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Providing a Communication Model for Quantum Leadership, Productivity, and Empowerment of Personnel in the Ministry of Sport and Youth Using Interpretive-Structural Modeling

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ABSTRACT

The current study aims to explain a communication model for quantum leadership, productivity and empowerment of personnel in the Ministry of Sport and Youth using Interpretive-Structural Modeling approach. The research population included all of the personnel in the Ministry of Sport and Youth, and 269 persons were selected randomly as the research sample. The research tool was questionnaires adopted from the literature for collecting the research data. Twelve sport management experts and Cronbach's alpha method, respectively confirmed the validity and reliability of the questionnaires. SPSS software and interpretive-structural modeling (ISM) approach were applied to analyze the research data. The results indicated the optimal level in the quantum leadership, as well as personnel productivity, and empowerment. Based on the results, an increase in the level of quantum leadership in the Ministry of Sport and Youth raises the level of personnel productivity, and empowerment. In addition, an increase in the personnel empowerment level in the Ministry of Sport and Youth increases the level of personnel productivity.

Introduction

Generally, all of the modern organizations use their personnel's potential talents and abilities for progress and seek to actualize such abilities (Sievers, Reil, Rimbeck, Stumpf-Wollersheim, & Leyer, 2021). Managers in organizations utilize their personnel's capabilities for performing the

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duties to achieve the main objectives (Sievers et al., 2021). Today, organizations aim to surpass their rivals due to the fast and increasing evolutions (Sievers et al., 2021). Organizations apply their personnel's potential abilities and talents for progress and seek to actualize such abilities. In addition, organizations benefit from such talents and abilities for performing the duties and achieving the main objectives of the organization. Personnel in organizations can undertake their duties correctly using their capabilities. Further, personnel can identify their ability and release their internal hidden power utilizing an instrument like empowerment (Alazzaz & Whyte, 2015). Such view emphasizes the relations and effort for raising the personnel's motivation and delegating the authority, which helps the sense of attachment to the organization and increases their ability, resulting in influencing the productivity directly. Therefore, personnel are regarded as the most valuable resource available to organizations to eliminate the obstacles, make decisions, and objectify productivity (Zohar, 2021). Managers can affect the productivity, satisfaction, spirit, and effort of their personnel applying the spirit of quantum leadership, resulting in influencing the productivity and success of the organization directly (Zohar, 2021). The leadership of personnel which constitutes the base and real capital of the organization has attracted a lot of attention and finds existence by the above-mentioned vital factor (Ahmadiyan, Ghalavandi, & Hassani, 2022). The Ministry of Sport and Youth which aims to extend both the personnel and sport in the country should benefit from expert managers with quantum leadership qualities who can create a dynamic organization. The Ministry of Sport and Youth in Iran requires written plans, a quantum leadership to conduct correct jobs, and their personnel’s empowerment for specified objectives. Planning in the above-mentioned organization plays a critical role and is considered as the basis of its management (Bagheri, Saboonci, & Foroughipour, 2020). The Ministry of Sport and Youth can utilize the quantum leadership style to become a dynamic and self-organizing system and can improve and develop its capacities., The motivations, needs, tendencies, and factors of satisfaction and dissatisfaction among the personnel and their empowerment should be recognized to obtain the correct policies, appropriate approaches, and effective plans since the Ministry of Sport and Youth creates a vital role in the structures of society and the relations between the peoples and personnel (Arshad, Qasim, Farooq, & Rice, 2022). The sports organizations which seek growth, inflorescence, and improvement of their personnel's capability in the current year should empower their personnel, as well as utilizing the existing quantum leadership style (Arshad et al., 2022). The effective factors to increase the productivity of the personnel and organizations are aligned with each other, meaning that the effort to increase the personnel’s potencies is regarded as a bridge to improve their productivity (Ahmadiyan et al., 2022). Thus, the requirement of productivity in sports organizations and existence of talented and specialized personnel result in considering the quantum leadership style in the organization and guiding the organization towards its main objective (Watson, Porter-O’Grady, Horton-Deutsch, & Malloch, 2018). The organizations which aim to perform their activities more smartly in the variable environment should concentrate on increasing the productivity (Delmas & Pekovic, 2018). Holding sports events at the national and international level and establishing more and better relationship between various races and nations lead to the best human achievement, which is based on better understanding, peaceful coexistence, and communication among various institutes of championship sport in training the athletes (Afif, Mariyanti, Septiani, & Dolan, 2023). The significance of developing sports is felt more obvious than ever considering the importance of planning in expanding various categories including popular sports and championships. Ignoring the aforementioned categories by authorities is among the most critical reasons for lagging behind in the field of sports (Faraji, Safania, Bagherian, & Naghshbandi, 2023). The matter should be assessed more seriously, despite steps taken in this direction. Formulating a strategic program in the field of public sports and championships is regarded as the right solution. The leadership style in the Ministry of Sport and Youth impacts the development of public sports and championships and its output directly (Faraji et al., 2023). The special attention of the Ministry of Sport and Youth to public sports and championships, efforts to improve the infrastructure, and use of youth and women managers in the field of sports management have been effective. Selecting the right and appropriate leadership style to develop and guide the popular sports and championships can be one of the appropriate solutions (Faraji et al., 2023). Quantum leadership may be applied to increase the personnel’s productivity in the Ministry of Sport and

Youth through the intermediating role of empowerment. The current study aims to explain a communication model for quantum leadership, productivity and empowerment of personnel in the Ministry of Sport and Youth using Interpretive-Structural Modeling approach.

