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Identifying the Human Capital Dimensions and Components in the Iranian Education System to Provide a Model

Mashalah Azizi [1], Naghi Kamali [2*], Rasoul Davoudi [3]

1. PhD Student, Department of Educational Management, Zanjan Branch, Islamic Azad University, Zanjan, Iran.
2. Assistant Professor, Department of Educational Sciences, Faculty of Educational Sciences and Psychology, Zanjan Branch, Islamic Azad University, Zanjan, Iran.
3. Assistant Professor Assistant Professor, Department of Educational Sciences, Faculty of Educational Sciences and Psychology, Zanjan Branch, Islamic Azad University, Zanjan, Iran.

Purpose: The aim of this study was to identify the dimensions and components of human capital in the Iranian education system in order to provide a model for it.

Methodology: The present study was applied research in terms of purpose and mixed (qualitative/quantitative) research in terms of implementation method. In the qualitative section, the participants included 15 university experts from Zanjan in the academic year 2019-20, selected by purposive sampling. In the next part of the study, the statistical population consisted of 1029 high school principals in Zanjan in the academic year 2019-20. The sample size was determined 292 principals based on Morgan table and was selected by simple random sampling. Data were collected through a questionnaire obtained based on qualitative findings, the validity of which was confirmed by professors and the reliability of which was calculated to be 0.81 through Cronbach's alpha test. To analyze the data in the qualitative part, the researchers used the thematic analysis method, the validity of which was confirmed by experts and the reliability of which was obtained as the coding agreement coefficient (0.86). To analyze the quantitative part, the researchers used content analysis method and confirmatory factor analysis and structural modeling with Amos24 for the quantitative part analysis.

Findings: The results demonstrated that HC had 5 dimensions and 20 components, namely skill (5 components), knowledge (4 components), ethics (4 components), mental health (4 components) and sociocultural (3 components), as well as 70 indicators (P <0/05). The results of confirmatory factor analysis showed that the measurement models have a good fit. The RMSEA value was less than 0/08, the GFI, AGFI and NFI values were greater than 0.9 and the indices (PNFI and PCFI) were greater than 0/5 The results of structural equations also showed that all dimensions had a direct and positive effect on human capital (P <0/05).

Conclusion: Planners and practitioners of the education system can use the results of this research at two levels of study time of human resources in universities, especially Farhangian University for the growth and excellence of human capital and during service to maintain them in the education system.

* Corresponding Author Email: naghikamali1400@gmail.com

1. Introduction

Capitals of any country are the main foundations of its growth and development. In the past, economic capital was more important, but with the changes in the global system and the dominance of human-centered theories based on human resource management, intellectual and human capitals have been more important to organizations (Diebolt & Hippe, 2018). Human capital is considered as the basis of sustainable competitive advantage in organizations (Hamadamin & Atan, 2019) and strategic management of human resources plays a significant role in organizational effectiveness and success (Bailey & etal, 2018). Researchers believe that human capital has a fundamental role for the overall development of society and especially economic growth. For example, the results of studies show that paying attention to human capital leads to economic growth (Pelinescu, 2015). Therefore, human capital is considered as one of the main components of economic growth and cultural and social development of societies (Akbar Mousavi, Haghighat & Salmani Bishak, 2015).

Researchers have provided several definitions of human capital. As the founder of human capital theory, Becker (1964) believed that human capital leads to increased employee productivity (Quoted from Diebolt & Hippe, 2018). Schultz (1972) also pointed out that human capital is a collection of knowledge, abilities and motivations that are a source of future income and pleasure. He argued that investing in a person means investing in education, health care and science (Quoted from Kuzmin & ETAL, 2020). According to Bontis (2002), human capital is a set of knowledge, ability and experiences of an organization's employees, which is temporarily and short-term at the organization's disposal during office hours (Quoted from Dahash & Al-Dirawi, 2018). In general, there are several general views about human capital. In the first perspective, attention has been paid to the unique aspects of people. In this perspective, human capital is dependent on the assets and capabilities of human resources. Schultz (1981) believed that innate and acquired skills are important for the development of human capital (quoted from Alika & Aibieyi, 2014). The second perspective emphasizes human capital trends. In this view, knowledge and skill are two key elements, and the importance of these two issues is considered during educational activities such as formal education and technical and professional skills. The third perspective has a human capital-oriented production perspective and considers human capital to be a combination of factors such as education, experience, education level, intelligence, energy, work habits and individual initiative (Marginson, 2019).

