A study on the success factors of the Iran Martial Arts Federation

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Abstract

The research had a mixed-methods type and was qualitative and quantitative. In the qualitative phase, the statistical population consisted of 15 faculty members in sports management and economics and all people with experience in the management of martial arts teams as well as senior managers of the Martial Arts Federation. The samples were selected using the non-random (judgmental) purposive and snowball sampling methods. To answer the questionnaire of the present study, the statistical population consisted of 100 athletes, club managers, and managers of the Martial Arts Federation according to Morgan's table, and 80 final samples were selected to answer the questionnaires. The reliability of the questionnaire was used using Cronbach's alpha of 0.83. The questionnaire had 7 components and 27 indices, including coaches (4 questions), administration (5 questions), women (4 questions), finance (5 questions), athletes (3 questions), foresight (3 questions), and information technology (3 questions). SPSS 25 was used to perform descriptive and inferential statistics calculations, and the PLS ver.3 software was utilized for structural equation modeling. The index of rent in selecting coaches with 71% correlation in the component of coaches, the index of unfavorable training courses with 81% correlation in the administrative component, the index of training restrictions in the women's hall with 81% correlation in the women component, the index of economic problems of athletes and their lack of total compensation with 87% correlation in the financial component, the index of non-commitment of the Sports Medicine Federation to support athletes after injury with 86% correlation in the component of athletes, the non-implementation of projects with strategies of revenue-generating from athletes' championship with 90% correlation in the forecast component, the index of recording the information about championship databases and provincial delegations in the database for easy access to information with 71% correlation in the information technology component had the highest correlation with the above-mentioned components. Furthermore, the financial component was the highest effective component with a path coefficient of 0.853, and the administrative component was the least effective component with a path coefficient of 0.519. All components had a positive and significant effect on the success of the Martial Arts Federation. Given the above-mentioned factors, the managers of the Martial Arts Federation must implement strategies such as new economic, motivational, educational, information technology, and support programs for athletes and coaches to achieve organizational success and goals in domestic and foreign fields.

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Introduction

The pervasiveness of sports and the importance of its place in international relations have attracted much attention from governments. The success of countries in international sports arenas has social and economic effects and is a symbol of stability and all-round capabilities of those countries, and a reason for their high investment in the championship and professional sports [13, 14]. In recent decades, there has been an increase in knowledge about the value of championship success among countries and governments. These successes are recognized as valuable sources due to their capacity to help achieve a range of sporting and non-sporting goals. For the United States, the former Soviet Union, and the communist governments of Europe, championship sports were a means of demonstrating ideological superiority, and even for former East Germany, it served a dual role in helping to assert its sovereignty. The success in international sports has recently gained different values due to its sense of national pride, economic profitability, as well as its general diplomatic application. Countries have found that the development of championship sports and enjoying its direct and indirect benefits are not possible without proper planning and policy, as well as attention to its determinants [22]. The Ministry of Sports and Youth evaluates sports federations in three main fields and ranks them based on the score obtained in each field and total. The axes, which the Ministry of Sports has considered to evaluate, succeed, and advance the goals of the federations, are as follows: the specific, general, and managerial axes. The Ministry of Sports and Youth classifies the specific axis into five indices, namely the championship indices (anti-doping; championship progress and obtaining Olympic quota; national team preparation; hosting international competitions, and developing international relations), the general axis into 9 indices, namely sports development indices (national league competitions; talent discovery; promotion of coaches and referees; active provincial delegations; national championships; memorandums and development of clubs; organized athletes; and scientific support and processes), and the managerial axis into seven indices, namely the indices of administrative management and support (adequacy of manpower; development of management and organizational behavior; development of standards, evaluation, and monitoring; financial management, and cultural development of sports). For ICT, the Ministry of Sports sums up the scores, which are obtained by federations in the axes for resources, legal environment, and ranking development, and arranges them based on the scores. Many sports researchers and experts believe that the establishment of an integrated and organized system for sports management is an important priority for high-level sports [11]. Sports federations and club teams try to develop the athletes' abilities from a young age, using strategic management and long-term programs, and the IRAN Martial Arts Federation is an exception to this rule. The strategic program forces managers to focus on broader organizational issues rather than short-term ones. The purpose of strategic planning is to help organizations achieve competitive advantages [19]. Khabiri et al. [18] pointed out: The main obstacles to financial support are not limited to the management structure of the taekwondo industry and attracting sponsors, but environmental barriers also play an important role in the failure of financial support. The most important known obstacles, which have roots in the economic structure of Iran, are some legal problems, government ownership of clubs, structure and manpower of the Taekwondo industry, marketing management, planning for Taekwondo competitions, and facilities of the Taekwondo industry. Khabiri and Memari [17] found that the significant growth of attendance in international competitions was the most important factor in Iran's Taekwondo.

