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## Effective Factors on the Productivity of Human Capital via an Interpretive Structural Modeling (Case Study: General Office of Sports and Youth in Khorasan Razavi)

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### A B S T R A C T

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The purpose of this study is to explore the effective factors on the productivity of human capital via an interpretive structural modeling (ISM) in General office of Sports and Youth in Khorasan Razavi Province. The present study is a qualitative research with an analytical nature and it is also an applied one that was conducted via interpretive structural modeling. Literature review, interviews and ISM questionnaires were used for data collection. The research population included professors and experts in sports management, managers, deputies and staff of the General office of Sports and Youth in Khorasan Razavi, of which 35 people were selected through purposeful sampling in three stages of this study. According to the research findings, 59 effective indicators were identified under seven major dimensions playing role in improving the productivity of human capital, which were classified into five levels. Motivational factors were, organizational culture and work environment, the relationship between managers and employees along with individual factors were, the quality of labor force, and finally the technology factor were identified under five levels of the model. Finally, it can be concluded that managers in sports organizations should pay special attention to the technology factor and its indicators, which have been identified as the foundation of improving employees' productivity, which then provides the ground for exploiting other dimensions at higher levels.

### Introduction

Today, productivity is considered as a culture of attitude towards work and life, and its development has led to expansion in various dimensions and is important in the promotion and development of the organization. This has led all societies to believe that the survival of any society is not possible

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without regard to productivity, IRAN is not separated from this norm and attention to productivity has a significant role in the development and progress of the country. The importance of productivity and the need to study it is not hidden from anyone due to the expansion of competition, technological complexity, diversity of tastes, lack of resources, speed of information exchange (Mehrabian & Hasanipour, 2017). According to Urszula, Tabor and Kocira (2015) from a managerial perspective, productivity expresses the success of a system in using of resources to achieve goals. Thus, productivity is related to the concepts of efficiency, effectiveness, profitability, quality, innovation, quality of working life and culture and, in fact, it is a combination of them. The main mission and goal of the managers of any organization, including sports organizations, is the effective and efficient use of the organization's resources and facilities such as labor force, capital, materials, energy and information. In this mission, the optimal use of human capital has a particular importance. In fact, if the labor force is productive, it can make good use of other resources and achieve all kinds of productivity and thus make the organization productive. But how to increase and enhance the productivity of human resources is an issue that has long been considered by experts in management and organization (Lotfiamchi et al, 2018).

Manpower productivity is one of the most important concerns of managers in today's organizations (Mehrabian & Hasanipour, 2017). Sports organizations, similar as other organizations, need employees who are at a high level of efficiency and effectiveness. The human capital development system in sports organizations should create new solutions to reform and improve labor force management, which has a positive relationship with manpower productivity (Awan & Saeed, 2015). Productivity of human resources is to obtain the maximum possible profit by utilizing and making optimal use of the power, talent and skills of human resources in order to achieve the goals of the organization (Latifian, 2014). Paying attention to manpower as the basis of production and provision of services in sports organizations is one of the basic strategies to increase the productivity of the organization. Productivity of human resources under the influence of various factors such as technical and professional ability and the power to do work, science, experience, education, motivation, material and physical needs, job security, salary, psychological needs, management method, employee training, participation and creativity. A report has been released by the Ministry of Labor in Japan, considers factors such as way of equipment and personnel deploy, labor force skills, organizational culture, and motivation to be effective in productive human resources. The International Labor Organization also reports the effective factors on the productivity of manpower, including the relationship between management and employees, social and psychological conditions of work (Latifian, 2014; Barbosa, 2017). Human resources play an important and strategic role in supporting organizations. Emphasis on manpower to improve performance in sports organizations has increased in recent years, because according to resource theory, organizations' manpower is the only scarce resource and competitors cannot easily imitate it. As a result, it creates a sustainable competitive advantage for the organization. Often the main reason that causes organizations to fail to achieve their goals is the lack of productivity of human resources (Arjmandini Nejad et al, 2017). According to Van Hoecke, Schoukens and De Knop (2013), sports organizations, because of the scope of their tasks and having customers with different demands, should be able to achieve their goals by adopting appropriate strategies that one of these strategies is to attract, retain and develop capable manpower. Perck, Van Hoecke, Westerbeek and Breesch (2016) also state that identifying the effective factors on the performance and behavior of manpower can lead to the formation of positive work behaviors in employees of sports organizations and eventually have a positive effect on the performance of these organizations.

Numerous studies on the factors affecting employee productivity have been conducted in Iran and the world through different techniques. The single goal of all these studies is to achieve appropriate specific priorities to each organization to improve the productivity of employees. In the internal research section, Khodabakhshzadeh, Amirzadeh Moradabadi, Khodabakhshzadeh and Bani Asadi (2015) stated in a study that among the effective factors on the productivity of manpower, those