Methodology

This study aims to assess the quantum leadership communication model, productivity of personnel of the Ministry of Sport and Youth, and empowerment using the ISM. The present study is considered as applied, correlational, and analytical in terms of type, nature, and method, respectively. In addition, this study is regarded as survey-based. The population included all of the personnel in the Ministry of Sport and Youths (N=890), among which 269 persons were selected as sample based on Morgan table and 10 persons were considered as the statistical sample of ISM phase. The SIM was utilized because 10-250 persons should be selected to confirm the hypotheses. The data were collected by quantum leadership questionnaire proposed by Harouni et al. (2018), which is regarded as standard and includes 7 sub-components and 34 items. The above-mentioned questionnaire was designed for seven quantum skills including seeing, thinking, feeling, recognition, action, trust, and quantum existence. The standard questionnaire of personnel productivity suggested by Heresy and Goldsmith (1980) includes 26 items and 7 sub-components including ability, perception and recognition, organizational support, motivation, feedback, credit, and consistency. Spreitzer empowerment questionnaire (1995) which includes 5 sub-components and 19 items was designed for sense of significance and competence in the occupation, being effective, independence, and trust. All of the specialists who confirmed the questionnaires (N=12) had PhD degrees in the field of sport management. Unlike attitude questionnaires, the Likert scale was not applied to design the ISM. The ISM questionnaire has 3 matrixes in which the dimensions of the quantum leadership (N=7), empowerment (N=5), and personnel productivity (N=7) are assessed in pairs. The matrices were created based on the research hypotheses. In addition, two variables were replaced in each level or column so that the effects of each dimension on others are specified based on the experts' views as pairs with zero and one code. The experts entered number one when a relation existed and zero when no relation existed. Then, frequency or mode was used to summarize the experts' opinion. All of the specialists who approved the questionnaires (N=29) had a specialized doctorate in the field of management. A preliminary test with 38 subjects was conducted randomly among the personnel in the Ministry of Sport and Youth utilizing SPSS software before the study in order to estimate the reliability of the questionnaires. Cronbach's alpha was reported as 8.92, 8.09, and 8.07, respectively. The field method was applied to achieve the required data. The questionnaires were distributed and completed among the personnel by visiting the Ministry of Sport and youth for a week The data were collected and analyzed by descriptive statistics and SIM approach. Descriptive statistics performed by using SPSS software.

Results

The frequency distribution of the sample individuals was provided based on demographic variables in order to present an appropriate view about the features of the people under study.

Table 1. Frequency distribution based on the features of the sample

		Statistical indicators		
	Attributes	**Abundance**	**Frequency**	**Cumulative frequency percentage**
Gender	Woman	82	30.5	30.5
	Man	187	69.5	%100
	Total	269	%100	
Education	Masters	134	49.8	49.8
	Master's degree or higher	135	50.2	%100

	Total	269	%100	
Age	26 to 30 years	15	5.6	5.6
	31 to 35 years	94	34.9	40.5
	Above 36 years	160	59.5	%100
	Total	269	%100	
Work experience	Less than 5 years	4	1.5	1.5
	6 to 10 years	6	2.2	3.7
	11 to 15 years	97	36.1	39.8
	More than 15 years	162	60.2	%100
	Total	269	%100	

As indicated, 187 persons (69.5%) of the respondents are considered as men, while 82 persons (30.5%) are regarded as women. In addition, the group of men is greater than women. Further, 134 persons (49.8%) has bachelor's degree and 135 persons (50.2%) master's degree and higher. Furthermore, 15 persons (5.6%) are aged 26-30 years old, 94 persons (34.9%) are aged 31-35 years old, and 160 persons (59.5%) are above 36 years old. As shown, most respondents are above 36 years old. Finally, 4 persons (1.5%) among the respondents are less than 5 years old, 6 persons (2.2) 6-10 years old, 97 persons (36.1%) 11-15 years old, and 162 persons (60.2%) above 15 years old.

ISM is regarded as a methodology to create and understand relationships between elements in a complex system. The above-mentioned modeling system which is considered as technical is regarded as appropriate for analyzing the effect of one element on other ones. ISM includes several stages in which the factors identified from the previous phase are considered as ISM inputs, which help determine the leveling of variables. Based on the first hypothesis, a relationship is observed between the components related to quantum leadership and the productivity of the personnel in the Ministry of Sport and Youth from the approach method. The utilized ISM is explained in the different stages of the interpretive-structural approach as follows.

First stage: Drawing structural self-interactive matrix (SSIM)

The relationship between 14 sub-components related to quantum leadership and productivity are studied in pairs in each column and row after entering the research variables in the matrix. The following signs are applied in the aforementioned matrix to identify the probable relationship between the variables.

Sign V: The variable in row i can establish a relationship to obtain that in column j (one-way relationship from i to j).

Insignia: A two-way relationship is reported between the variable in row i and that in column j. On the other hand, both variables can be regarded as the reason for reaching each other (two-way relationship from i to j and vice versa).

Sign: No relationship is observed between the two variables (i, j).