Researchers have conducted numerous studies on the determinants of the progress and success of sports. Some of these factors are common to all researchers and some are different. Truyens et al. [29] pointed out ten key categories as competitive advantages of a sports organization to achieve sports success. These categories include competitive and training facilities, support for the sports profession, talent discovery, youth participation, government and organizational support, financial support, environmental conditions of sports elites, scientific support, competition opportunities, and training and equipping coaches. Brouwers et al. [4] considered the financial support, cohesive organization and structure, rate of participation in sports, talent discovery, support for athletes during activity and retirement, holding training and coaching classes, competition opportunities, training facilities, and scientific research as effective factors in the success of international sports. De Bosscher et al. [5] considered nine essential pillars in the success of international sports. These nine pillars included financial support, organization and structure of sports policies (comprehensive approach to development policy), establishment and participation in sports, talent discovery and training system, support for athletes and champions, training facilities, coaching and promotion courses, holding national and international competitions, and finally, scientific research. According to these researchers, financial resources, support for athletes, training facilities, and the development of coaches' knowledge were the main factors in improving the quantity and quality of elite athletes. Sotiriadou & Shilbury (2009) pointed out the importance of the roles of economic, cultural, and scientific methods in training elite athletes. They also concluded that discovering interested and talented individuals, developing long-term strategies for success, attracting financial funds, and gaining

social status were the ways to attract people to sports, and ultimately, train elite athletes. Alidoust et al. [2] considered the most important strategies for the development of the judo championship in Iran as the talent discovery, budget, management and planning, hardware equipment, competitions and sports camps, coordination and communication, coach and manpower promotion, motivation, and support of the manpower.

Goudarzi et al. [10] found that the four main factors in the success of Taekwondo sport included the style and method of professional training, participation in international competitions, compliance with the requirements of professional sports, and obtaining maximum points in pre-competition tests. Furthermore, Funahashi et al. [8] valued the elite sports success using the contingent valuation method and concluded that according to the regression test of respondents in more successful countries, they were more willing to pay than relatively less successful countries. According to the theory of welfare economics, more medals seemed to be more useful among sports officials in a way that financial planning for medals at the 2020 Tokyo Olympics significantly increased by implementing the Sports Support Fund, indicating the direct effect of non-governmental financial support on more success in the Olympics. Keshtidar et al. [16] considered increasing the number of staff of the delegations, improving the quantity and quality of coaches, increasing financial sponsors, increasing research articles, increasing the number of books, CDs, and training courses, increasing intra-provincial competitions, encouraging and supporting volleyball elites, and establishing talent-discovering centers as executive solutions for the development of volleyball in Iran. Eftekhari et al. [6] also considered the cultural component, talent discovery, and poor attitude to sports activities as the most important obstacles to the development of Iranian women's volleyball. A challenge for understanding skillful behavior is to detect components that are effective in acquiring and maintaining athletic success. A study of studies on athletic success indicates that many factors play roles in athletes' sports development. These factors include exercise, inner ability, age, skills, psychological commitments, and enjoyment of sports. Sports success is an active learning process that is achieved through purposeful practice and the improvement of skills necessary to achieve a high level of athletic performance. Optimal performance in sports is the result of a combination of technical, tactical, and physical abilities of strength, speed, etc., mental focus, self-confidence, anxiety control, etc. [30].

The present study sought to find whether we could play a significant role in the success of martial federations by providing solutions for each case that affected the success of the federations. To this end, the main goal of the researcher was to design a success model for the IRAN Martial Arts Federation using the views of experts and elites to help the Martial Arts Federation.

Research methods

The data analysis and collection were performed according to the mixed-methods, qualitative, and quantitative procedures. The knowledge of sports elites, specialists, and the officials of the Martial Arts Federation was used in the qualitative phase, and the knowledge of athletes, coaches, and staff of the martial art federation and delegations was utilized in the qualitative phase. In the first phase of the research, it was sought to use both academically educated people (faculty members) and senior managers of the Martial Arts Federation in selecting a statistical sample for in-depth interviews of 30 to 60 minutes. The statistical population of the study consisted of 15 faculty members in sports management and economics and all individuals with experience in the management of martial arts delegations, and senior managers of the Martial Arts Federation. In the qualitative phase, the prominent participants of each sector were selected using the non-random (judgmental) purposive sampling, as well as the snowball method in each category. All athletes, club managers, and Martial Arts Federation managers were studied in the quantitative phase. The statistical population for answering the questionnaire consisted of 100 athletes, club managers, and managers of the Martial Arts Federation, and 80 final samples were selected to answer the questionnaire according to Morgan's table. The desk and field methods were used to collect data. The necessary data for the second chapter, which constituted the literature review, was obtained by referring to specialized books, journals, and the Internet. In the quantitative phase, data were collected and a conceptual model of the research was designed using a researcher-made questionnaire. Before designing the questionnaire in the quality phase, interviews were conducted with elites and experts to obtain codes for the main fields of the success model of the Martial Arts Federation. The interview time lasted from 30 to 60 minutes, depending on the participants. The interviews were terminated whenever the participants finished talking or when they got tired. Depending on the interviewees' choice, the interviews took place at a federation, university, or other places. If necessary, the interviews were postponed to another time. The second round of interviews was organized to complete the data collected from each participant and clarify the ambiguities of the previous statements. The data about age, sex, education level, etc. were also recorded and used only to better describe the interviewees. In the study, Cronbach's alpha was used to assess the reliability of the questionnaire. To this end, the questions of each category were evaluated separately after distributing the questionnaires among 30 individuals in a pre-test, and finally, all the questions were evaluated using SPSS. Even though many studies have considered the alpha values of 60% to