related to leadership method, employee empowerment, individual, reward systems, organizational culture, environment and physical space, are the most important in the development and promotion of human resource productivity, respectively. Mehrabian and Hassanipour (2016) also introduced environmental conditions, leadership method, organizational culture, empowerment and motivational factors as the most important components of manpower productivity. They also stated that providing environmental conditions and appropriate facilities and mechanisms, establishing a work culture and empowering employees have a significant role in increasing the productivity of manpower. In another study, Arjmandinejad, Doaei, Yaghoubi and Roshana (2016) introduced the growth and development of human resources, organizational health, empowerment, structure and occupation, managerial laziness, Islamic values and organizational indifference as the effective factors on the human resource productivity. Also Motallebi Varkani, Sadegh, Alipour Darvish, Salehi Sedghiani and Mohammadi (2019) introduced such effective factors as, design and establishment of organizational environment, planning, recruitment and retention of manpower, management mechanisms, training mechanisms, welfare mechanisms on improving the productivity of human capital. Also, some researchers in their study specifically examined the effect of a factor on human resource productivity, including these factors can be referred to the organizational culture in the research of Alvani, Mohammadi and Mirzaei (2012) and Jalali Farahani, Fereydoni and Zafari (2017), University education in Shabani Bahar and Farid Fathi (2018), talent management in Lotfi Yamchi, Kalateh Safiri and Hosseini (2018) and delegated authority in Nazari and Ali-Panahian research (2015). In the field of foreign research, Haenisch (2012) in his research examined the effective factors on the productivity of government employees. Finally, the results showed that factors such as job appreciation, independence in work, teamwork, low supervision, proper management, budgeting and work-related education were considered as the most important factors affecting productivity of government employees. In another study, Gichuhi, Abaja and Ochieng (2013), entitled "The effect of performance assessment on employee productivity", concluded that performance assessment is effective on employee productivity. Banaszak-Holl, Castle, Lin, Shrivastwa, and Spreitzer (2015) found in their study that cultural values in the organization are important for employees, and that organizational culture and its characteristics are appropriate predictors of employee productivity. Olivier and Laurence (2015) in a study examined the role of education on manpower productivity and concluded that knowledge and learning opportunities are factors affecting manpower productivity. Also, Pang and Lu (2018) in their research entitled "organizational motivation", considered that job satisfaction of employees and organizational performance, factors of work environment and creating appropriate working conditions for employees are effective on employee productivity.

The General office of Sports and Youth are among the largest sports organizations in charge of sports in the country, which play an important role in promoting and developing sports. There is no denying the significant and influential role of the human resources working in this sports organization on the promotion and development of this organization. Alignment of employees working in these departments with their goals has an important role in advancing the goals of those organizations. In this regard, identifying the factors affecting the productivity of human capital is very important. The Youth and Sports Directorate in general and the General office of Sports and Youth of Khorasan Razavi Province in particular are no exception to this rule and in order to deal with environmental changes and achieve organizational goals, it needs to identify the effective factors on the productivity of its employees. Employee productivity is a function of different factors. These factors are different from other organizations according to the nature, mission and operations in each one and also the impact of each factor on employee productivity is not the same in each organization. Researchers and experts have pointed out some aspects of the employee productivity process, but it seems that a comprehensive model of the dimensions and indicators of employee productivity in sports organizations and the relationship between them has been less studied. Therefore, achieving an appropriate model for human resources productivity according to the nature of each organization requires identifying and prioritizing factors in terms of importance according to valid scientific methods. Therefore, the present study aims to identify and ranking the effective factors on the

productivity of human capital with an interpretive structural approach (ISM) which was conducted as a case study on the General office of Sports and Youth of Khorasan Razavi Province to provide operational guidelines to solve this problem. This method analyzes the relationship between indicators by analyzing the criteria at several different levels. The difference between the interpretive structural model and other methods of qualitative data analysis is that it is able to determine the relationship between indicators that are individually or in groups (Asadollahi et al, 2020). The effort of the present study to use the views of both academics and the executive is a subject that has added to its richness. Because executives are closely involved in the subject and are well acquainted with the shortages and defects, and on the other hand, academic experts can theoretically contribute to the validity of the research. For this reason, the main question of the research is, what strategies make the human capitals of the General office of Sports and Youth of Khorasan Razavi Province more productive? And which of these solutions is prioritized over the others? Undoubtedly, the General office of Sports and Youth in other provinces, sports delegations of Khorasan Razavi province and other provinces that seek the productivity of their human capital, can benefit from the results of this research.

### Methodology

The present research is applied in terms of nature and purpose. According to data collection, it is a qualitative one and in terms of data analysis method, it is descriptive-analytical, that has been done by interpretive structural modeling. The interpretive structural approach is an effective and efficient method for topics in which qualitative variables interact with each other at different levels of importance. By using of this technique, the relationships and dependencies between the qualitative variables of the problem can be discovered. This methodology examines the order and direction of complex relationships between the elements of a system, in other words, it is a tool by which the complexity between the elements can be overcome (Asadollahi et al., 2020). Data collection tools in this research were library studies, interviews and questionnaires. The population and statistical sample of the research in different sections, are as follows:

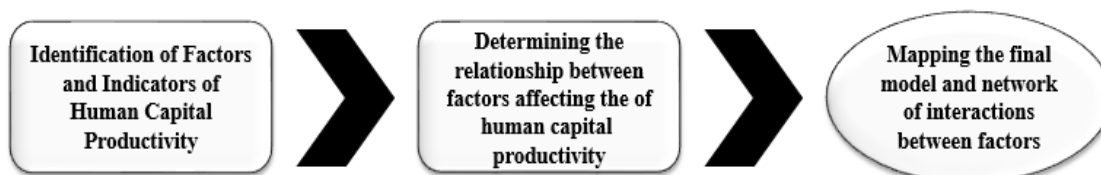
**Table 1.** The Research Population and Sample

Method	Research population	Research sample	Sampling method	Sample size
<b>interview</b>	All managers, deputies and staff of the General Directorate of Sports and Youth of Khorasan Razavi Province, professors and experts in the field of sports management, graduate students of sports management and researchers in the field of human resources	Managers, deputies and employees of the General Department of Sports and Youth of Khorasan Razavi Province	Purposeful sampling	<b>10</b>
<b>Delphi</b>		Employees of the General Department of Sports and Youth of Khorasan Razavi Province and professors and experts in the field of sports management	Purposeful sampling	<b>10</b>
<b>ISM</b>		Professors and experts in the field of sports management, graduate students of sports management and researchers in the field of human resources	Purposeful sampling	<b>15</b>