Kazemi & etal (2019) concluded in a research that the cognitive components of human capital (knowledge, information and skills) have the power to predict the performance of human resources. Ezoji & etal (2018) concluded in a research that the components of human capital (education, health and experience) have a significant effect on labor productivity. Soltani Asl (2014) concluded in a research that human capital plays an essential role in the knowledge process and knowledge-based organization and is the most important competitive advantage of the organization and the rarest resource in today's knowledge-based economy. Diaz-Fernandez & etal (2016) found in a research that human capital has an effect on organizational learning. Movahedi & et al (2015) found in a research that access to knowledge is the most important component of human capital. In a research, Lendzion (2015) concluded that organizations with higher intellectual capital have more capabilities in the fields of absorbing, using, maintaining and transferring knowledge.

The educational systems of each country are formed based on its values and culture. According to different values and cultures, human capital can have different components and indicators. Also, one of the important challenges of Iran's education system is related to human resources management, and the evidence of this is the annual withdrawal of some human resources from education, lack of motivation and lack of proper use of their capacities, which is a management challenge in It is considered the field of human capital management, and without any doubt, the first step in the proper use of human capital is to know the components and indicators that are effective in it. The innovation of the current research is that it has been tried to reach more depth on the issue of human capital by using both qualitative and quantitative methods, something that was done mostly with one method in the previous research and created a research gap. Also, most of the previous studies dealt with the effect of the human capital variable on other variables, and the identification of the components of human capital has received less attention. Therefore, the main goal of the current research is

to identify the dimensions and components of human capital in the education system in order to provide a model.

2. Methodology

The current research was an applied research in terms of its purpose, and an integrated research (qualitative/quantitative) in terms of its execution method. In the qualitative part, the participants included 15 university experts from Zanjan city in the academic year 2018-2019. The criterion of the adequacy of the sample size was determined by the rule of theoretical saturation. In this way, based on the resume of the selected sample, people who meet criteria such as relevance of the field of study (social sciences, educational sciences and educational management), relevant resume (at least one or two articles on human capital), faculty member and at least 5 years of teaching experience. They were selected if they had a desire to participate in education and research. The exit criterion was the completion of the interview. The statistical population of the quantitative part also included all principals and vice-principals of secondary schools (1st and 2nd) in Zanjan city in the academic year 2018-2019 in the number of 1029 people, based on the table of Karjesi and Morgan, there were 292 people as the sample size and by simple random sampling method. were chosen. Since each school has a principal and several vice-principals, therefore, in order to reach the desired sample size, every secondary school that was identified was randomly selected. The criteria for entering the research included having a history of being a school administrator and vice president, and the desire to complete the questionnaire, and the exit criteria included completing the questionnaire and sending it to the researcher.

The method of conducting the qualitative part of the research was as follows: first, based on the previous arrangements, the participant was referred to the interview location (university area) where the interviewee could easily answer the questions. At the beginning of the interview, the main purpose of the research was explained to each expert, and then questions were asked. The interview questions were asked without any time limit or order, and the interview time was between 50 and 65 minutes according to the speaking power of the participant and other factors. The important interview questions were: What is your definition of human capital? What are the challenges of human capital in education? What are the important components and indicators of human capital in education from your point of view? How to improve human capital? What is the role of education in creating human capital? How to prevent the departure of human resources specialized in education? After each interview, all sentences were analyzed and related concepts were identified. In the quantitative part, while explaining the main purpose of the research in the questionnaire, managers were assured that the results of the questionnaire are related to research work and the results are confidential, and if the respondent did not want to complete the questionnaire at any stage of the questionnaire, he could do so freely. get out of it It should be noted that some of the respondents wanted to receive the questionnaire by e-mail due to the corona virus epidemic that was sent to them.