80% acceptable, the same was calculated for all Cronbach's alpha levels, and inappropriate questions were removed if possible to achieve the best possible reliability. Divergent and convergent validity were also used for construct validity in PLS software. The Martial Arts Federation Success Questionnaire consisted of two parts: 1. Personal information section, including demographic characteristics and job information; 2. A researcher-made questionnaire compiled after collecting the interview codes. A 5-point Likert scale was used for all questionnaires and had equal intervals (1 to 5) in terms of the measurement value. As a common tool for data collection in descriptive research, a questionnaire is a tool that measures the respondents' views, perspectives, and insights using special scales. The questionnaire had 7 components and 27 indices, including coaches (4 questions), administrative (5 questions), women (4 questions), finance (5 questions), athletes (3 questions), foresight (3 questions), and information technology (3 questions). To perform statistical calculations, the descriptive statistical test (frequency, percentage, mean, and standard deviation) was first utilized to describe the research variables using SPSS 25, and then the inferential statistical methods, including the construct validity of the questionnaire and its factor structure were used based on confirmatory factor analysis, structural equations modeling, and path analysis using Smart PLS 3.

Nonlinear structural equation mode

The traditional linear structural equation model is typically made up of two parts: the measurement model describing the relationships between the observed and latent variables and the structural model describing the relationships between the latent variables. Given a vector of p observed variables $\boldsymbol{Z}_i$ for the ith individual in a sample of size n and a vector of q latent variables $\boldsymbol{f}_i$, the linear structural equation model system can be written:

$$\boldsymbol{Z}_i = \mu + \Lambda f_i + \varepsilon_i, \tag{0.1}$$

$$\boldsymbol{b}_0 + \boldsymbol{B}_0 f_i = \delta_{0i}, \tag{0.2}$$

where in the measurement model, the matrices $\boldsymbol{\mu}(p \times 1)$ and $\boldsymbol{\Lambda}(p \times q)$ contain fixed or <u>unknown scalars</u> describing the <u>linear relation</u> between the observations $\boldsymbol{Z}_i$ and the common <u>latent factors</u> $\boldsymbol{f}_i$ and $\boldsymbol{\varepsilon}_i$ represents the $(p \times 1)$ vector of random measurement error independent of $\boldsymbol{f}_i$ such that $E(\boldsymbol{\varepsilon}_i) = \boldsymbol{0}$ and $\text{Var}(\boldsymbol{\varepsilon}_i) = \boldsymbol{\Psi}$ with fixed and unknown scalars in $\boldsymbol{\Psi}$; and in the structural model, the matrices $\boldsymbol{b}_0(d \times 1)$ and $\boldsymbol{B}_0(d \times q)$ contain fixed or unknown scalars defining defining d different additive linear simultaneous structural equations relating the factors to one another plus the $(d \times 1)$ vector for random <u>equation error</u> $\boldsymbol{\delta}_{0i}$, where $E(\boldsymbol{\delta}_{0i}) = \boldsymbol{0}$ and $\text{Var}(\boldsymbol{\delta}_{0i}) = \boldsymbol{\Delta}_0$ with fixed and unknown scalars in $\boldsymbol{\Delta}_0$.

The simultaneous linear structural model as written in (0.2) is very general. For many practical research equations which be addressed by simultaneous structural models, it is useful to model specific variables in terms of the rest of the variables, i.e., it is useful to consider some of the latent variables as endogenous and others as exogenous, where <u>endogenous variables</u> are those that are functions of other endogenous and <u>exogenous variables</u>. Let $\boldsymbol{f}_i = (\boldsymbol{\eta'}_i, \boldsymbol{\xi'}_i)$ where $\boldsymbol{\eta}_i$ are the d endogenous latent variables and $\boldsymbol{\xi}_i$ are the $q - d$ exogenous latent variables. Then a commonly used from for the structural model (0.2) becomes:

$$\eta_i = \boldsymbol{b} + \boldsymbol{B}\eta_i + \Gamma\xi_i + \delta_i, \tag{0.3}$$