In the first step, by studying theories, models, approaches and the use of library resources, internet search and databases of reliable electronic journals, the effective factors on the productivity of human capitals were identified. At the next stage, a semi-structured interviews was conducted. The interviewees were asked to answer the questions based on the effective factors on the productivity of human capitals. At this stage, individuals were completely free to participate in the research and were

assured that their answers would remain confidential. Semi-structured and interactive-participatory method were exerted to conduct interviews and collect data. The number of interviews continued until the theoretical saturation was reached. Also, interviews with individuals were conducted in person and via meetings through virtual networks by using various applications (Email, Whatsapp, Telegram). Interview times ranged from 35 to 70 minutes. Finally, after the interviews, the information in the form of text was implemented and finalized. Then, a comprehensive list of the mentioned factors by the managers, deputies and employees of the Sports and Youth General office in Khorasan Razavi Province was identified, which was collected through the library studies and semi-structured interviews section. Based on that, semi-structured questionnaires of the first stage of delphi method were designed and participants in the study were asked to identify important dimensions and indicators affecting the productivity of human capital and also add other possible dimensions and indicators to the list. This step led to the identification of 67 indicators that these indicators were classified into a subset of 7 dimensions (factors) according to theoretical considerations. Then, according to the results of the preliminary questionnaire, the second stage questionnaire (Delphi) was designed based on five-point Likert scale to achieve a consensus of opinions on effective indicators. Questionnaire options include:

Very high (with a score of 5), high (with a score of 4), middle (with a score of 3), low (with a score of 2), very low (with a score of 1) and the research participants were asked to rate the indicators. Then, in order to combine the views and prioritize the final indicators in each dimension effective indicators were selected respectively according to their importance, through EXCEL software, arithmetic mean and geometric mean. That is, those indicators that scored higher than the arithmetic and geometric mean of the total questionnaire responses (for each subject) were selected, respectively, and a number of indicators that had an arithmetic or geometric mean lower than the total mean were removed from the process. The result of this step was the identification of 59 indicators in a subset of seven dimensions (factors). These dimensions and its indicators included technology (with eight indicators), quality of labor force (with 11 indicators), relationship between managers and employees (with 11 indicators), organizational culture (with six indicators), characteristics of work-environment (with six indicators), motivational factors (with 10 indicators) and individual's factors (with seven indicators). Following this step, the Interpretive Structural Process (ISM) was implemented. In this method, first, the way the factors relate to each other was determined and it was declared which factors lead to the other, which factors are affected by other factors, which factors are two-way communication and which ones are unrelated. Then, these scores were included in the table in the form of numbers zero and one, and in the next step, indirect correlations of factors were also included in the table. Finally, factor leveling was performed and the number of factor levels and factors of each level were determined and the final structural-interpretive model of the effective factors on the productivity of human capitals was obtained. It should be noted that among the statistical population of the study, 15 persons were purposefully considered as a research sample to answer the structural-interpretive questionnaire. Also, through Mic Mac analysis method, the diagram of penetration power and dependence of structural-interpretive components were determined.



**Figure 1.** Steps to Perform Interpretive Structural Method (ISM)

In order to determine the content validity of the questionnaire, the opinions of experts, club managers and university professors in the field of sports management were used and the validity of the questionnaire was confirmed.

## Findings

The demographic information of the participants in the study is as follows:

**Table 2.** Information on Demographic Characteristics

section	Gender		Education			Position				
	Male	Female	PhD	Master	Bachelor	Manager	Deputy	Employee	Professor	Student
interview	7	3	1	5	4	1	4	5	0	0
Delphi	6	4	2	5	3	0	2	8	0	0
ISM	10	5	9	5	0	0	0	0	8	7

As can be seen in Table 2, 23 of the participants in the study were men and 12 were female, of which 35% had a doctorate, 42% had a master's degree and 20% had a bachelor's degree.

### Step 1: Identifying the Effective Dimensions and Indicators on the Productivity of Human Resources of the General office of Sports and Youth of Khorasan Razavi Province

In this study, finally, with the collective agreement of the participants in the study, a total of 59 indicators were identified in a subset of 7 dimensions (Table 3). Dimensions include technology, labor force quality, relationship between managers and employees, organizational culture, work environment characteristics, motivational factors and factors related to the individual. It should be noted that each of the indicators, in order of their importance, describes the operational concept of each of the dimensions.

**Table 3.** Identification of Factors and Indicators of Human Capital Productivity

No	Dimensions of Productivity	Indicators of Productivity
1	Labor force quality	1- Existence of sincere and friendly atmosphere among employees, 2- Pre-service trainings, 3- In-service trainings for updating job information, 4- In-service trainings for getting acquainted with job duties and responsibilities, 5- Training Techniques for increasing the quality of services and improving expertise, 6- Employees' willingness to participate in organizational productivity improvement programs, 7- Positive attitude towards work and productivity, 8- Positive attitude towards persons 9- Helping colleagues and doing work in the form of team and group, 10- Paying attention to efficiency, 11- Maintaining physical health and proper nutrition of individuals.
2	Relationship between managers and employees	1- Applying correct and scientific management style, 2- Management department's attention to the problems and work life of employees, 3- Establishing friendly and intimate relations between the management department and employees, 4- Healing and documenting methods of work for employees, 5- Employee participation in decision making and planning of the organization, 6- Facilitating the understanding of the strategic goals of the organization for employees, 7- Attention and support of management in the field of participatory management, 8- Creating a correct management information system, 9- Informing employees about career goals and tasks 10- Creating a spirit of cooperation and problem-solving in the organization, 11- Increasing the level of employee support by managers.

