



The Effect of Social Capital on Knowledge Management Processes (Mazandaran University of Medical Sciences)

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ABSTRACT

Background: Social capital as a network of communication and mutual trust in the organization plays a crucial role in the production and creation of knowledge. Therefore, the present study aims to investigate the effect of social capital on knowledge management processes in Mazandaran University of Medical Sciences.

Methods: This is a descriptive-analytical study conducted on a cross-sectional basis in 2016. The statistical population of the study comprised all the staff (faculty and administrative members) of this university (N = 230). The questionnaires were distributed among them and 183 questionnaires were collected. The data were collected via the Social Capital Questionnaire (17 questions) and Lawson Knowledge Management Questionnaire (24 questions). Data were analyzed using statistical tests (t), path coefficients (β), SPSS₂₂ software and structural equation technique using SMART PLS software.

Results: The results of t-test statistics (0.60, 0.61, 0.60, 0.61, 0.59 and 0.41) and path coefficients of β (7.32, 21.76, 21.6, 6.7, 14.49, and 2.9), respectively showed that social capital positively and significantly affect knowledge management processes (knowledge creation, knowledge absorption, knowledge organization, knowledge storage, knowledge dissemination, and knowledge utilization).

Conclusion: The officials of such social institutions are recommended to identify, improve and strengthen social capital and its dimensions in order to enhance the knowledge management processes and provide them with a sustainable competitive advantage compared with other universities.

Keywords: Social capital, knowledge management, knowledge management processes

Citation

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Introduction

Nowadays, intelligent and knowledgeable employees, as the most important capitals of an organization, lead the organization to a sustainable competitive advantage with respect to the creativity and innovation power, creation of new organizational processes, modern technologies and the development of new products and services. Innovative efforts in the organization are the result of targeted investment in the learning process and the promotion of knowledge management. Information and communication technology, in general, and the human society, in particular, have put different organizations in a position of seeking new tools and solutions tailored to the prevailing conditions in order to survive. The organizations used to acquire information, but today, they are faced with a large amount of information and knowledge, which usually require adopting brain ware software, and hardware equipment to correctly classify, diagnose and exploit them. Perhaps this is why knowledge management has found a special place in the literature, and made experts to develop techniques and the related strategies (1). Peter Drucker, a well-known thinker in management science said we are entering a knowledge society in which economic resources, natural resources, more workforce, etc. are not the main sources, but the main economic source will be the knowledge, which is one of the most important components of intangible capitals. Most of the capitals of organizations were evident in the past, whereas, today, most of the capitals are intangible (2). Competitive organizations nowadays are due to the effective management of knowledge and other intangible capitals, such as their intellectual and social capital. Knowledge management is a process that helps organizations find, select, organize, and publish critical information that is essential for activities such as problem solving, dynamic learning, strategic planning, and decision making (3). Several experts have defined knowledge management, which will be addressed below. From the perspective of Newman, knowledge management is a collection of processes that dominate knowledge creation,

dissemination and utilization. Bertolt considered knowledge management as the management of the organization towards continuous modernization of organizational knowledge, such as creating organizational support structures, organizational members facilities, embedding technology tools with an emphasis on teamwork and knowledge dissemination, he also considers knowledge management as an audit of intellectual property highlighting unique resources, the main tasks and potential bottlenecks. Wing held that knowledge management includes activities that focus on organizational knowledge acquired from personal experiences and that of others and the wise use of knowledge to carry out missions of the organization (4). Knowledge management has six processes, namely, knowledge creation, knowledge absorption, knowledge organization, knowledge storage, dissemination and application of knowledge (5).

In addition, social capital is a new concept that plays a much more important role than physical and human capital in organizations and societies. Today, in sociology and economy, and recently in management and organization, the concept of social capital has been widely employed. The concept of social capital refers to links, and connections among members of a network as a valuable resource, and by creating norms and mutual trust, it serves to realize the goals of the members. In the absence of social capital, other capitals lose their effectiveness, and the paths through cultural and economic development will get uneven and difficult to navigate. Social capital, whether at the level of macro management or at the level of management of organizations and enterprises, can create new knowledge of economic and social systems and assists managers to better manage the system (6).

Social capital has three structural, relational and cognitive dimensions. The structural dimension of social capital represents the general communication network of the overall configuration and interpersonal links between individuals. From the perspective of Nahapit and



Ghoshal (3), the relational dimension of social capital indicates a kind of personal relationship that individuals establish with each other for their records and interactions. The cognitive dimension of social capital refers to the sources that provide religions and interpretations and systems of common meanings among the groups. With these interpretations, in many organizations, especially universities, especially medical universities, there is no systematic process of finding, selecting and organizing information and utilizing them in order to solve educational and decision-making problems, thus causing the loss of latent capitals incurred by knowledge-oriented workers who are either forced to leave the organization or lack education, skills, and abilities (7). So, the medical university as an educational organization can enhance its performance and quality by using the knowledge management strategy. Thus far, several studies have been conducted on the relationship between social capital and knowledge management (8).