where it is assumed the <u>equation errors</u> $\boldsymbol{\delta}_i$ have $E(\boldsymbol{\delta}_i) = \boldsymbol{0}$, $\text{Var}(\boldsymbol{\delta}_i) = \boldsymbol{\Delta}$ and are independent of the $\boldsymbol{\xi}_i$ as well as independent of $\boldsymbol{\varepsilon}_i$ in (0.1), and the matrices $\boldsymbol{b}(d \times 1)$, $\boldsymbol{B}(d \times d)$, $\boldsymbol{\gamma}(d \times (q - d))$, and $\boldsymbol{\Delta}(d \times d)$ are fixed or unknown scalars. The structural model (0.3) is said to be in **implicit from**, implicit because it has endogenous variables on both sides of the equations, i.e., it is not "solved" for the endogenous variables. It is assumed that the diagonal of $\boldsymbol{B}$ is zero so that no element of η_i is a function of itself. A sufficient condition for solving (0.3) is that $(\boldsymbol{l} - \boldsymbol{B})$ is invertible, then (0.3) can be solved for the endogenous variables and written as

$$\eta_i = \boldsymbol{b}^* + \Gamma^*\xi_i + \delta_i^*, \tag{0.4}$$

where $\boldsymbol{b^*} = (\boldsymbol{l} - \boldsymbol{B})^{-1}\boldsymbol{b}$, $\boldsymbol{\gamma^*} = (\boldsymbol{l} - \boldsymbol{B})^{-1}\boldsymbol{\gamma}$ and $\text{Var}(\boldsymbol{\delta}_i^*) = (\boldsymbol{l} - \boldsymbol{B})^{-1}\boldsymbol{\delta}(\boldsymbol{l} - \boldsymbol{B})^{-1'}$. The structural model (0.4) is said to be in **reduced from** as the $\boldsymbol{\eta}_i$ now appears only on the left-hand side of the equation. It is important to note the assumption that the equation errors $\boldsymbol{\delta}_i$ were additive and independent of the $\boldsymbol{\xi}_i$ in the implicit from (0.3) results in the equation errors $\boldsymbol{\delta}_i^*$ in the reduced from (0.4) also being additive and independent of the $\boldsymbol{\eta}_i$.
Given p, q and d, additional restrictions must be placed on $\boldsymbol{\mu}, \boldsymbol{\Lambda}, \boldsymbol{\Psi}, \boldsymbol{b}_0, \boldsymbol{B}_0$ and $\boldsymbol{\Delta}_0$ in (0.1)-(0.2) in order to make all the unknown parameters identifiable. The assumption that (0.2) can be written in reduced from (0.4) is the typical restriction placed on the structural model.

Additionally, a common restriction placed on the measurement model (0.1) is the errors-in-variables parametrization where q of the observed variables are each fixed to be equal to one of the q different latent variables plus measurement

error. For a thorough discussion of identifiability in linear structural equation models see, e.g. Finally, it should be noted that there is no inherent distributional assumptions needed for ε_i, δ_{0i}, nor f_i at this point of model specification although distributional assumption may be added eventually to perform estimation.

A mixture SEMs for a $p \times 1$ random vector y_i is defined as follows:

$$f(y_i) = \sum_{k=1}^{K} \pi_k f_k(y_i | \mu_k, \sigma_k), \quad i = 1, \cdots, n, \tag{0.5}$$

where K is the number of components which can be unknown, $\pi_k's$ are component probabilities which are nonnegative and sum to 1.0, $f_k(y | \mu_k, \Sigma_k)$ is a multivariate normal density function with an unknown mean vector μ_k and a covariance matrix Σ_k. Conditional on the kth component, suppose that y satisfies the following measurement model:

$$y = \mu_k + \Lambda_k \omega_k + \varepsilon_k, \tag{0.6}$$

where μ_k is an $p \times 1$ intercept vector, γ_k is a $p \times q$ factor loading matrix, ω_k is a $q \times 1$ random vector of latent variables, and ε_k is a $p \times 1$ random vector of error measurements with distribution $N(0, \Psi_k)$, which is independent of ω_k and Ψ_k is a diagonal matrix. Let ω_k be partitioned into $(\eta_n^T, \xi_k^T)^T$, where η_k is a $q1 \times 1$ vector, ξ_k is a $q2 \times 1$ vector, and $q1 + q2 = q$. The structural equation is defined as

$$\eta_k = B_k \eta_k + \Gamma_k \xi_k + \delta_k, \tag{0.7}$$

where B_k and γ_k are $q1 \times q1$ and $q1 \times q2$ matrices of unknown parameters; and random vectors $\xi_k \lambda_k$ are independently distributed as $N(0, \Phi_k)$ and $N(0, \Phi_{\lambda k})$, respectively; and Φ_k is a diagonal matrix.

We assume that $B_{0k} = (l_{q1} - B_k)$ is nonsingular and (l_{q1} is independent of any elements in B_k. One specific from of B_k that satisfies this assumption is the lower or upper triangular matrix.