3	<b>Organizational culture</b>	1- Creating a sense of positive competition among employees, 2- Commitment of employees, 3- Creating a spirit of innovation, 4- Creativity and innovation, 5- Working conscience of employees, 6- Creating discipline in the organization.
4	<b>Work environment characteristics</b>	1- Proportion of equipment to the job needs of employees, 2- Physical attractiveness of the workplace, 3- Creating appropriate conditions of working, 4- Hygiene of the workplace, 5- Ergonomics, 6- Accuracy in the order and sequence of departments that cooperate with each other in terms of work relationship.
5	<b>Technology</b>	1- Using mechanized system to do work, 2- Giving importance and using the power of innovation and creativity of employees, 3- Doing research to achieve cost reduction methods and inventing new ways of working with superior quality, 4- Access to high-speed internet without Definite, 5- Providing facilities at the right time, 6- Using better equipment and investing in this field, 7- Eliminating unnecessary work steps, 8- Proper use of technical equipment and technologies.
6	<b>Factors related to the individual</b>	1- Proportion of job with employees 'education, 2- Proportion of job with employees' skills, 3- Proportion of job with employees' talents and abilities, 4- Proportion of job with employees' experience, 5- Proportion of job with employees 'interest and attitude, 6- Proportion of job with employees' moral and personality characteristics 7- Choosing the right person for the right job and the right job for the right person.
7	<b>Motivational factors</b>	1- Feeling of justice and equality in comparison with other counterparts in the organization, 2- Paying cash rewards to employees, 3- Encouraging employees through non-cash and moral rewards, 4- Delegating authority and determining responsibility, 5- Paying based on employees' performance, 6- Paying attention to Social relations, 7- Opportunity for promotion based on employees' work competence, 8- Job development, 9- Job enrichment, 10- Appropriate system of encouragement and punishment.

In the continuation of the research, to determine the type of correlation between productivity factors of the staff of the General office of Sports and Youth of Khorasan Razavi, the second step of the interpretive structural modeling method has been used. At this stage, the relationship between the dimensions of employee productivity with the use of interpretive structural modeling and the use of the conceptual relationship "leads" is analyzed. That is, "two-by-two" comparisons are made by the subject in a table between the row dimension and the column dimension, and the result is written as symbols at the intersection of the row and column. If the row factor can be the foundation of the column factor, the symbol is V; if there is a two-way relationship between the row factor and the column, the symbol is X; if the column factor can be the base of the row factor, the symbol is A; and if there is no column, the symbol O is exerted in this conceptual relation.

### **Step 1: Formation of Structural Self-Interactive Matrix (SSIM)**

The structural self-interaction matrix consists of the productivity dimensions of the staff of the Youth and Sports General Department of Khorasan Razavi Province and their comparison using four modes of conceptual relationships. This matrix has been completed in the form of a questionnaire by the sports directors of the Youth and Sports General Department of Khorasan Razavi Province. The obtained information from the questionnaire was summarized based on the interpretive structural modeling method.

### Step 2: Determining the relationship between the effective factors on the productivity of human capitals of the Youth and Sports General Department of Khorasan RAZAVI Province

In order to perform this step, a questionnaire was designed that has the same shape as Table 2. In this way, the seven selected dimensions were mentioned in the first row and column of the table and the respondents were asked to specify the type of communication of the factors in pairs according to the introduced symbols (V, A, X, O). In this way, the most common answers (mode) were selected. In fact, the logic of interpretive structural modeling corresponds to non-parametric methods and operates on the basis of mode in frequencies. Finally, the final structural self-interaction matrix was formed based on the shown relationships in Table 4.

**Table 4.** Structural Self-Interaction Matrix of the Effective Factors on the Human Capitals Productivity of the General Office of Sports and Youth in Khorasan RAZAVI (ISM)

Dimensions	1	2	3	4	5	6	7
1		V	V	X	A	A	X
2			V	X	A	V	V
3				X	A	A	V
4					A	X	V
5						V	O
6							X
7							

### Step 2: Received Matrix

The resulting matrix is obtained by converting the structural self-interaction matrix into a two-value matrix (zero and one). To extract the received matrix, in each row the number one must replace the symbols X and V and the number zero must replace the symbols A and O in its structurally interactive matrix. After converting all the rows, the result is called the initial received matrix (Table 5):

**Table 5.** Primary Received Matrix of the Effective Factors on the Human Capitals Productivity of the General Office of Sports and Youth in Khorasan RAZAVI

Dimensions	1	2	3	4	5	6	7
1	1	1	1	1	0	0	0
2	0	1	1	1	0	1	1
3	0	0	1	1	0	0	0
4	1	0	1	1	0	1	1
5	1	1	1	1	1	0	0
6	1	0	1	1	1	1	1
7	1	0	0	0	0	1	1

After receiving the initial matrix, the secondary relationships between the existing dimensions were checked. That is, after the initial received matrix was obtained, its internal consistency was also examined. For example, if the variable "a" leads to the variable "b" and the variable "b" also leads to the variable "c", the variable "a" must also lead to the variable "c", and if this case was not in the



received matrix, the matrix must be modified and the relationships that exist directly between the dimensions but not mentioned in the table must be replaced. In this study, Boolean method was exploited to adapt the matrix. By identifying the secondary relationships, the modified received matrix was obtained. Then, the modified table was provided to the experts and with the consensus of the experts, the relationship between other dimensions of employee productivity and each other was examined and an indirect relationship between the dimensions was considered at this stage. The results are presented in Table 6. In Table 6, the penetration power column is obtained from the row sum and the dependency column (follower) is obtained from the column sum. In other words, although the column of influence and the dependency row are derived from the algebraic sum, each of the numbers (1) in the column of the table indicates the dependence of one dimension on the other dimension (Madhooshi & Hadi Taabar, 2018).