The results of the research indicate that there is a significant relationship between organizational intangible capitals (intellectual and social capital) and knowledge management (4, 9, 10, 11, 12). The findings of Alvani et al. (6), indicate the different nature of knowledge management actions. The results of this research showed that the existence of social capital in organizational groups affected the development of soft knowledge management activities (transfer activities and knowledge creation), nevertheless, no significant relationship was found with the development of hard knowledge management activities (registration activities and knowledge use). The results of Nourian and Amini (9), suggested that there is a significant positive relationship between dimensions of social capital (structural, relational and cognitive dimensions) and dimensions of knowledge management, and that the social and capital dimensions of social capital had a greater effect on knowledge management. In addition, the findings of Moghala et al. (4), On the relationship between social capital and knowledge management in Shiraz University of Medical Sciences showed

that there is a positive and significant relationship between social capital and the dimensions of knowledge management. Based on the results of research conducted by Mohseni et al. (10), there was a significant positive relationship between social capital and its dimensions with intellectual capital and knowledge management. Also, the results of Azadi's research (11), entitled "the relationship between social capital and organizational knowledge management" indicated a positive correlation between social capital and its components, except for structural capital with knowledge management. Moreover, the research findings of Diani et al. (12), showed that there was a significant positive relationship between the rate of social capital and its dimensions with the rate of implementation of knowledge management and among social capital dimensions, the relational dimension of social capital had the most relationship with the rate of implementation of knowledge management. The research results of Manu et al. (13), indicated that social capital had a significant positive effect on knowledge transfer and the development of social capital facilitated the process of knowledge transfer. Das and Tang (14), indicated that the existence of social capital in an organization affects the sharing and transfer of knowledge among the members of networks. Adler and Krone (15), showed that social capital was significantly related to knowledge transfer. Leonard and Vernon (16), found evidence indicating the relationship between social capital and knowledge management, however, they considered knowledge management in its general sense, without distinction of its various dimensions. Steyompheff and Timon (17), In their research showed that the role of social capital in improving knowledge management leads to higher performance in the organization. In his research, Chen dealt with the relationship between social capital and knowledge sharing in different companies and considered the dimensions of social capital including the social network, social trust, and sharing purposes. However, they considered the concept of knowledge management as a whole, the results revealed that social network and sharing



purposes have a significant relationship with the sharing of organizational knowledge and the effect of individual motivation and social capital, but social trust does not directly affect organizational sharing (18). Chang presented a study on the willingness of employees to share implicit and explicit knowledge in different industries. The results showed that organizational reward had a negative effect on the willingness to share implicit knowledge; however, it had a positive effect on the willingness to share explicit knowledge. The results of the research indicated that social capital significantly increased the willingness of employees to share implicit and explicit knowledge (19).

Based on the research literature, no research has been conducted in this field at the universities of medical sciences. Therefore, the researcher is

seeking to find out more about effective factors in the implementation of this strategy in Mazandaran University of Medical Sciences. A question is posed here: Do the existing knowledge capitals in the university affect the performance of organizational knowledge management? Therefore, the main purpose of this study was to investigate the effect of social capital on the dimensions of knowledge management among employees (faculty and administrative members) of Mazandaran University of Medical Sciences. Based on the theoretical studies of this research, the conceptual model of the research (Figure 1) was designed which illustrates the relationship between social capital and the dimensions of knowledge management.

