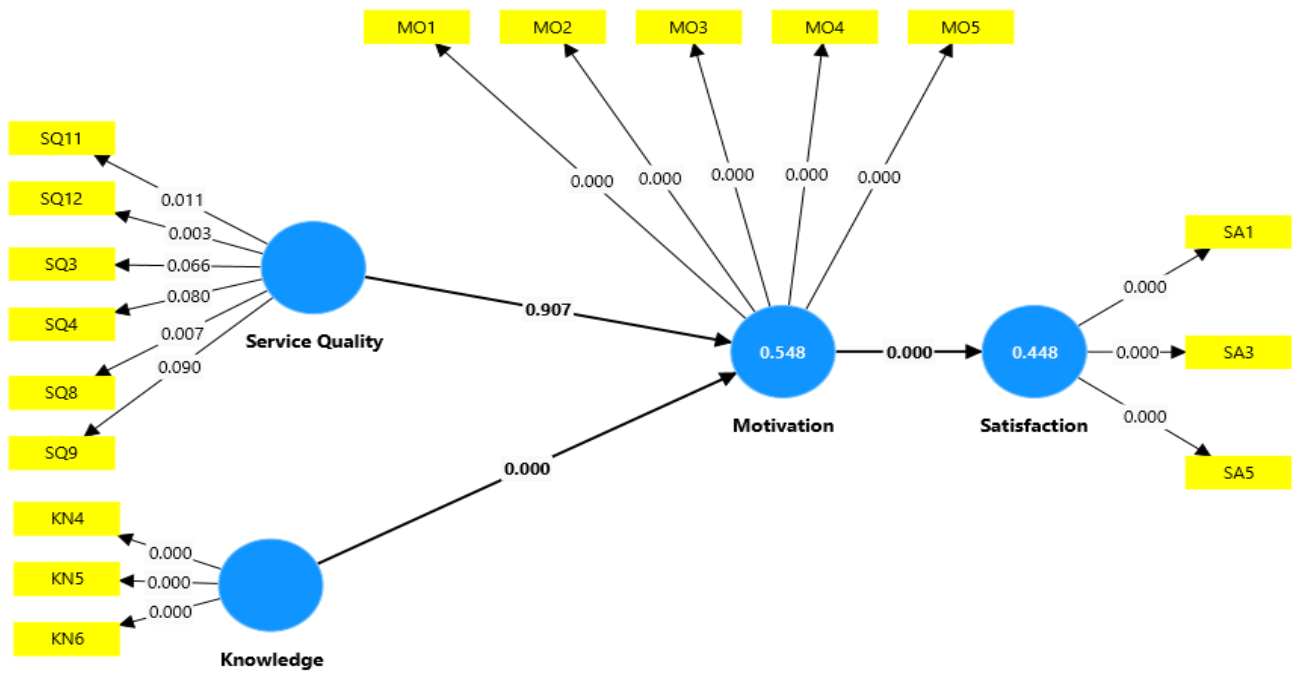


Figure 3. Structural Model (Inner Model) of Relationships Between Latent Variables

Hypothesis testing involves analyzing the relationships between variables formulated in the research hypotheses. This analysis was conducted within the inner model of the Smart-PLS software. The inner model output was generated through bootstrapping, and the results of the hypothesis tests are presented in the path coefficient table. The hypothesis test results were evaluated based on the estimated path coefficients, T-statistics, and p-values. The estimated path coefficients represent the relationships between latent variables obtained through bootstrapping. The criteria for significance were set at a T-statistic value greater than 1.96 and a p-value less than 0.05, with a significance level of 5% (Ghozali, 2008).

Table 8. Inner Model Test Results

| Hypothesis | T-statistic | P-value | Result |
|---|-------------|---------|---------------|
| Service Quality -> Motivation | 0.116 | 0.907 | Not Supported |
| Knowledge -> Motivation | 10.405 | 0.000 | Supported |
| Motivation -> Satisfaction | 9.910 | 0.000 | Supported |
| Knowledge -> Motivation -> Satisfaction | 6.205 | 0.000 | Supported |
| Service Quality -> Motivation -> Satisfaction | 0.117 | 0.907 | Not Supported |

Source: Processed Primary Data, 2024

The results of the inner model testing, as presented in Table 8, indicate the following:

- 1) Service quality does not significantly influence motivation. It is evidenced by a t-statistic of 0.116 (less than the critical value of 1.96) and a p-value of 0.907 (greater than the significance level of 0.05). Therefore, Hypothesis 1 (H1) is not supported.
- 2) Knowledge significantly influences motivation. It is supported by a t-statistic of 10.405 (greater than the critical value of 1.96) and a p-value of 0.000 (less than the significance level of 0.05). Thus, Hypothesis 2 (H2) is supported.
- 3) Motivation significantly influences satisfaction. It

is evidenced by a t-statistic of 9.910 (greater than the critical value of 1.96) and a p-value of 0.000 (less than the significance level of 0.05). Therefore, Hypothesis 3 (H3) is supported.

4) Motivation does not significantly mediate the effect of service quality on satisfaction. It is indicated by a t-statistic of 0.117 (less than the critical value of 1.96) and a p-value of 0.907 (greater than the significance level of 0.05). Hence, Hypothesis 4 (H4) is not supported.

5) Motivation significantly mediates the effect of knowledge on satisfaction. It is supported by a t-statistic of 6.205 (greater than the critical value of 1.96) and a p-value of 0.000 (less than the significance level of 0.05). Therefore, Hypothesis 5 (H5) is supported.