Table 2. SSIM related to quantum leadership and personnel productivity

	Small components	**C11**	**C12**	**C13**	**C14**	**C15**	**C16**	**C17**	**C31**	**C32**	**C33**	**C34**	**C35**	**C36**	**C37**
C11	Quantum View		O	O	O	v	V	V	A	A	V	O	V	V	A
C12	Quantum thinking			V	V	V	A	A	A	X	A	A	A	O	V
C13	Quantum sense				V	O	V	V	A	X	A	A	A	A	V
C14	Quantum knowledge					V	O	A	A	O	A	V	V	V	V
C15	Quantum action						V	V	V	A	A	A	V	A	V
C1	Quantum							V	A	A	A	A	A	V	X

6	trust									
C17	Quantum existence	A	V	A	A	A	O	A		
C31	Ability		V	A	V	A	O	V		
C32	Understanding			A	A	V	A	A		
C33	Organizational protection				A	V	O	V		
C34	Motivation					V	A	V		
C35	Feedback						X	V		
C36	Validity							V		
C37	Compatibility									

Second stage*:* Drawing access to primary reach matrix (RM)

Existing signs in self-interactive matrix are acquired by transforming the primary matrix to numbers 0 and 1 (Table 3).

Table 3. Method of converting conceptual relationships into numbers

conceptual symbol	i to j	j to i
V	1	0
A	0	1
X	1	1
O	0	0

Table 4 indicates the primary achievement matrix.

Table 4. Primary RM

	C11	C12	C13	C14	C15	C16	C17	C31	C32	C33	C34	C35	C36	C37
C11	0	0	0	0	1	1	1	0	0	1	0	1	1	0
C12	0	0	1	1	1	0	0	0	1	0	0	0	0	1
C13	0	0	0	1	0	1	1	0	1	0	0	0	0	1
C14	0	0	0	0	1	0	0	0	0	0	1	1	1	1
C15	0	0	0	0	0	1	1	1	0	0	0	1	0	1
C16	0	1	0	0	0	0	1	0	0	0	0	0	1	1
C17	0	1	0	1	0	0	0	0	1	0	0	0	0	0
C31	1	1	1	1	0	1	1	0	1	0	1	0	0	1
C32	1	1	1	0	1	1	0	0	0	0	0	1	0	0
C33	0	1	1	1	1	1	1	1	1	0	0	1	0	1
C34	0	1	1	0	1	1	1	0	1	1	0	1	0	1
C35	0	1	1	0	0	1	1	1	0	0	0	0	1	1
C36	0	0	1	0	1	0	0	0	0	0	1	1	0	1
C37	1	0	0	0	0	1	1	0	1	0	0	0	0	0

Third stage: Drawing the final achievement matrix

The primary availability matrix should be adapted considering the multiplicative relationship between the variables. For example, factor one should lead to factor three when it leads to factor two and factor two leads to factor three. In addition, the matrix should be modified and the missed relationships should be replaced when such state is not obtained in the matrix. A matrix is needed to draw the final matrix. The method of maximum frequency (the mode in each row and column) should be used to integrate the above-mentioned matrix. Accordingly, all of the matrices achieved

during the second step are altered to numbers 8 and 2. Finally, all of the faces facing each other in the matrix are gathered together and the mode is acquired. Any number less than or equal to zero in the matrix should be written as 8 and any one greater than the mode should be entered as 2 (Table 5).

Table 5. Final achievement matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		C11	C12	C13	C14	C15	C16	C17	C31	C32	C33	C34	C35	C36	C37
1	C11	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	C12	1	1	1	1	1	1	1	1	1	0	1	1	1	1
3	C13	1	1	1	1	1	1	1	0	1	0	1	1	1	1
4	C14	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	C15	1	1	1	1	1	1	1	1	1	0	1	1	1	1
6	C16	1	1	1	1	1	1	1	0	1	0	1	1	1	1
7	C17	1	1	1	1	1	1	1	0	1	0	1	1	1	1
8	C31	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	C32	1	1	1	1	1	1	1	1	1	1	0	1	1	1
10	C33	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	C34	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	C35	1	1	1	1	1	1	1	1	1	**0**	1	1	1	1
13	C36	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	C37	1	1	1	1	1	1	1	**0**	1	1	**0**	1	1	1

Fourth stage: Determining the levels and prioritization of the research variables

The outputs and inputs are collected in the form of a set utilizing the final achievement matrix obtained during the third stage for each variable separately in order to determine the levels and priority (Khan & Rahman, 2015). The classification of research variables is determined for each intended output and input variable. The sum of the output in a variable includes the components related to the matrix from which the output is created except that applied to determine such set of outputs. The number of 2 numbers should be determined in each row which represents the directional lines and the upper and lower levels. The input in each variable includes components of the matrix which are connected to those applied to determine the inputs. The corresponding column should be reviewed and the number of 2 numbers in the column should be checked with directed lines.

In order to determine a set of outputs and inputs in each variable, the common element is identified, as well as deciding on which level each variable should be placed. The variables with the highest levels in the first table of matrices are eliminated after identification. The set of inputs and its common element which simulate completely are placed at the highest level and the rest of the variables should form the second table like the first one. Finally, the critical variables related to the second level are determined repeatedly until the level of all of the variables is determined.