The research tool in the qualitative part was semi-structured interviews, and some questions were adjusted during the interviews as needed. In order to validate the data, the viewpoints of the participants inside and outside the research were used, so that all the results along with the coding steps were provided to 3 professors outside the research and 2 participants in the research, and some of their points were applied while criticizing. Coding agreement coefficient method was also used for reliability. 3 interviews were randomly selected and the researcher coded the interviews again with the coder outside the research, and the coding agreement coefficient was 0.92. In the quantitative part, the research tool was a questionnaire made by the researcher based on the results of the qualitative findings of the first part and based on the Likert scale as very high (5), high (4), medium (3), low (2) and very low (1).) it was examined. The validity of the tool was calculated by experts' point of view and its reliability was calculated by Cronbach's alpha test, which was 0.79, 0.81, 0.82, 0.81, and 80. 0 was obtained and the value of the entire questionnaire was 0.81.

For data analysis in the qualitative part, thematic analysis method was used, and for the quantitative part analysis, structural equation modeling-confirmatory factor analysis was used in Spss26 and Amos24 software.

3. Findings

The characteristics of the statistical population were presented in the qualitative and quantitative section in Table (1).

Table 1. Some characteristics of the participants in the research

years of service (years)			Science ranking			Age					gender		Variable	Method type
21 to 30	11 to 20	5 to 10	Professor	Associate Professor	Assistant Professor	More than 50	46 to 50	41 to 45	36 to 40	30 to 35	female	male		
6	5	4	4	6	5	2	3	4	3	3	5	10	Frequency	Qualitative section
40	33	27	27	40	33	13	20	27	20	20	33	67	Percentage	
years of service (years)			education			Age					gender		Variable	Quantitative part
21 to 30	11 to 20	1 to 10	P.H.D	senior	Masters	More than 50	46 to 50	41 to 45	36 to 40	30 to 35	female	male		
72	126	94	33	107	152	13	61	83	69	66	94	198	Frequency	
25	43	32	11	37	52	4	21	29	24	22	32	68	Percentage	

The findings of the table showed that 0.67 participants were male in the qualitative section. The age group of 41 to 45 years had the highest percentage, in terms of scientific rank, the rank of associate professor was the highest percentage and years of service between 21 and 30 years were more than other groups. In the quantitative section, 0.68 male respondents and the age group of 36 to 40 years had the highest percentage. Most of the educational qualifications related to bachelor's degree and the years of service of the 11-20 years group were more than other groups.

Table (2) shows the dimensions and components of human capital.

Table 2. Components and dimensions of human capital

concepts	Components of human capital	Dimensions of human capital
Familiarity with internal rules	1. Organizational skills	
The skill of optimal and efficient use of the rules of the organization	2. Knowledge transfer	
Ability to transfer knowledge	3. Intellectual innovation	skill
The ability to apply knowledge in work matters	4. Ability to solve problems	
Providing new solutions	5. Criticism skill	
Solving challenges with collective ideas	6. Organizational learning	
Organization dynamism through innovation	7. Continuous learning	
Identifying the time to intervene in the problems of the organization	8. Scientific competence	knowledge
Solving organizational challenges with a root cause approach	9. Sharing knowledge and information	
Welcome fair reviews	10. Moral responsibility	moral

Supporting mutual criticism	11. Organizational loyalty
Focus on the criticisms made	12. Avoiding extravagance
Participation in professional meetings of the organization	13. Honesty in behavior and speech
Desire to learn issues within the organization	14. Resilience
Desire to learn external issues related to the organization	15. Cognitive ability mental health
Trying to combine work and learning	16. Desire to progress
Strive for individual learning daily	17. Positive thinking
Continuous professional development	18. Cultural capital
Prove your knowledge clearly	19. Social communication Sociocultural
Support specialized ways	20. Social capital

The findings of Table (2) showed that from the experts' point of view, human capital has 5 dimensions (skill, knowledge, moral, mental health and socio-cultural) and 20 components.In Table (3), the results of descriptive indices, correlation coefficient and normality of research variables were presented.