As the mixture model defined in (0.1) is invariant with respect to permutation of labels $k = 1, \ldots, K$, adoption of an unique labeling for identifiability is important. Roeder and Wasserman and Zhu and Lee proposed to impose the ordering $\mu_{1,1} < \ldots < \mu_{k,1}$ for eliminating the label switching (jumping between the various labeling subspace), where $\mu_{k,1}$ is the first element of the mean vector μ_k. This method works fine if $\mu_{1,1}, \ldots, \mu_{K,1}$ are well separated.

However, if $\mu_{1,1}, \ldots, \mu_{K,1}$ are close to each other, it may not be able to eliminate the label switching and may introduce incorrect results. Hence, it is necessary to find a sensible identifiability constraint. In this chapter, the random permutation sampler developed by Frühwirth-Schnatter will be applied for finding the suitable identifiability constraints. See the following sections for more details.

Moreover, for each $k = 1, \ldots, K$, structural parameters in the covariance matrix Σ_k corresponding to the model defined by (0.6) and (0.7) are not identified. A common method in structural equation modeling for identifying the model is to fix appropriate elements in A_k, B_k and/or γ_k at preassigned values. The positions of the preassigned values of the fixed elements in these matrices of regression coefficients can be chosen on a problem-by-problem basis, as long as each Σ_k is identified. In practice, most manifest variables are usually clear indicators of their corresponding latent variables. This give rather clear prior information to specify the zero values to appropriate elements in these parameter matrices. See the illustrative example for a more concrete example. For clear discussion of the proposed method, we let $\Pi = (\Pi_1, \ldots, \Pi_K)$ and θ be the vector which contains all unknown parameters in the covariance matrices that defines an identified model.

Results

According to the results of Table 1 in the descriptive statistics, the statistical population of the study consisted of 15 individuals, including 10 men and 5 women, among whom 11 had Ph.D. degrees, 3 had master's degrees, and 1 had bachelor's degree, and 8 were professors of sports management, 3 economics, and 4 were the federation managers. In the quantitative phase, 80 athletes and coaches, club managers, and managers of the Martial Arts Federation were selected to answer the questionnaires of the present study.

Table 1: Descriptive statistics of interviewers

	Variable	N frequency	Frequency percentage
Gender	Male	10	66.6
	Female	5	33.3
Education level	Bachelor	1	6.6
	Master	3	20
	Ph.D.	11	73.3
Job	Professors of sports management	8	53.3
	Professors of economics	3	20
	Federation managers	4	26.6
	Sum	15	100
Gender	Male	56	70
	Female	24	30
Education level	High school diploma and associate degree	5	6.25
	Bachelor	39	48.75
	Master	26	32.5
	Ph.D.	10	12.5
Job	Athletes and coaches	41	51.25
	Club managers	22	27.5
	Federation Managers	17	21.25
	Sum	80	100

Table 2 presents the results of the interviews with 15 elites in the form of main sentences mentioned by the interviewees. Initial coding and repetitive codes are mentioned with the interviewees. In this section, repetitive cases are presented in 7 main components (coaches, administrative, women, finance, athletes, foresight, and information technology).

Testing the conceptual model of research

In the present study, structural equation modeling was used with a structural least squares approach using Smart PLS software.
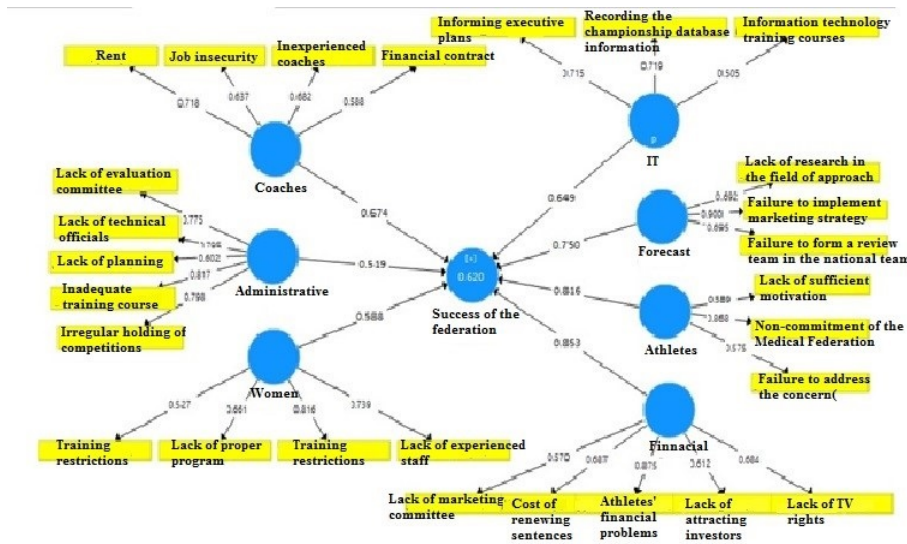
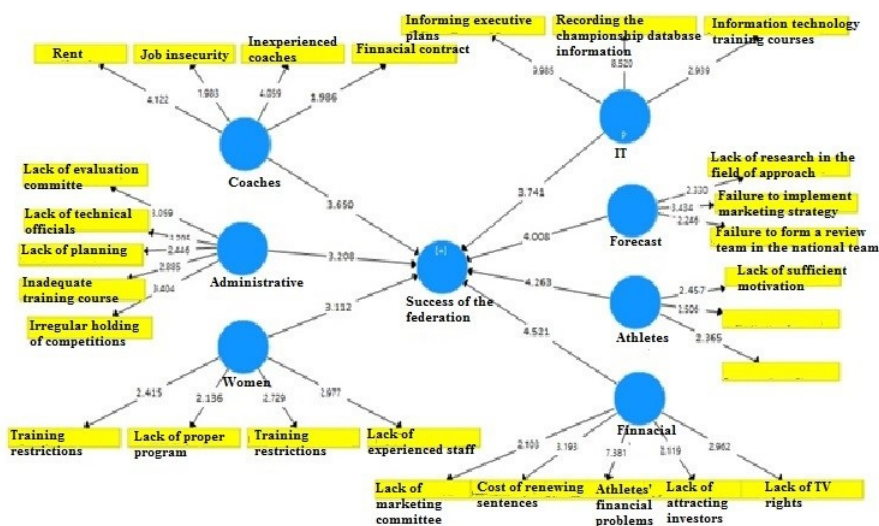