Table 6. Determining the levels of variables

Variables	**Set of inputs**	**Set of outputs**	**Common elements**	**Rating**
First repetition				
1	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	1
2	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	1
3	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	1

4	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	1
5	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	1
6	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	1
7	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	1
8	(1,2,4,5,8,9,10,11,12,13)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,4,5,8,9,10,11,12,13)	
9	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,12,13,14)	(1,2,3,4,5,6,7,8,9,10,12,13,14)	1
10	(1,4,8,9,10,11,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,4,8,9,10,11,13,14)	
11	(1,2,3,4,5,6,7,8,10,11,12,13)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,10,11,12,13)	
12	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	(1,2,3,4,5,6,7,8,9,11,12,13,14)	
13	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	1
14	(1,2,3,4,5,6,7,8,9,10,11,12,13,14)	(1,2,3,4,5,6,7,8,9,10,12,13,14)	(1,2,3,4,5,6,7,8,9,10,12,13,14)	1
Second repetition				
8	(8,10,11,12)	(8,10,11,12)	(8,10,11,12)	2
10	(8,10,11)	(8,10,11,12)	(8,10,11)	
11	(8,10,11,12)	(8,10,11,12)	(8,10,11,12)	2
12	(8,10,11,12)	(8,11,12)	(8 ,11,12)	2
Third repetition				
10	(10)	(10)	(10)	3

Fifth stage: Drawing ISM model

The model is drawn based on the determined levels and the final achievement matrix. The level of variables can be drawn in a model form based on the degree of involvement after determining relationships. To this aim, the variables are regulated in order from top to bottom according to their level (Singh & Kant, 2008). The factors are placed in three levels here.

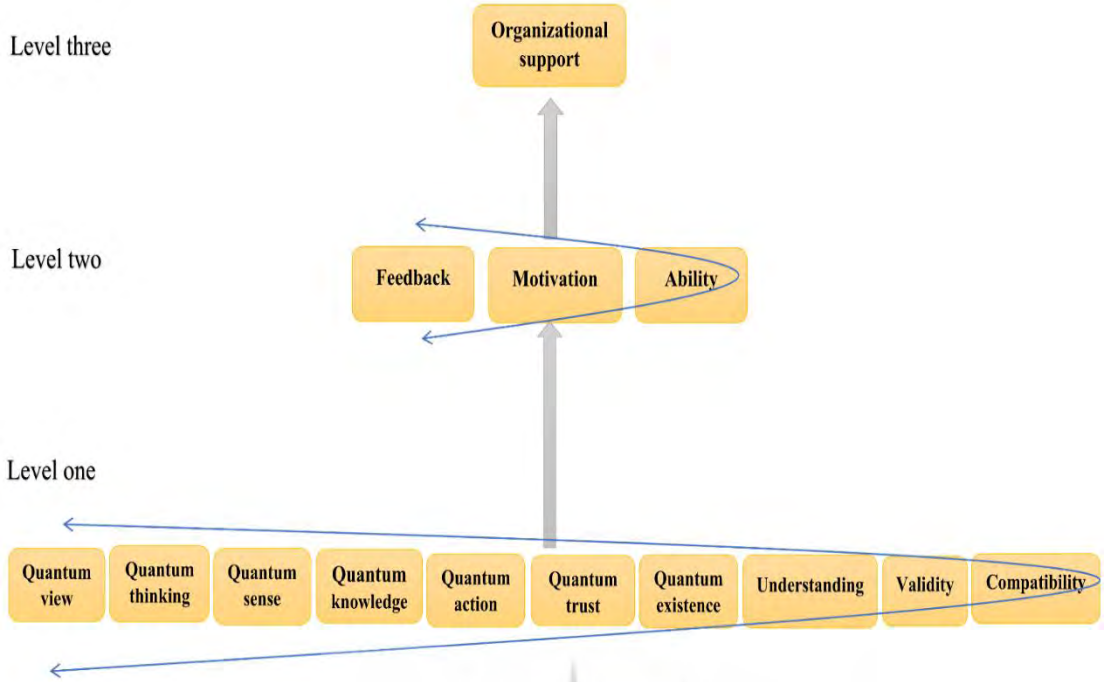

Figure. 1. Interpretive-structural model of quantum leadership and personnel productivity

As observed, the components of quantum leadership and productivity exhibit a two-to-two relationship at each level and are considered as effective at three levels, indicating that the null hypothesis is rejected and the research hypothesis is confirmed. Accordingly, the components of ability, motivation, and feedback impact organizational support and the components of understanding and recognition, credibility and compatibility, and seeing, thinking, feeling, recognition, action, trust, and quantum existence affect the components of ability, motivation, and feedback directly. The aforementioned components are related to each other two by two. Thus, the second hypothesis between the components of the productivity of the personnel in the Ministry of Sports and Youth and empowerment leads to a relationship as follows. Here, 29 micro-components of productivity and empowerment are entered into the matrix in order to examine the two-by-two relationship between the micro-components in the row and column.