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	Sig	Shapiro-Wilks	standard deviation	Average	Variable
	0.26	0.93	0.86	3.33	a skill
	0.15	0.82	0.86	12.3	knowledge
	0.14	0.81	0.88	19.3	moral
	0.24	0.91	0.83	22.3	mental health
	0.12	0.87	0.91	14.3	Sociocultural
Sociocultural	mental health	moral	knowledge	skill	The correlation matrix
				1	skill
			1	**0.82	knowledge
		1	**0.66	**0.58	moral
	1	**0.64	*0.66	**0.57	mental health
1	**0.51	**0.71	**0.55	**0.69	Sociocultural
0.42**	**0.53	**0.61	**0.75	**0.68	Total human capital

**: significance at the error level of 0.01 *: significance at the error level of 0.05

The findings in table (2) show that the assumption of normality was established based on the Shapiro-Wilks test ($p<0.05$). Also, there is a correlation between dimensions of human capital ($p<0.05$). Therefore, structural equation modeling method can be used to fit the conceptual model.

The results of composite reliability (CR), average variance extracted (AVE) and Cronbach's alpha are presented in Table (3).

Table 3. Factor loadings and construct validity and reliability indices

Cronbach's alpha	CR	AVE	R2	Significance level	factor load	variable/ component
0.794	0.888	0.614	0.41	-	-	a skill
			0.56	0.001	0.75	Organizational skills
			0.52	0.001	0.72	Ability to transfer knowledge
			0.72	0.001	0.85	Intellectual innovation
			0.69	0.001	0.83	Ability to solve problems
			0.58	0.001	0.76	Criticism skill
0.819	0.860	0.607	0.50	-	-	knowledge
			0.55	0.001	0.74	Organizational Learning
			0.69	0.001	0.83	Continuous learning
			0.67	0.001	0.82	Scientific merit
			0.52	0.001	0.72	Sharing knowledge and information
0.825	0.872	0.631	0.31	-	-	moral
			0.74	0.001	0.86	Moral responsibility
			0.69	0.001	0.83	Organizational loyalty
			0.56	0.001	0.75	Avoid extravagance
			0.53	0.001	0.73	Honesty in behavior and speech
0.810	0.833	0.556	0.19	-	-	mental health
			0.52	0.001	0.72	Resilience
			0.56	0.001	0.75	cognitive ability
			0.61	0.001	0.78	Desire to progress
			0.53	0.001	0.73	Thinking positive
0.808	0.814	0.594	0.14	-		Sociocultural
			0.66	0.001	0.81	Cultural capital
			0.55	0.001	0.74	social relations
			0.58	0.001	0.76	Social capital

The results of table (3) show that the factor loading of all components is greater than 0.7. Also, the value of index (AVE) is greater than 0.5 and index (CR) is greater than 0.6, and Cronbach's alpha value of all three constructs is greater than 0.7.

Table 4. Appropriateness indices of the research model

AGFI	GFI	IFI	TLI	CFI	RMSEA	χ 2/df	Fitness indicators
0.904	0.929	0.951	0.933	0.916	0.030	42/1	Reported value
>0.8	>0.9	>0.9	>0.9	>0.9	<0.08	Below 3	Acceptable value