**Table 6.** Modified Received Matrix

<b>Dimensions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>Power of influence</b>
<b>1</b>	1	1	1	1	0	1*	1*	<b>6</b>
<b>2</b>	0	1	1	1	0	1	1	<b>5</b>
<b>3</b>	0	0	1	1	0	0	1*	<b>3</b>
<b>4</b>	1	1*	1	1	0	1	1	<b>6</b>
<b>5</b>	1	1	1	1	1	1*	0	<b>6</b>
<b>6</b>	1	1*	1	1	1	1	1	<b>7</b>
<b>7</b>	1	1*	0	0	0	1	1	<b>4</b>
<b>Degree of dependence</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>2</b>	<b>6</b>	<b>6</b>	

### **Third Stage: Determining the Relationships and Leveling the Effective Factors on the Productivity of Human Capitals of the General office of Sports and Youth in Khorasan RAZAVI**

In order to determine the relationships and level the dimensions, a set of outputs and a set of inputs must be extracted for each dimension of the received matrix. The set of outputs includes the dimension itself and the dimensions from which it is affected. The set of inputs includes the dimension itself and the set of dimensions that affect it. Then the set of two-way relations of each dimension is determined. That is, the number of dimensions that are repeated in the two sets of input and output. Dimensions are graded based on the resulting sets. Typically, dimensions that have the same output set and two-way relationship set constitute the top level dimensions of the hierarchy.

In other words, if the sharing of the output set and the input one (common set) are equal to the output set, it is at the highest level in the ISM hierarchy. Therefore, the dimensions of the upper surface will not be the source of any other dimension. Once the upper level is defined, it is separated from the other dimensions. Then the next levels are determined by an identical process (Madhooshi & Hadi Taabar, 2018). The results for the productivity dimensions of the staff of the General office of Sports and Youth in Khorasan RAZAVI are presented in Table 5. It should be noted that to prevent the table from lengthening, the dimensions are indicated by the numbers 1, 2, 3, 4, 5, 6, 7, respectively.

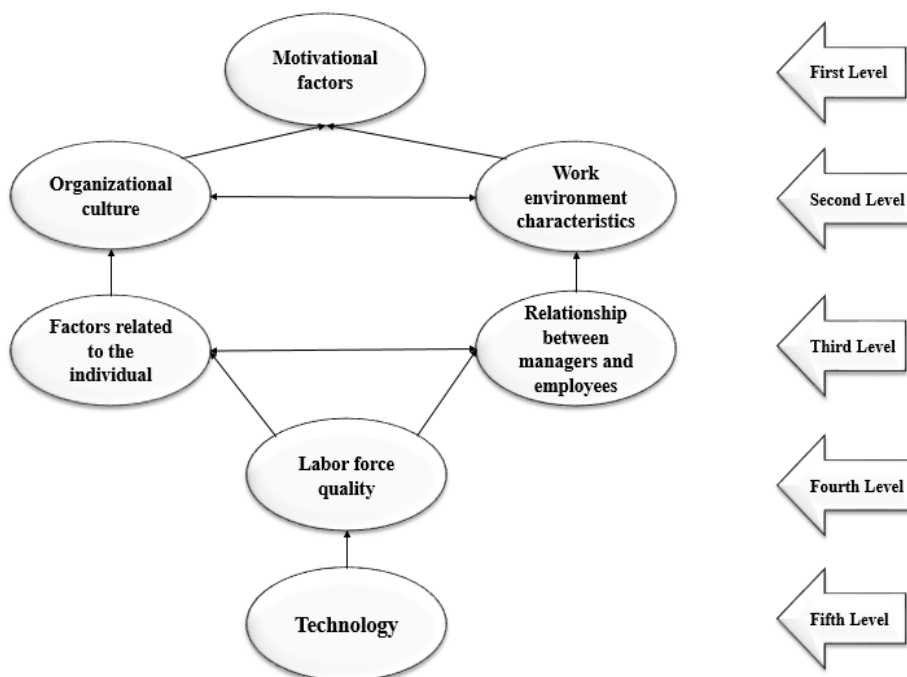
**Table 7.** Determining the Relationships and Levels of the Effective Factors on the Productivity of Human Capitals of the General Office of Sports and Youth in Khorasan RAZAVI

Dimensions	Input Set	Output Set	Common Set	Level
Labor force quality (1)	1,4,5,6,7	1, 2,3,4,6,7	1,4,6,7	Fourth
Relationship between managers and employees (2)	1,2,4,5,6,7	2,3,4,6,7	2,4,6,7	Third
Organizational culture (3)	1,2,3,4,5,6	3,4,7	3,4,7	Second
Work environment characteristics (4)	1,2,3,4,5,6	1,2,3,4,6,7	1,2,3,4,6	Second
Technology (5)	5,6	1,2,3,4,5,6	5,6	Fifth
Factors related to the individual (6)	1,2,4,5,6,7	1,2,3,4,5,6,7	1,2,4,5,6,7	Third
Motivational factors (7)	1,2,3,4,6,7	1,2,6,7	1,2,6,7	First

According to Table 7 and the leveling of factors, it was determined that the dimensions are in 5 levels; that motivational factors are at the first level; following the leveling of factors, organizational culture and work environment are at the second level; also, the relationship between managers and employees along with individual factors are at the third level; labor force quality is at the fourth level and finally, technology is at the fifth level of structural-interpretive model of the effective factors on the productivity of employees of the General office of Sports and Youth in Khorasan RAZAVI.