Table 7. SSIM related to productivity and empowerment

		C31	C32	C33	C34	C35	C36	C37	C21	C22	C23	C24	C25
C31	Ability		V	v	V	V	V	V	A	A	V	O	V
C32	Understanding			A	A	X	A	A	A	X	A	A	V
C33	Organizational Protection				A	V	X	A	A	X	A	A	O
C34	Motivation					V	O	A	V	O	A	V	V
C35	Feedback						X	X	A	A	X	A	O
C36	Validity							X	A	A	X	A	A
C37	Compatibility								A	A	X	A	A
C21	Competence in the job									V	A	V	A
C22	To be effective										V	A	V
C23	Meaning in the job											A	V
C24	Right to Choose												A

C25	Partnership with others

Table 8 shows the matrix of the primary access.

Table 8. Primary achievement matrix (RM)

	C31	**C32**	**C33**	**C34**	**C35**	**C36**	**C37**	**C21**	**C22**	**C23**	**C24**	**C25**
C31	0	1	1	1	1	1	1	0	0	1	0	1
C32	0	0	0	0	1	0	0	0	1	0	0	1
C33	0	1	0	0	1	1	0	0	1	0	0	0
C34	0	1	1	0	1	0	0	1	0	0	1	1
C35	0	1	0	0	0	1	1	0	0	1	0	0
C36	0	1	1	0	1	0	1	0	0	1	0	0
C37	0	1	1	1	1	1	0	0	0	1	0	0
C21	1	1	1	0	1	1	1	0	1	0	1	0
C22	1	1	1	0	1	1	1	0	0	1	0	1
C23	0	1	1	1	1	1	1	1	0	0	0	1
C24	0	1	1	0	1	1	1	0	1	1	0	0
C25	0	0	0	0	0	1	1	1	0	0	1	0

Table 9. Final achievement matrix

		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
		C31	C32	C33	C34	C35	C36	C37	C21	C22	C23	C24	C25
1	C31	1	1	1	1	1	1	1	1	1	1	1	1
2	C32	1	1	1	0	1	1	1	1	1	1	1	1
3	C33	1	1	1	0	1	1	1	0	1	1	0	1
4	C34	1	1	1	1	1	1	1	1	1	1	1	1
5	C35	0	1	1	1	1	1	1	1	1	1	0	1
6	C36	0	1	1	1	1	1	1	1	1	1	0	1
7	C37	0	1	1	1	1	1	1	1	1	1	1	1
8	C21	1	1	1	1	1	1	1	1	1	1	1	1
9	C22	1	1	1	1	1	1	1	1	1	1	1	1
10	C23	1	1	1	1	1	1	1	1	1	1	1	1
11	C24	1	1	1	1	1	1	1	1	1	1	1	1
12	C25	1	1	1	1	1	1	1	1	1	1	1	1

Table 10. Determining the levels of variables

	Set of inputs	Set of outputs	Common elements	Rating
First iteration				
1	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,8,9,10,11,12)	
2	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	1
3	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,5,6,7,9,10,12)	(1,2,3,5,6,7,9,10,12)	1
4	(1,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,4,5,6,7,8,9,10,11,12)	
5	(1,2,3,4,5,6,7,8,9,10,11,12)	(2,3,4,5,6,7,8,9,10,12)	(2,3,4,5,6,7,8,9,10,12)	1
6	(1,2,3,4,5,6,7,8,9,10,11,12)	(2,3,4,5,6,7,8,9,10,12)	(2,3,4,5,6,7,8,9,10,12)	1
7	(1,2,3,4,5,6,7,8,9,10,11,12)	(2,3,4,5,6,7,8,9,10,11,12)	(2,3,4,5,6,7,8,9,10,11,12)	1
8	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,4,5,6,7,8,9,10,11,12)	
9	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	1
10	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	1
11	(1,2,4,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,4,7,8,9,10,11,12)	
12	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	1
Second repetition				
1	(1,4,8,11)	(1,4,8,11)	(1,4,8,11)	2
4	(1,4,8,11)	(1,4,8,11)	(1,4,8,11)	2
8	(1,4,8,11)	(1,4,8,11)	(1,4,8,11)	2
11	(1,4,8,11)	(1,4,8,11)	(1,4,8,11)	2

The model is drawn based on the determined levels and final achievement matrix. The above-mentioned factors can be drawn as a model after determining the relationships and level of the variables. To this aim, the variables are adjusted from top to bottom based on their level (Khan & Rahman, 2015). The factors are placed in three levels here.