The fit indices in Table (4) show that all the indices were at the optimal level, so the structural model of the research was confirmed. Figure (1) also presents the fitted structural model.
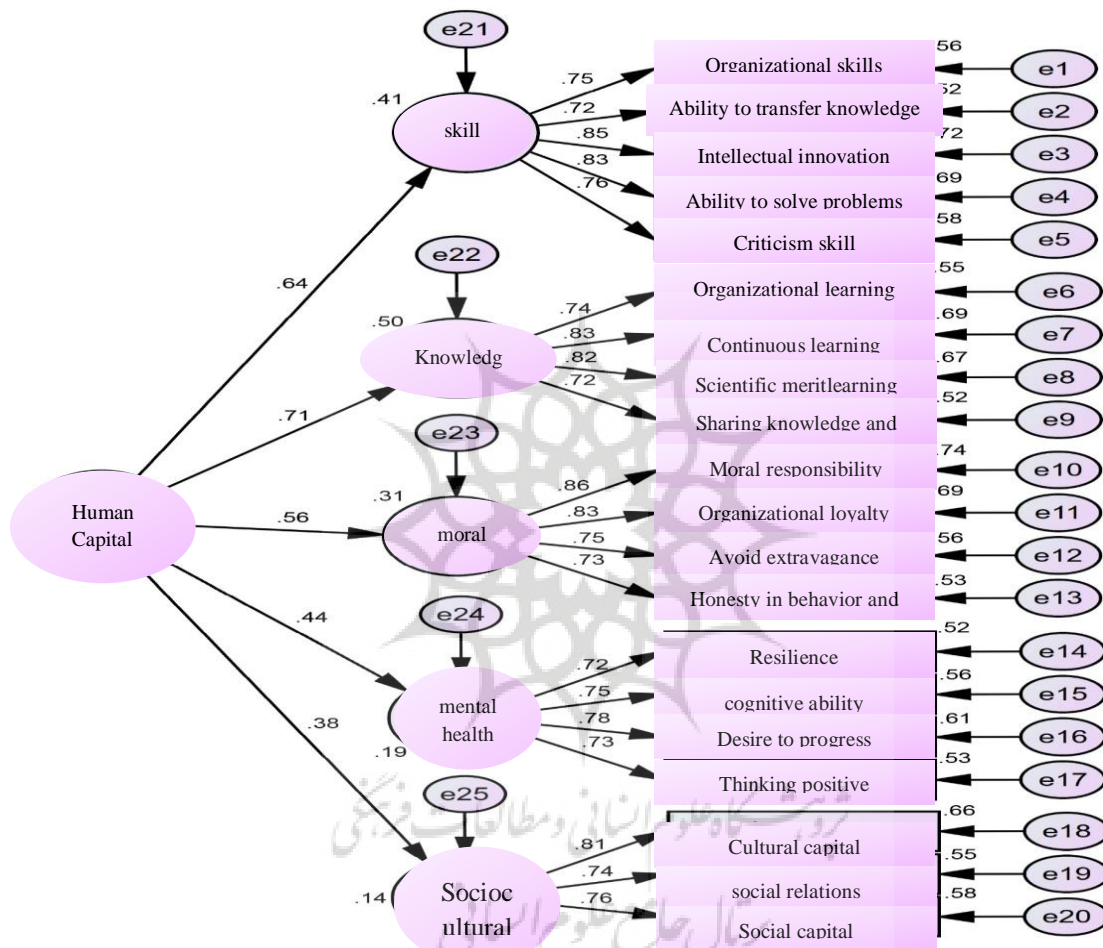
Figure 2. The fitted structural model of human capital

The findings in the structural model (Figure 2) show that the factor loading of the components in all dimensions is more than 0.7, which shows that the components explain the dimensions well. In table (5), the significance of the path coefficient and the significance level of the main variables are reported.

Table 5. Significance of path coefficient

Significance level	t statistic	Path coefficient	The effects
0.001	7.69	0.64	The effect of skill dimension on human capital
0.001	8.34	0.71	The effect of knowledge dimension on human capital

0.001	6.81	0.56	The effect of moral dimension on human capital
0.001	5.61	0.44	The effect of mental health dimension on human capital
0.001	5.07	0.38	The effect of social/cultural dimension on human capital

The findings showed that knowledge (0.71), skill (0.64), moral (0.56), mental health (0.44) and socio-cultural (0.38) dimensions had the most effect in measuring human capital.

4. Conclusion

One of the most important systems related to human capital is the education system. Because its main function is to create human capital based on knowledge and skills, etc. for other parts of the society. Therefore, knowing as much as possible the components and indicators affecting human capital can lead to the management of human resources interest. The purpose of this research was to identify the dimensions and components of human capital in Iran's education system in order to provide a model.