Figure 1: Path coefficient of the research model

Figure 2: The *t*-value of the research model

Table 2: Results of the initial and secondary coding of the research

Component	Initial codes	Repetitive codes
Coaches	Job security; Contract; Dissatisfaction; Lack of attention to the coach; Rent; opportunism; Short-term view of coaches; Lack of compassion of coaches; Player development; Using traditional methods	Low financial contracts of coaches compared to other sports Employing inexperienced and non-qualified coaches Lack of job security for coaches Rent in choosing coaches
Administrative	Planning; ethics; culture; lack of attention to martial arts; non-competent managers; rent managers; opportunist managers; league non-arrangement; training courses without practical profit; lack of mutual understanding of officials; stubbornness of managers in decisions; culture of heroism; administrative bureaucracy; lack of motivation; restrictive laws; improper implementation of decisions; lack of supervision; low inspection	Lack of evaluation, inspection, legal committee, and efficient planning in the federation Lack of technical and competent officials in the Martial Arts Federation Lack of regular strategic planning at least in the midterm in the federation Lack of proper training courses Irregular holding of regional, provincial, and national competitions
Women	Lack of attention to female athletes; women's low budget; Lack of support for women's sports; Physical restrictions; Non-standard halls; Lack of female representatives in the federation; Financial problems of women athletes; Restrictions on attending national team camps; Lack of proper program for women's league; Lack of sponsorship for women	Lack of experienced and experienced personnel in the field of training various martial arts for women Training restrictions in the women's specific halls Lack of proper program for Women's League Outdoor training restrictions for women
Financial	Federation financial problems; Lack of sponsorship for some league teams; Poor marketer in the federation; Exorbitant costs of martial arts; Inadequate budget spending; Financial problems of athletes and coaches; Lack of financial planning strategy of the federation; High cost than federation income; financial statements; Inefficient financial managers in the federation; Lack of government support; Weak marketing committee; Lack of financial desire to win; Lack of request to relevant organizations to increase the federation's budget; the effect of inflation on sport	Lack of support for the Broadcasting organization in paying for the television broadcasting rights of the competitions Insufficient support in attracting investors and sponsors in martial arts Athletes' economic problems and lack of salaries and benefits High cost of membership card and renewal of sentences Lack of active marketing committee in the federation
Athletes	Dissatisfaction of athletes; Lack of motivation to progress in the athletes; Lack of support for championing; empty promises of managers to athletes; Failure to fulfill past obligations; Membership of Iranian players in national teams of other countries; Improper planning of athlete preparation; Tensions among athletes; Insufficient focus on training; Athletes' mental and intellectual concerns	Insufficient motivation in martial arts athletes to progress by federation officials Lack of commitment of the Sports Medicine Federation to support athletes after injuries Failure to address the concerns of martial artists by sports officials
Forecast	Implementing knowledge-based projects; Employing Internet elites in the federation; Creating administrative bureaucracy on the federation's site; Making money from advertising on the federation's site; Competition review team; Multilateral view about club performance; Long-term support for start-up clubs; Preparing a hall for promoting talents	Lack of research in the field of new approaches in the management of the federation by the research committee of the organization Failure to implement projects with revenue-generating strategies from the championship of athletes Need to establish a review team in national team camps to evaluate the strengths and weaknesses of the team
Information and Communications Technology	Lack of database; Weakness in the IT system; Managers with low e-literacy; Employing computer experts; lack of transparent statistical data; Need to compare federation statistics with other federations; Approach to creating federation information in the system	Recording information about championship databases and provincial delegations in the database for easy access to information IT training courses for federation managers and employees Informing the new executive projects of the federations of other countries to update the employees' information