### **Step 3: Drawing the Model and Network of Interactions of the Effective factors on the Productivity of Human Capitals of the General office of Sports and Youth in Khorasan RAZAVI**

In order to draw a conceptual model of employees' productivity of the General office of Sports and Youth in Khorasan RAZAVI through the ISM model, the third step of the ISM method has been used. In this step, the network of interactions between the dimensions of the research can be plotted as a model. For this purpose, first, the dimensions according to their level were drawn from top to bottom, respectively, according to the data in Table 7 (determination of relationships and their level). As can be seen in Figure 2, the factors affecting the productivity of human capital of the General office of Sports and Youth in Khorasan RAZAVI are classified into five levels. In the ISM model, the interrelationships and influence between dimensions and the relationship of dimensions of different levels are visible.



**Figure 2.** Final Conceptual Model of the Effective Factors on the Human Capitals Productivity of the General Office of Sports and Youth in Khorasan RAZAVI (According to ISM Method)

As can be seen in Figure 2, at the first level, there are motivational factors. Strategies related to organizational culture and workplace characteristics are at the second level; at the third level, there are strategies related to communication between managers and employees and individual factors; at the fourth level, there are strategies related to the quality of the labor force, and finally, the strategies related to the technology sector in the organization are placed at the lowest (fifth) level of the model, which is the first priority compared to other dimensions and acts as the foundation stone of the model. As a result, the General office of Sports and Youth in Khorasan RAZAVI Province, in order to witness the greater productivity of its employees, must pay special attention to the field of technology to provide the emergence and realization of other factors at the top levels of the model.

In the next step, the competition analysis matrix was presented. The purpose of matrix analysis is to analyze the conductivity and dependency of the variables. The first cluster contains criteria that have powerless conductivity and dependence. These variables are almost separated from the system; because they have powerless connections to the system. Dependent variables are in the second cluster, which have low conductivity but high dependency. In the third cluster, there are linking criteria that have both strong leadership and dependency. These variables are non-static; Because, any change in them can affect the system (Khorsandifard et al., 2020).

**Table 8.** Total Achievement, Dependency Power and Dimensional Guidance

Factor	1	2	3	4	5	6	7
<b>Influence Power</b>	6	6	3	6	6	7	4
<b>Dependence Degree</b>	5	6	6	6	2	6	6

**Table 9.** Final Infiltration-Dependence Matrix using Mic Mac Method

Influence Power	8	Influence					Connective		
	7					6			
	6		5			1	4		
	5						2		
	4							7	
	3						3		
	2	Independent /Autonomous						Dependence	
	1								
		1	2	3	4	5	6	7	8

**Dependence Degree**

According to Tables 7 and 8 and in the final matrix of infiltration-dependence power through Mic Mac method, it is observed that technology (No. 5) is one of the infiltration factors and strategies related to labor force quality (No. 1), the relationship between managers and employees. (No. 2), workplace characteristics (No. 4) and individual factors (No. 6) are part of the linkage factors and organizational culture (No. 3) along with motivational factors (No. 7) are among the factors that are more dependent in this study than other ones.

**Discussion and Conclusion**

Productivity of human capitals follows various factors and these are different according to the mission, vision and goals in each organization and also the effect of each factor on employee productivity in each organization is different. Considering that the General office of Sports and Youth in each province is considered as the main custodian of the development and expansion of sports in that provinces in Iran and the existence of productive human capitals leads to the realization of the goals of this sports organization; therefore, the present study focuses on identifying and classifying the effective factors on the productivity of human capitals of the General office of Sports and Youth in Khorasan RAZAVI Province. According to the findings, the factors affecting the productivity of human capital were identified under seven factors: technology, labor force quality, relationship between managers and employees, organizational culture, work environment characteristics, motivational and individual factors. These findings are in line with the findings of Alvani et al. (2012), Khodabakhsh Zadeh et al. (2016), Nazari and Ali Panahian (2016), Mehrabian and Hassanipour (2017), Jalali Farahani et al. (2017), Lotfiyamchi et al. (2018), Arjmandi Nejad et al. (2017), Shabani Bahar and Farid Fathi (2018), Motalebi Varkani et al. (2019), Haenisch (2012), Gichuhi et al. (2013), Holl et al. (2015), Olivier and Laurence (2015) and Pang and Lu (2018) who concluded that organizational culture factors, environmental factors, individual and labor force skills, employee participation in decision making, managers' communication and support of employees, continuous employee feedback from the manager, motivational factors, employee training, delegation of authority by management, employee involvement, management and leadership method, advanced technologies and working environment conditions that affect the promotion and improvement of human capitals productivity.

Also, the results of the present study in the ISM model, demonstrates the interrelationships and

relationships of factors and the criteria at different levels, which leads to a better understanding of the decision-making in the field of HRM. This research has provided a new insight into the effective strategies on developing the productivity of human capitals. According to the main logic of the used method, which is a method for designing and analyzing systems, the factors had the greatest impact on other ones have been identified as the most important strategies. The first key result in this research is the graphical model extracted from the structural interpretive modeling method, which is shown in Figure 2. In this model, 7 factors (solutions) affecting the productivity of human capitals of the General office of Sports and Youth in Khorasan RAZAVI Province are leveled. As can be seen in Figure 2, technology strategies are the paramount ones. Following that, strategies related to labor force quality were identified as the most effective ones. Factors of strategies related to communication between managers and employees and individual factors are at the first level and organizational culture and characteristics of the work environment at the next level have been identified as intermediate strategies that have moderate effectiveness. Finally, motivational strategies were identified as the most effective ones. The relationships between the strategies, indicate the effectiveness for improving and creating the foundation for productive human capitals in the organization. In this section, technology strategies are at the lowest level that act as the foundation stone of the model. Therefore, to improve and to develop the productivity of human capitals organizations should start from this variable and generalize it to other variables. Based on this finding, it can be concluded that this graphic model can help managers to get an appropriate picture of the effective strategies on the productivity of human capitals and by focusing on the most key and influential factors, significant success can be achieved in this area.