The findings showed that from the experts' point of view, human capital had 5 dimensions (skill, knowledge, moral, mental health and socio-cultural) and 20 components.) Was. This finding was consistent with the results of Kazemi & etal (2019) and Soltani Asl (2014) studies. In this case, it can be said that one of the most important dimensions of human capital was the skill dimension. Skills have a wide range. Organizational skill allows human capitals to understand organizational rules and restrictions and be compatible with their organization. The component of knowledge transfer is also a kind of skill in transferring knowledge to other colleagues and especially students. Another component of the skill dimension was problem solving skills. This component is very important in the education system. Because the education system deals with a lot of human capital, and on the other hand, there are many challenges in education that human capital should be able to solve. The creditability component was also one of the most important components of the skill dimension. Criticism can provide a context for human resources to express their criticisms and opinions with superiors, and this can lead to favorable results in the education system.

Another dimension of human capital was the knowledge dimension (with organizational learning, continuous learning, scientific competence and knowledge and information sharing). In the studies of Kazemi & etal (2019) and Movahedi (2015), this dimension has been one of the elements of human capital. In this case, it can be said that knowledge is one of the main elements of human capital and its application in activities can lead to optimal performance. In the education system, which deals with science and knowledge more than other organizations, continuous learning makes the organization up-to-date and this can lead to favorable results. On the other hand, the scientific competence of human resources can lead to the training of competent forces, which is essential for education and other institutions. Another component of the knowledge dimension was knowledge sharing. Scientific spirit and information exchange is one of the important scientific indicators. The more scientific exchanges between human resources, the better scientific achievements can be witnessed. Therefore, it can be concluded that knowledge and scientific expertise can form efficient and more productive human resources, and the education system needs more knowledgeable and expert forces to develop and adapt to global changes.

Another finding was the moral dimension (including the components of moral responsibility, organizational loyalty, avoiding extravagance and honesty in behavior and speech). This finding lacked background and was not present in previous studies. In this case, it can be said that ethics has always been a point of controversy, so that some consider the importance of ethics after professional qualifications, and others attach more importance to it. In Iran, ethical and value issues are among the important basics and principles for employees at any level. In societies that look more at values, its role in human capital may be greater, and in societies where the set of specialized competencies and knowledge is more valuable, its role may be less.

Another dimension of human capital was mental health (resilience, cognitive ability, desire to progress and positive thinking). Ezoji & et al (2018) also considered health and mental quality as components of human capital in their research. In this regard, it can be said that although few studies have mentioned the general role of health in human capital, having mental health can be the basis for learning more knowledge. and form skills. Perhaps one of the reasons why mental health in human capital is less mentioned in previous studies is that mental health is one of the basic needs for growth and development, and for this reason its role is obvious. Resilience as One of the components of mental health is the ability for human resources to be flexible in the face of challenges. The desire to progress can also stimulate orientation and progress in people. Therefore, we can conclude that mental health is one of the important dimensions. Human capital is important because of the fundamental role it provides for the growth of other dimensions of human capital.

Another dimension of human capital was the socio-cultural dimension (including the components of cultural capital, social communication and social capital). This finding has not been found consistently and clearly in previous studies. In this regard, it can be said that although experts consider the core of human capital to be knowledge and skills, it must be said that the human capital of societies depends to some extent on the culture and values of that society and is influenced by it. Regarding the social capital component of employees, it can be said that it is considered one of the important elements in social relations inside and outside the organization. Social capital can complement human capital. Because the foundation of human capital, knowledge and skills, and the foundation of social capital are also relationships and social exchanges. For this reason, it can be said that social capital can be one of the important elements of human capital. Cultural capital is closely related to cultural and scientific activities with the indicators of book reading and knowledge acquisition. This component can also lead to an increase in human capital. Because cultural and scientific activities are considered important elements of human capital. Therefore, it can be concluded that social and cultural capitals have a very close and reciprocal relationship with human capital.

The results of the structural equations also showed that the knowledge dimension had the highest coefficient of influence (0.71) on human capital. In the studies of Ezoji & et al (2018), Movahedi & et al (2015), and Kazemi & et al (2019), the knowledge dimension was also the most important element of human capital. In its explanation, it can be said that expert human capital is someone who has a lot of knowledge and scientific load in his field of work, and also in several definitions of researchers, more attention has been paid to this dimension. Therefore, it can be concluded that the reason for the greater impact of the knowledge dimension is due to its importance and the place of specialization in work and activities.