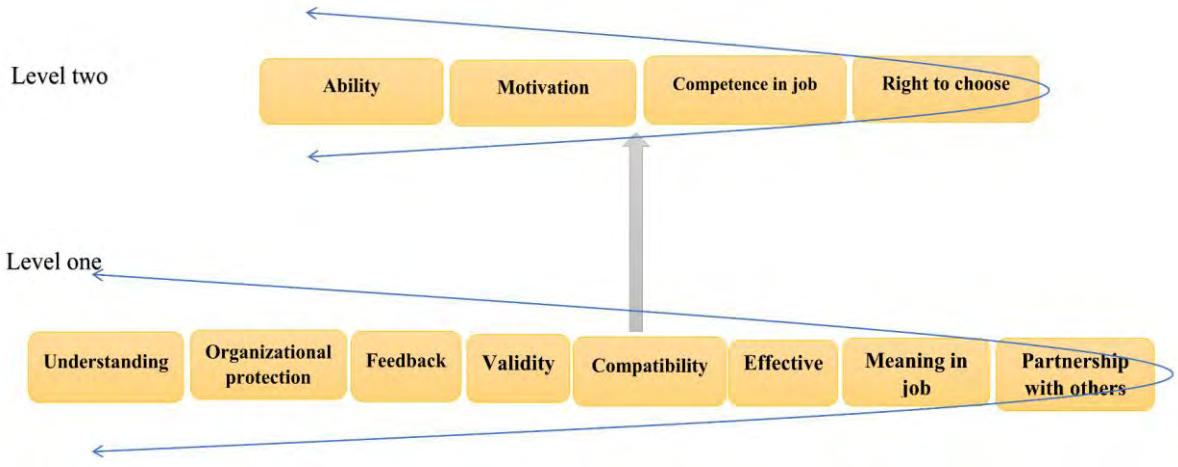

Figure. 2. Interpretive-structural model of personnel productivity and empowerment

As perceived, the components of personnel productivity and empowerment exhibit a two-to-two relationship at each level. The aforementioned components are regarded as effective, as well. Therefore, the null hypothesis is rejected and the research hypothesis is confirmed, meaning that the components of trust, feeling of influence, meaningfulness, understanding and recognition, credibility, organizational support, feedback, and adaptability to the environment affect the components of independence and feeling competence, as well as ability and motivation directly. In addition, the above-mentioned components are related to each other two by two.

Based on the third hypothesis, a relationship is reported between the components of quantum leadership and empowerment of the personnel in the Ministry of Sports and Youth as follows. Here, 29 micro-components of quantum leadership and empowerment are entered into the matrix in order to check the relationship between the two micro-components in the row and column.

Table 11. SIM related to quantum leadership and empowerment

		C11	C12	C13	C14	C15	C16	C17	C21	C22	C23	C24	C25
C11	Quantum View		A	A	O	V	V	v	A	A	V	O	V
C12	Quantum thinking			V	V	V	A	A	A	X	A	A	A
C13	Quantum sense				A	V	X	V	A	X	A	A	A
C14	Quantum knowledge					V	O	A	V	O	A	V	V
C15	Quantum action						X	X	V	V	A	A	V
C16	Quantum trust							X	A	A	A	A	A
C17	Quantum existence								A	V	A	A	A
C21	Competence in the job									A	A	V	A
C22	To be effective										A	A	V
C23	Meaning in the job											A	V
C24	Right to Choose												V
C25	Partnership with others												

Table 12 represents the achieved primary matrix access.

Table 12. Primary reach matrix (RM)

	C11	C12	C13	C14	C15	C16	C17	C21	C22	C23	C24	C25
C11	0	0	0	0	1	1	1	0	0	1	0	1
C12	1	0	1	1	1	0	0	0	1	0	0	0
C13	1	0	0	0	1	1	1	0	1	0	0	0
C14	0	0	1	0	1	0	0	1	0	0	1	1
C15	0	0	0	0	0	1	1	1	1	0	0	1
C16	0	1	1	0	1	0	1	0	0	0	0	0
C17	0	1	0	1	1	1	0	0	1	0	0	0
C21	1	1	1	0	0	1	1	0	0	0	1	0
C22	1	1	1	0	0	1	0	1	0	0	0	1
C23	0	1	1	1	1	1	1	1	1	0	0	1
C24	0	1	1	0	1	1	1	0	1	1	0	1
C25	0	1	1	0	0	1	1	1	0	0	0	0

Table 13. Final achievement matrix

		1	2	3	4	5	6	7	8	9	10	11	12
		C11	C12	C13	C14	C15	C16	C17	C21	C22	C23	C24	C25
1	C11	1	1	1	1	1	1	1	1	1	1	0	1
2	C12	1	1	1	1	1	1	1	1	1	1	1	1
3	C13	1	1	1	1	1	1	1	1	1	1	0	1
4	C14	1	1	1	1	1	1	1	1	1	1	1	1
5	C15	1	1	1	1	1	1	1	1	1	0	1	1
6	C16	1	1	1	1	1	1	1	1	1	0	0	1
7	C17	1	1	1	1	1	1	1	1	1	0	1	1
8	C21	1	1	1	1	1	1	1	1	1	1	1	1
9	C22	1	1	1	1	1	1	1	1	1	1	1	1
10	C23	1	1	1	1	1	1	1	1	1	1	1	1
11	C24	1	1	1	1	1	1	1	1	1	1	1	1
12	C25	1	1	1	1	1	1	1	1	1	0	1	1

Table 14. Determining the levels of variables

Variables	Set of inputs	Set of outputs	Common elements	Rating
First repetition				
1	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,12)	(1,2,3,4,5,6,7,8,9,10,12)	1
2	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	1
3	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,12)	(1,2,3,4,5,6,7,8,9,10,12)	1
4	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,11,12)	1
5	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	1
6	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,12)	(1,2,3,4,5,6,7,8,9,12)	1
7	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	1
8	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,12)	(1,2,3,4,5,6,7,8,9,10,12)	1
9	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,12)	(1,2,3,4,5,6,7,8,9,10,12)	1
10	(1,2,3,4,8,9,10,11)	(1,2,3,4,5,6,7,8,9,10,12)	(1,2,3,4,8,9,10,11)	
11	(2,4,5,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,10,12)	(2,4,5,7,8,9,10,11,12)	

12	(1,2,3,4,5,6,7,8,9,10,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	(1,2,3,4,5,6,7,8,9,11,12)	1
Second repetition				
10	(10,11)	(10)	(10)	2
11	(10,11)	(10)	(10)	2

The model is drawn based on the determined levels and final achievement matrix. The aforementioned factors can be drawn as a model after determining the relationships and level of the variables. To this aim, the variables are adjusted from top to bottom based on their level. The factors are placed in three levels here (Chen, Zhou, & Zhou, 2022).