The findings of the research introduced the dimension of technology as a fundamental and necessary factor that underlies the realization of higher level factors. In the researches of Faraji Marjanloo et al. (2017) and Kim (2001), the effect of technology on improving labor force productivity was found to be positive and significant. In today's fast-paced and complex world, there are new and sometimes complex needs and problems that can only be addressed by taking advantage of new technology approaches. Mechanization of work systems is one of the strategies through which both speed and accuracy in doing things can be achieved. The use of high-speed and noise-free internet is another solution that has been considered by many managers, and wherever a manager seeks to improve an organization, one of the first needed items, is to exploit the internet and to automate the administrative, financial and organizational system. The impact of the internet and the Web on improving employee performance cannot be overstated, and this phenomenon is an effective factor on employee productivity that every organization needs to improve productivity. Investing and spending for the provision of new equipment and facilities and preparing the necessary infrastructure and providing these facilities to employees in a timely manner and eliminating unnecessary work steps that waste money and energy of the organization, are other strategies that shape the productive manpower. According to the above explanations, technology factor is considered as a foundation for providing a platform for employee productivity, and many organizations consider technology development as one of the most important infrastructures of employees' productivity development.

In the continuation of the research findings, the factor of labor force quality was identified as the present factor at the fourth level of the ISM graph, which has the highest effectiveness and the least impressionability after other factors of technology compared to other ones of higher levels. The quality of labor force performance within organizations is a reflection of their knowledge, expertise, skills and values. One of the effective indicators on the quality of the labor force is providing an environment in which intimate and friendly relations are established between employees. This variable can play an important role in strengthening and raising the morale of employees in the workplace and it can also create a positive attitude towards work in their minds to the extent that they accept their work environment as their second home. The next significant indicator that has an impact on the quality of the labor force is employees training. The results of Shabani Bahar and Farid Fathi (2018) showed that the university education has a significant role in the productivity of the employees in the Youth and Sports Ministry. Also, Olivier and Laurence (2015) in their research introduced

knowledge and learning opportunities as effective factors on the productivity of manpower. Pre-service and in-service training courses should be considered as a basic strategy in this field, because training leads to updating of employees' information, employees' familiarity with job duties and responsibilities, employees' familiarity with techniques to increase job quality and improving specialties. Involving employees in decision-making is also one of the other strategies that confirm the emergence of productive human resources. Helping each other and doing things as a team are another indicator of employee productivity. Haenisch (2012) considered teamwork as one of the most important factors affecting productivity. Paying attention to the efficiency of employees, maintaining the physical health and proper nutrition of employees are other effective factors in making employees productive.

Relationship between managers and employees as well as individual factors were identified to be at the third level in the research model, organizational culture along with workplace characteristics were at the second level, and finally motivational factors were at the first level of ISM graph. The relationship between managers and employees as one of the areas of internal communication in organizations has a very important role in improving the productivity of human capitals. Utilizing the correct leadership and management method based on scientific principles, paying attention to the problems and working life of the employees, establishing intimate and friendly relations with the employees, clarifying and revealing work methods along with providing relevant documents to employees, involving employees in organizational decisions and planning, clarifying and concretizing the strategic goals of the organization for employees to better understand their mission, utilizing and manipulation of participatory management, implementing a correct and practical management information system (MIS), creating a spirit of cooperation and teamwork to solve problems as well as immediate and comprehensive management support of employees are all effective indicators and factors that should be considered in the relationship between managers and employees. Khodabakhsh Zadeh et al. (2016) considered the factors related to management method and leadership style to be the most important factor relevant to employees' productivity. For any manager who seeks to improve the productivity of the organization's employees, it is necessary to develop programs to improve communication between managers and employees to obtain the improvement of their labor force productivity and consequently the development of the organization. Individual factors are other effective factors identified in the present study. The congruity between the job and employee is very important in order to make better use of the talent, education, abilities and skills of manpower. Sangi et al. (2017) considered the congruity between job and employee as the cause of improving employee productivity. Ahaki et al. (2011) also stated in their research that there is a positive and significant relationship between the appropriateness of the field of study with the field of work and the level of employee productivity. The incongruity between person and job can have many costs for the organization. Employees differ in terms of talent, interests, education, personality, abilities, attitudes, experiences and other characteristics. Faraji et al. (2018) stated that managers of youth and sports directorate should pay attention to the specific personality traits of employees, in order to increase employee productivity. Success in doing things requires special abilities and talents and careful and regular planning to guide the career of individuals, leads to productivity and success of employees. When there is a congruity between the job and the employee, the employee feels satisfied, motivated to work, and in addition, due to having the required expertise, the relevant job has high efficiency and effectiveness and leads to the overall productivity of the organization.