The second dimension affecting human capital was the skill dimension with an influence coefficient (0.64). In the research of Kazemi & etal (2019), the skill component has been ranked second. In its explanation, it can be said that skill is a basic characteristic of human capital, which is also acquired during the working career. Skills increase the quality of work. In fact, next to knowledge, skill is considered a basic element in the specialization of professions. Therefore, skilled human capitals can facilitate organizational learning and also facilitate the application of knowledge in the organization. Therefore, for these reasons, it can be said that the skill dimension is ranked second. It can also be said that the knowledge and skill dimensions of human capital can both play a complementary role. The knowledge dimension can create the necessary ground for improving skills and the skill dimension can also lead to an increase in knowledge. Therefore, the importance of these two dimensions (knowledge and skills) and being placed in the first and second ranks can also be caused by this issue.

The moral dimension was ranked third with the effectiveness factor (0.56). In empirical studies, the ethical dimension of human capital has not been considered, and for this reason, it has no background. In explaining the position of the moral dimension, it can be said that in Iran, Islamic values and beliefs are the main pillar and important factor in establishing work rules, and moral issues are always considered an inseparable part of professional issues. Therefore, the moral dimension was identified as one of the dimensions of human capital, and its third place can also indicate its importance. Also, in general, it can be said that the issue of ethics and work has always been disputed. For some societies, morality is limited to some specific cases and its

importance is reduced in this sense. But in Iran, ethics is important in most activities. Therefore, the role of ethics is sometimes considered equal to one's expertise. For this reason, the third dimension is human capital. The fourth dimension of human capital was mental health with an impact factor of (0.44). The dimension of health has not been specifically used in quantitative analyzes in previous researches. In fact, quantitative measurement and its position have not been investigated. Nevertheless, health is a basic condition for personal development. Health creates the background of vitality and motivation to learn in people, and in this sense, it is the basic foundation of human capital. Therefore, placing the degree of importance of this dimension in the fourth place can be due to the fact that human capital is more highlighted by the components of knowledge and skill in the view of the main experts, and other dimensions are placed in the next ranks. Therefore, it can be concluded that the dimension of mental health is ranked fourth compared to knowledge, skill and even moral dimensions.

The fifth dimension of human capital was the socio-cultural dimension (0.38). This finding had no empirical background in terms of quantitative measurement. In this case, it can be said that societies do not have the same view of social and cultural values, and for some, social and cultural issues are important after knowledge and expertise, and for some other societies, it may not be a priority. In Iran, cultural topics are very important, but the reason for the less importance of this dimension and being in the last place can be because experts and specialists look at the issues from a scientific point of view, contrary to the value view, and in terms of the importance of this dimension, it ranks It was placed last.

One of the limitations of this research is the generalizability of the results. Considering that the statistical sample was limited to one city and different cities of the country with different levels of development were not studied, the results should be viewed with caution. Another limitation was the challenge of the corona disease, which made it difficult to conduct interviews and distribute the questionnaires, and the completion of the questionnaires was delayed for several days. Based on the results, it is suggested: 1) In the knowledge dimension, which was recognized as the most important dimension of human capital, expert human resources in all fields, especially those with specialized doctorate degrees in the education system, should be identified and supported. 2) In the skill dimension, which was the second most important dimension of the human capital model, the education and training system should put skill training for its human forces more on the agenda. 3) It is suggested to pay very serious attention to the knowledge, skill and moral components for the selection of school managers from among the existing forces so that the most qualified people are selected for human resource management. 4) In the ranking system, a special position should be defined for human forces with specialized doctorates and outstanding researchers, so that these people do not have the desire to enter the higher education system in order to improve their social status. 5) In the aspect of mental health, it is suggested to develop a professional health system for human resources in education so that teachers can increase and improve their mental capabilities while using its services. 6) In the cultural and social aspect, it is suggested that research and scientific achievements of human forces be given serious attention so that the scientific leap in the education system does not stagnate.

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