Table 3: Results of the reliability test of the measurement model

Components	Questions	Factor loadings	Composite reliability	Cronbach's alpha
Coaches	Low financial contracts of coaches compared to other sports	0.588	0.73	0.71
	Employment of inexperienced and low-qualified coaches	0.682		
	Lack of job security for coaches	0.637		
	Rent in selecting coaches	0.718		
Administrative	Lack of evaluation, inspection, and legal committee, efficient planning in the federation	0.775	0.77	0.75
	Lack of technical and competent officials in the Martial Arts Federation	0.795		
	Lack of regular strategic planning in the federation at least in the medium term	0.602		
	Lack of desired training courses	0.817		
	Irregular holding of regional, provincial, and national competitions	0.798		
Women	Lack of experienced personnel in the field of training various martial arts for women	0.739	0.73	0.70
	Training restrictions in specific female halls	0.816		
	Lack of proper program for women's league	0.661		
	Outdoor training restrictions for women	0.527		
Financial	Lack of support from broadcasting organization in paying the TV broadcasting rights of the matches	0.684	0.81	0.79
	Insufficient support in attracting investors and sponsors in martial arts	0.612		
	Athletes' economic problems and lack of salaries and benefits	0.875		
	High cost of membership card and renewal of sentences	0.687		
	Lack of active marketing committee in the federation	0.570		
Athletes	Insufficient motivation in martial arts athletes for progression by federation officials	0.589	0.80	0.78
	Lack of commitment of the sports medicine federation to support athletes after injuries	0.868		
	Failure to address the concerns of martial arts athletes by sports officials	0.575		
Forecast	Lack of research in the field of new approaches in the management of the federation by the research committee of the organization	0.692	0.84	0.81
	Failure to implement projects with a revenue-generating strategy from the athletes' championship	0.900		
	Need to establish a review team in the national team camps to assess the strengths and weaknesses of the team	0.695		
ICT	Recording information of championship bases and provincial delegations in the database for easy access to information	0.719	0.79	0.77
	IT training courses for federation managers and employees	0.505		
	Informing the new executive plans of the federations of other countries to update the employees' information	0.715		

According to Table 3, the reliability of each item refers to the values of factor loadings of the observed variables, and it is used to determine to what extent the measurement indices (observed variables) are acceptable for measuring the latent variables. The acceptable value of factor loadings of 0.4 indicates a medium significance level. In confirmatory factor analyses, factor loadings of higher than 0.5 indicate a strong significance level and high correlation between the observed variables and the factor and also indicate that the construct is well defined. According to the table, almost all items are higher than 0.5, indicating a good relationship with the components. The rent in selecting coaches with 71% correlation in the coaches component, the unfavorable training courses with 81% correlation in the administrative component, the training restrictions in the specific women's hall with 81% correlation in the women component, economic problems of athletes and their lack of salaries and benefits with 87% correlation in the financial component, the non-commitment of the sports medicine federation to support athletes after injury with 86% correlation in the athletes component, the non-implementation of projects with a revenue-generating strategy with 90% correlation in the forecast component, and the record of information about the championship and provincial delegations in the database for easy access to information with 71% correlation in the information technology component had the highest correlation with the above-mentioned components, indicating the greater impact of the indices on the components.

Table 4: Average Variance Extracted (AVE)

Components	Average Variance Extracted (AVE)
Coaches	0.614
Administrative	0.677
Women	0.744
Financial	0.832
Athletes	0.827
Forecast	0.870
IT	0.739

Since all values of the average variance extracted for all research components were higher than 0.6, the research questionnaire had appropriate convergent validity.

Table 5: The result of the interactive effect between the research components with the success of the federation

The impact of components of the success of the federation		Path coefficient value	Number	T	Significance level	Result
Coaches	The success of the Martial Arts Federation	0.674	80	3.650	P<0.05	Confirmed
Administrative		0.519	80	3.208	$P < 0.05$	Confirmed
Women		0.588	80	3.112	$P < 0.05$	Confirmed
Financial		0.853	80	4.521	P<0.05	Confirmed
Athletes		0.816	80	4.263	P<0.05	Confirmed
Forecast		0.750	80	4.008	P<0.05	Confirmed
IT		0.649	80	3.741	P<0.05	Confirmed

According to Table 5, the path coefficient between research components with the success of the Martial Arts Federation, all components were at a significant level of $p < 0.05$, the path coefficient was greater than 0.50, and the t-value was greater than the standard value (1.96); hence, the financial component was the most effective component with a path coefficient of 0.853 and a t-value of 4.521, and the administrative component was the least effective component with a path coefficient of 0.519 and a t-value of 3.208. All components had a positive and significant effect on the success of the Martial Arts Federation, indicating that the success rate of the Martial Arts Federation improved with an increase in each component.