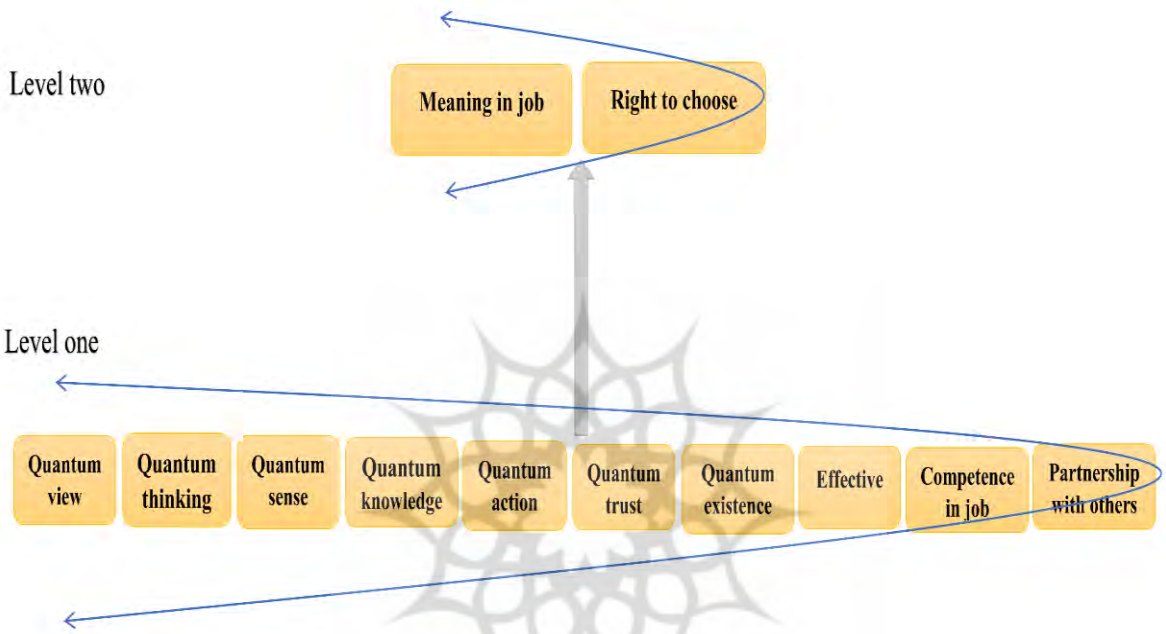

Figure. 3. Interpretive-structural model of quantum leadership and empowerment

As observed, the components of quantum leadership and empowerment exhibit a two-to-two relationship at each level and are considered as effective, indicating that the components of trust, feeling of influence and competence, seeing, thinking, feeling, knowing, action, trust, and quantum existence affect those of independence and sense of meaning directly. Further, the above-mentioned components are related to each other in pairs.

Discussion and Conclusion

The present study aims to explain the communication model of quantum leadership, productivity of personnel in the Ministry of Sport and Youth, and empowerment using interpretive-structural approach. Based on the first hypothesis, the aforementioned model benefits from three levels in the first level. A direct and significant relationship is observed between the components of quantum leadership and personnel productivity (Delmas & Pekovic, 2018). The above-mentioned variables are regarded as independent, their power of guidance and dependence is considered as weak, and exhibit a direct and significant relationship with other three components of productivity at the second level (Khan & Rahman, 2015). The aforementioned variables are regarded as connection ones with a high power of guidance and dependence. Such variables are considered as non-stationary since the ministry can influence sports and youth by necessary alterations, meaning that productivity can be increased in that organization when knowledge and work preparation,