Discussion

Good training is one of the determining factors for the achievement of pencak silat students. Besides training, other factors that are also very important include support from service quality, coach knowledge, and achievement motivation from these students, both motivation that comes from within (intrinsic) and motivation that comes from outside (extrinsic). The form of service quality consists of services in fostering the preparation of martial arts students during training and competition and meeting the needs of students both during training and competition. Good service will affect satisfaction and improve athlete achievement.

Based on the results of the study, it was found that service quality affects the satisfaction of pencak silat students in Kazakhstan, even good service quality will affect student achievement and increase the achievement motivation of these students. These results show that pencak silat students

really need good services for students to improve their careers as students and open up career opportunities to become professional fighters (Muzhaffar, D., 2024).

Studies that address service quality and achievement motivation directly show that it can have a favorable impact on the level of satisfaction of martial arts students. In addition, from some research findings and analysis, it can be explained that good quality services will lead to increased achievement in martial arts students and will also greatly affect motivation and satisfaction in martial arts students. High and low performance of martial arts students and achievement motivation is not only influenced by service quality but also by coach knowledge. In this research study, service quality and coach knowledge are very important parts in achieving satisfaction in pencak silat students which will lead to an increase in achievement. Service quality has an important role in increasing student motivation, but students must first obtain a level of satisfaction (Kadir et al., 2023).

Apart from improving the quality of services for pencak silat students, another factor that is also very important and affects the satisfaction and achievement of pencak silat students is the knowledge of the coach, because without the support of the knowledge of the coach, achievement will be less than optimal and difficult to achieve (Farhansyah, A., Fitri, M., & Hamidi, A., 2023). Because the coach's knowledge has an important role, for example in making and compiling training programs, formulating strategies both during training and competition. This certainly requires the quality of the coach's knowledge so that all programs can run well and achievement in pencak silat students can be achieved.

Based on the results of the study, it is reported that service quality and coach knowledge affect martial arts student satisfaction, both directly and through achievement motivation. Previous research found that the effect of service quality affects student performance, especially amateur silat students. However, one of the factors that influence the low or high performance of students is to measure the level of achievement motivation (Rosalina, M., & Nugroho, W. A., 2020). Achievement motivation in martial arts students is also determined by the quality of training during the student's participation from the beginning of their career to becoming a professional student. The quality of training includes the closeness of the coach and his students to pencak silat taekwondo, reportedly the closeness of the coach and students with the delivery of appropriate material, understanding of student conditions, and cooperation can increase student motivation (Widodo, A. W., & Nurwidawati, D., 2015).

These results are in accordance with the theory of empathy and reliability of service quality used for this research instrument. Then the quality of training including training programs, the availability of complete and safe training facilities, and training motivation also affect the satisfaction of pencak silat students (Kadir et al., 2023). These results are

also in line with the theory of tangible evidence, responsiveness, and assurance that focuses on training facilities. The high performance of pencak silat students will also be directly proportional to the achievements obtained. Silat students' trust in the knowledge and good service quality is an asset for pencak silat students to continue to develop their careers as fighters to a professional level. Being a fighter from the beginning of a career is not easy, many aspects such as technique, physical training load, discipline, and mental to the competence of a coach. So achievement motivation is needed to support the performance of pencak silat students. Therefore, the combination of service quality and coach knowledge can be said to be a unity, especially in achievement sports (Sholikha, R. (2014).

In fact, the achievement of pencak silat students will also not develop if the quality of service and coach knowledge cannot go together. When the services provided to pencak silat students do not meet expectations, the achievements of fighters will decrease and consequently cannot obtain optimal achievements. The achievement of a pencak silat student does not depend on the student and the coach alone, but the attention given to the student, meeting needs, providing guarantees while still a student. The performance is also not only shown during training, but also when the fighters compete. When a fighter competes, the mentality of a student has a huge influence. The mentality is seen from how well the fighter has achievement motivation. The limitation of this study is that the number of samples involved is still not enough to assess the effect of service quality and achievement motivation on satisfaction. So that research with mixed methods (qualitative and quantitative) can be used in future research, considering that the variables of service quality and coach knowledge have very broad aspects, it is necessary to continue for future research with a large number of national samples and specific criteria while maintaining a long training experience so that achievements at the national and international levels can be achieved optimally and maximally.

Conclusion

The lack of scientific studies on the effect of service quality management, coach knowledge, and achievement motivation on student satisfaction, especially among martial arts students, is a topic that needs to be studied in this study because the four variables are interrelated with each other in achieving achievement. The analysis in this study examines the direct and indirect effects of achievement motivation as a mediator. The value of R square on achievement motivation of martial arts students is 0.548 or 54.8.4%, while the value of R square on achievement motivation is 0.448 or 48.8%. The results of hypothesis testing show (1) that service quality has no significant effect on motivation. This result is evidenced by the t-statistic value $0.116 < 1.96$ and p-value $0.907 > 0.05$. (2) Knowledge has a significant effect on motivation. These results are evidenced by the t-statistic value of $10.405 > 1.96$ and p-value $0.000 < 0.05$.

(3) Motivation has a significant effect on satisfaction. These results are evidenced by the t-statistic value of $9.910 > 1.96$ and a p-value of $0.000 < 0.05$. (4) Motivation does not significantly mediate the effect of service quality on satisfaction. This result is evidenced by the t-statistic value of $0.117 < 1.96$ and a p-value of $0.907 > 0.05$. (5) Motivation significantly mediates the effect of knowledge on satisfaction. These results are evidenced by a t-statistic value of $6.205 > 1.96$ and a p-value of $0.000 < 0.05$. Based on the results of this study, it is hoped that coach knowledge and service quality through achievement motivation can increase student satisfaction in all types of sports and can work together to maximize student performance to achieve optimal performance. One solution to working together is to hold regular meetings every month and then conduct a thorough evaluation.

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