Goodness of fit (GOF) criterion (Total model strength criterion)

This index is the square of the multiplication of the average commonality values by the average coefficients of determination. Values of 0.01, 0.25, and 0.36 are considered the weak, moderate, and strong values respectively. The

GOF criterion is calculated by the following equation.

$$\text{GOF} = \sqrt{\overline{(\text{communality}) \times \overline{(\text{R square})}}}$$
$$\text{GOF} = \sqrt{0.481 \times 0.620} = 0.605$$

The GOF criterion was acceptable according to the sample based on Cohen's (1988) specified size classification of R^2 and using the minimum value of 0.5 by Fornell and Larcker (1981) for the commonality rate. The GOF value was equal to 0.605 for the model, indicating the goodness of fit for the data. Since the hypotheses are two-domain, the absolute t-value must be greater than 1.96 to reject the null hypothesis at the 0.05 level, and this condition was obtained for all hypothesized paths. According to the value obtained for GOF, which was equal to 0.60 and greater than the value proposed by Wetzels et al. (2009), i.e. 0.36, indicating the strength of the model, the goodness of fit of the overall model was confirmed.

Conclusion

The present study aimed to design a success model for the IRAN Martial Arts Federation. According to the research results and meeting the objectives, the results of some studies were presented for comparison. The research results indicated that the financial component with 85% correlation and effectiveness was the most important in the success of the Martial Arts Federation. The finding was consistent with the following studies: András & Havran [3], Hosseini et al. [13, 14], Ruoranen et al. [23], and Panahi and Khatibi (2017).

The impact of professional and experienced coaches among the staff of sports team was another determinant of sports success, indicating a 71% correlation with the success of the federation. In the study, the rent in the selection of coaches was the most effective factor in this component, and it was a major weakness in the federation. According to the results of the present study, this research was consistent with the results of the following studies: Soltanpour et al. [26], Aghaei and Tavakoli [1], and Shabani and Hassani [24].

The administrative component was also a determinant of the success of the Martial Arts Federation in the present study. The correlation of 51% had the lowest value among other components, but since the value above 50% was effective, it was an important component in the success of the federation. The index of unsatisfactory training courses was important. The present results were consistent with the following research: Memari et al. [18].

The effect of attention to women's sports in the federation was another component of the present study, which was examined with an emphasis on gender and had a significant effect with an 81% correlation. The main indices of this component included training limitations and the lack of specific halls. The following studies were consistent with these results: Motameni et al. [18], Forsyth et al. [7].

The index "athletes" was an important component in the success of sports federations. In the present study, it was an important component in the success of the federation with an 86% correlation. Furthermore, the non-commitment of the Medical-Sports Federation to the responsibility for athletes' injuries and the acceptance of medical expenses were also problems for this group. The following studies were consistent with these results: Norouzi et al. (2019), and Funahashi et al. [8].

The forecast was a component that was very important in the implementation of the federation's programs, and it had a 90% correlation. The non-implementation of plans for income-generating from athletes was also the most important factor of this component. The following studies were consistent with the present results: Hemmati Afif and Keshavarz [12], Ghiami-Rad and Moharramzadeh [9].

The information technology component was another factor that influenced the success of the Martial Arts Federation and had a 71% correlation with it. The athlete database record index was the most important index of this component. The following studies were consistent with these results: Jalilvand and Sharifian [15], Manev & Jakimovski [20].

According to the results of the present study on the success of the Martial Arts Federation, it is necessary to implement the research model and its implementation steps.

- The Martial Arts Federation needs to take serious measures to attract sponsors and form an active marketing committee.

- Policies should be considered for the financial independence of sports federations.

- It is suggested to provide daily accurate information about the activities of the federation by the information committee for news sites to reflect and clarify the activities of the federation.

- Given the role of the financial component in the success of the Martial Arts Federation, it is suggested to provide opportunities to improve the quality of sports teams for the success of the federation by attracting sports sponsors and creating facilities for athletes and coaches.

- It is suggested to detect and establish two-way communication with personal and government sponsors and remove cumbersome barriers (long processes and problems in concluding financial contracts with sponsors, appointing multiple supervisors for a single contract, redundant bureaucracy) to pave the way for sponsorship participation, and financial authorities to invest in promoting the financial capacity of the federation and clubs with empathy and trust.

- According to the research results, it is suggested that the Women's Committee of the Martial Arts Federation should create development plans in the field of sports facilities and grounds and provide financial loans for women athletes.

- It is suggested to establish a comprehensive database in all fields of the federation with the aim of sports information in cooperation with the information technology department of the Martial Arts Federation.

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