motivation to perform work tasks, and feedback from the personnel in the Ministry of Sport and Youth are observed on time (Rasool et al., 2022). All of the above-mentioned components affect the organization support component at the third level. Organizations are indirectly related to each other. Organizational support in the studied organization simulates a car which does not move without a driver (El-Kassar, Dagher, Lythreatis, & Azakir, 2022). Productivity does not increase without communication with other dimensions. Thus, all of the identified indices such as motivating, gaining employee satisfaction, strengthening the morale of personnel, increasing trust between the leader and personnel, encouraging and authorizing, making the working environment and conditions easier, and regarding incentives, compatibility between the job needs of personnel, ideal capitals in organization, rank increase, as well as salary and wages of personnel should be considered for equipping organizational support in the Ministry of Sport and Youth. Based on the first level of the model, probably the senior managers in the Ministry of Sports and Youth can regard the aforementioned dimensions in an integrated and systematic method in order to move towards a single objective. The quantum leadership style in the above-mentioned organization and productivity of its personnel are affected due to cross-sectional attention, case, and non-targeted to each of the aforementioned dimensions. Such managers can strengthen their ability, insight, knowledge, and awareness to increase the productivity of their personnel in order to exhibit a positive effect on the future (Khan & Rahman, 2015). The above-mentioned managers can interact with the external environment such as competitors, sports organizations and administrations, and Olympic committees or even within the ministry, adapt to the conditions, become flexible, and influence their personnel utilizing using quantum leadership style (El-Kassar et al., 2022). Therefore, the senior managers in the Ministry of Sport and Youth who rely on their intuition and potential abilities of the personnel, which can make the manager trust the personnel more and more, should multiply their efforts and make the communication between the members sincerer and constructive in such conditions, resulting in improving and fostering a sense of comprehensiveness and unity among personnel, as well as increasing the productivity in the organization. The second hypothesis indicated that the aforementioned model exhibits two levels in the first level. A direct and significant relationship is reported between the components of personnel productivity and empowerment (Zafar, Ishaq, Shoukat, & Rizwan, 2014). The above-mentioned variables are considered as independent, their power of guidance and dependence is regarded as weak, and are related to each other. Further, four micro-components are observed in the second level without communication with each other and with others. Variables at the first level cannot increase productivity. In fact, sense of empowerment is created in different dimensions and the motivation to work increase, resulting in improving productivity in the Ministry of Sport and Youth when the personnel can influence what occurs with their activities, there is a prevailing situation in their work environment who feel a sense of personal control over the results of their work, and a sense of independence, meaningfulness of work, and trust is observed among colleagues (Kalogiannidis, 2021). In fact, the personnel valorize for the purpose or activity and are motivated work in the ministry when they feel independent and competent, resulting in increasing the productivity of the personnel and organization. In order for the personnel to bring their talents and abilities to the fore, they should be given the right to select to apply their abilities appropriately and eliminate the obstacles in the organization (Daley, 1986). Creating trust and mutual security in personnel, using talents and abilities optimally, increasing sense of belonging and adaptability, and providing health, vitality and individual and organizational support in personnel are among the main objectives in the Ministry of sport and Youth. Finally, the results of the third hypothesis indicated that the aforementioned model has two levels. A direct and significant relationship is reported between the components of quantum leadership and empowerment at the first level. Such variables are considered as autonomous and their power of guidance and dependence is regarded as weak. The above-mentioned variables are directly related to two other components of empowerment including independence and sense of meaning at the second level (Li & Zheng, 2014). Any type of alteration in the aforementioned variables can affect the organization. In other words, capable personnel can be trained in the organization when the independence or delegation of authority and the value of the career objectives of the personnel in the Ministry of Sport and Youth are observed on time.. The personnel in the Ministry of Sport and Youth develop higher levels of motivation and are motivated

to work harder in the organization when they feel their job is considered as critical and valuable compared to those who feel their job is regarded as less valuable. The personnel increase the capability of their organization when they benefit from more proficiency and necessary abilities to perform their jobs successfully in their organization (Webster, Greenbaum, Mawritz, & Reid, 2022). Senior managers in the Ministry of Sport and youth with a quantum leadership style should trust the abilities and skills of the personnel, consider their mental standards by presenting performance feedback and reducing formality in the organization, strengthen their sense of competence and effectiveness more than before with delegating authority to take measures to improve their sense of effectiveness. The results of this study are consistent with those of (Natrajan, Sanjeev, & Singh, 2019)), (Nazarzadeh, Nikpay, & Madandar Arani, 2021)), (Mezginezhad, Ayati, & Pourshafei, 2021)), (Safarzadeh & Naemi, 2020)), (Watson et al., 2018)),)Ahmadiyan et al., 2022(), (Chang & Liu, 2008)), (Yaghoobi, Moloudi, & Azadikhah, 2011)), (Tewari, Gujarathi, & Maduletty, 2019)), and (Solaja, Idowu, & James, 2016)) because they discussed and concluded about quantum leadership, personnel productivity, empowerment of personnel, and their dimensions. The results indicated that quantum leadership affected productivity and empowerment, and empowerment affected productivity, separately, which is in line with the results of this study. Based on the results, the senior managers in the Ministry of Sport and Youth should create conditions which help build trust, protect the interests of the organization, define the expectations and roles of personnel, as well as their participation in group decision, and give significance to teamwork in organization in the future. The activities in the Ministry of Sport and Youth should be planned in such a method that helps personnel feel effective and significant to understand their role in the organization and know that they are regarded as the main capital in their organization and the works cannot be conducted without their presence. In addition, senior managers should pay attention to personnel who dedicate their time to help their managers out of interest and friendship and use guidance of the consultant personnel to achieve their organization objectives. Senior managers should undertake special financial and job support for their personnel. The quantum leadership style gives the senior managers in the Ministry Sport and Youth the right to select personnel, their sincere participation in decision-making, acquiring new ideas and creativity from them about how to perform the tasks cause that they create motivation and sense of responsibility and most importantly increase productivity in the organization. Such managers can inform personnel of their performance in the organization by applying daily evaluation and monitoring criteria, which is considered as a basis for comparing the performance of personnel with each other and with organizational objectives (Jie, Yunfeng, & Wenhao, 2021). The managers can be informed about the result of their performance through monthly collaborative meetings in formal and informal methods. Such managers can use and encourage personnel commit to the organization to achieve organizational objectives and increase productivity (Hanaysha, 2016).

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