Organizational culture was also identified as an influential factor on employees' productivity. Michaela et al. (2015) and Min et al. (2015) revealed that organizational culture and its indicators are effective on increasing the productivity of human resources in the Youth and Sports directorate. Alvani et al. (2012) also stated in their research that there is a positive and significant relationship between organizational culture and human resource productivity. Numerous components of organizational culture such as creating a positive and healthy competitive environment among employees, creating and cultivating a sense of commitment in employees, providing conditions for

creating and fostering a spirit of innovation and creativity among employees and setting rules and regulations for making discipline in the organization affects the improvement and enhancement of employee productivity. Fa'al et al. (2017) stated that organizational commitment of employees, which is one of the indicators of organizational culture, can affect employees' productivity in a sports organization. Also, the results of Saha and Kumar (2018) showed that the effect of employees' emotional commitment on their productivity is moderated by supportive and innovative organizational cultures. Noruz Seyed Hosseini et al. (2017) also stated that attracting and retaining employees in line with organizational goals in sports departments can help the empowerment of employees, as a result, the empowerment of employees will increase organizational effectiveness. Then, the characteristics of the work environment were identified as an effective factor on improving employee productivity at the first level of the model. The results of Pang and Lu (2018) show that the work environment and appropriate working conditions have a positive effect on employee productivity. Deployment of equipment, tools and machinery of the organization and the way persons are placed in the organization can affect how employees do the work of the organization. In order to equip the work environment, it is necessary to meet all the identified indicators of the work environment, such as the suitability of the equipment with the job needs of the employees, physical attractiveness and hygiene of the workplace, creating appropriate working conditions and accuracy in arranging and sequencing parts and sections that they cooperate together in terms of working relationship. For this purpose, the recommendations of human factor engineering or ergonomics can be used. In order to improve the productivity of the employees of the organizations, it is necessary to take any action to create a suitable work environment according to the principle of individual differences and the type of job in terms of complexity and simplicity of work and duties; because human resources show different reactions to stimuli and harsh work environment factors based on motivations, attitudes, psychological and personality characteristics. Employees' participation in equipping and arranging the work environment according to the preference and superiority of personal taste also has a great impact on their satisfaction and consequently their productivity.

Finally, motivational factors which is at the first level of the derived model from the ISM method, were identified as the last factor affecting the productivity of human capitals. Motivational factors has the most impressionability and the least effectiveness on other factors. Motivated employees are able to strive to achieve the goals of the organization, reduce costs and use resources properly. Allahwardi, Farahabadi and Sajjadi (2011) stated that the implementation of incentive programs, job enrichment, and delegation can be effective on increasing the productivity of human resources. Yousaf, Young, and Sanders (2015) also stated that manpower can be efficient and effective if it has the right motivation and spirit. Establishing justice and equality, is one of the motivational indicators. Social justice in organizations makes the environment of the organization tolerable, brings everyone to their right, put everyone is in its place, help everyone grow. Therefore, their high motivation coefficient and the degree of personal and organizational growth and improvement reach their peak. Paying cash and non-cash rewards to employees, is another motivational indicator. Sepahvand and Feli (2019) stated that social capital-based reward, market-based reward and position-based reward have a positive effect on human resources productivity. Employees want to receive a variety of rewards related to their performance, which can be in the form of tangible or intangible and spiritual rewards. Rewards, no matter how small, have a positive effect on employee performance. The next motivational indicator is the delegation of authority and responsibilities to employees. Delegating authority and responsibilities is an effective way to develop employee skills that consequently improves employee productivity. Nazari and Ali Panahian (2016) stated that senior managers of sports organizations should increase the feeling of effectiveness and self-confidence in employees by giving them the right choices and providing appropriate conditions in various decision-making opportunities. Another indicator is the payment of salaries and benefits based on employee performance; in other words, employees should feel the amount of paid salary as relevant and fair to their work. Another important issue in motivating employees to provide better work is the methods of career and organizational promotion. Promotions should be based on the abilities and competencies

of the employees. It is important that in each job stage, abilities and competencies are properly measured and ways of their progress are examined and followed.

Finally, it can be concluded that many factors are involved in the productivity of human capital that the impact of each of these factors and indicators varies from one organization to another. In the present study, technology and labor force quality factors were identified as the most influential elements that should be prioritized over other higher level factors. Automation of all organizational departments, employees' access to high-speed internet, use of new and up-to-date computers and tools, elimination of additional work steps, consideration of cross-sectional training for employees, attention to employees' physical and mental health with cross-sectional check-ups, ceremonies and cross-sectional celebrations to honor exemplary employees and holding camp and entertainment programs for employees and their families are some of the suggestions that can be recommended according to the research results. Finally, it is hoped that the effective factors on the productivity of human resources in the organization should be applied to all levels of management, especially for managers who are responsible for managing the future of a large number of human resources. Discovering the components affecting the productivity of human resources in the organizational context can be a step towards new models that help to study the necessary behaviors for enhancing meritocracy, elitism and substitution, especially in the general departments of sports and youth in different provinces.

Undoubtedly, there are limitations and problems in conducting any research that overshadow the generalizability of the results. The research method, research population and the statistical sample, can be some cases of the research limitation. Using other quantitative or qualitative methods and using the participants of the other stakeholders may leads to different results. Therefore, addressing research questions via other methods and among other stakeholders is recommended. It should also be noted that only seven effective factors on the productivity of human capitals have been identified in this study, while there may be other effective and key factors that can be explored in the future studies. In addition, the results of this study are highly dependent on the opinions of experts, and different findings may be possible by studying other different samples. Another limitation of the present study is that the obtained data have been collected in Khorasan RAZAVI province and the findings of the present study should be generalized with caution. The presented models in this study have not been statistically studied and analyzed, so the study and analysis of relationships and interaction between these factors through structural equation modeling and path analysis is suggested. Conducting this research in other provinces as well as sports federations is also recommended.

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