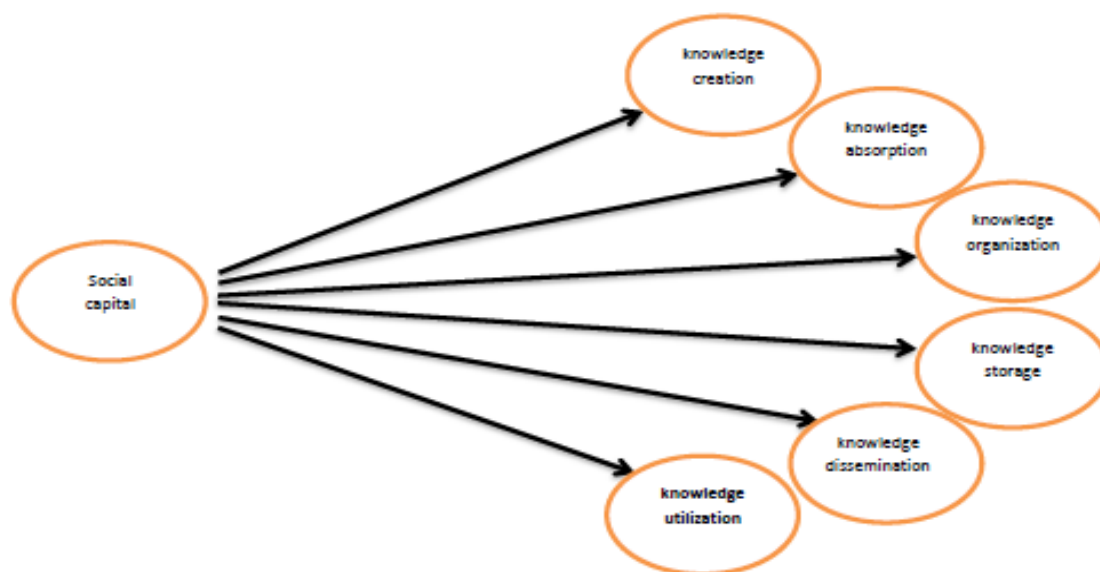


Figure 1. Conceptual model of the research

Materials and Methods

This research is "applied" in terms of purpose and, "descriptive, analytical" in terms of data collection. Data collection includes desk and field study. This research is correlational given that it seeks to determine the relationship between research variables. The statistical population comprised all employees (faculty and administrative members) of Mazandaran

University of Medical Sciences (N = 230), among whom the questionnaires were distributed and 183 questionnaires were collected. The statistical population comprised 25 employees (61% female) and 158 faculty members (68% male). Faculty members all had a doctoral degree, but among the staff, five had a Bachelor's degree and the rest had a Master's degree. The research data were collected through a questionnaire (social capital



questionnaire taken from the standard questionnaire of Nahapiet and Ghoshal) (20) and Lawson's knowledge management questionnaire (5). Accordingly, 17 questions were posed to measure social capital (structural, relational and cognitive) and 24 questions for evaluating the knowledge management dimensions (knowledge creation, knowledge absorption, knowledge organization, knowledge storage, knowledge dissemination and knowledge utilization) with Likert's scale (Five points) that ranged from strongly disagree to strongly agree. Numbers 1-5 were assigned to each item of the questionnaire. Content, convergent and divergent validities were used to ascertain the validity of the measurement tool. Content validity is created by ensuring the compatibility between the measurement indices and the existing literature, and this validity was obtained by surveying professors. The convergent validity relies on this principle that the indices of each structure have a moderate correlation with each other. According to Fornell and Larcker (21), the criterion for optimal convergent validity indicates that the mean of Average Variance Extracted (AVE) is greater than 0.5. Divergent validity is also measured by comparing the square root (mean coefficient of average variance extracted) of AVE with the correlation between the latent variables (variables that are not directly measurable and must be measured using the observed variables) (Table 2) and for each of the reflective structures (latent variables), the AVE square root should be more than the correlation of that structure in comparison with the other structures in the model. Moreover, Cronbach's alpha coefficient and composite reliability coefficient were employed in order to determine the reliability of the questionnaire. Cronbach's alpha coefficients of all variables in this study were higher than the minimum value (0.7). Composite reliability (CR), in contrast to Cronbach's alpha, implicitly assumes that each index has the same weight, which is based on the real factor loads (the strength of the relationship between latent variable and observed variable, the value of which is between one and zero) of each structure, thus

providing a better benchmark for reliability. Composite reliability (the degree to which a set of two or more indices are commonly used to measure a factor) should not exceed 0.7 to indicate the internal stability of the structure (21). Tables 1 and 2 fully indicate the reliability and validity of the measurement tool.

Based on the content and the results of the SMART-PLS software outputs, Tables 1 and 2 indicate that measuring tools enjoy proper validity (content, convergent and divergent) and reliability (load factor, composite reliability factor and Cronbach's alpha coefficient).

In the PLS models (Partial Least Squares), two models are tested. An external model that is equivalent to a measurement model, and an internal model that is similar to the structural model in other softwares (LISREL, EQS and AMOS). The external model is a model that identifies the relationship between the latent variables (social capital and knowledge management dimensions) with observed variables (questionnaire questions). To fit this model, we use the share validation check index (an index used to examine the fit of a model measuring a block of a "latent variable"). Moreover, the internal model is a model that identifies the relationship between the latent variables and to fit the structural model, the dispersion or redundancy index and the Stone-Giesser coefficient (Q^2), were used which predict endogenous latent variables (R^2). If these two indices (share validation check index and dispersion or redundancy index) are positive, it indicates the proper quality of the structural model (it specifies the causal structure between the latent variables) [20]. However, as seen in Table 3, the share index (CV Com) and redundancy index (CV Red) are positive, which indicates the proper quality of the model. R^2 value, which represents the ability of the model to describe the structure equals to 0.36, 0.37, 0.36, 0.38, 0.35 and 0.17 in order of dimensions of knowledge creation, knowledge absorption, knowledge organization, knowledge storage, knowledge dissemination, and knowledge utilization. The results obtained below



indicate that the proposed model (Figure 2) has a suitable fit.

In addition, the declaration of Helsinki was considered for ethical issues.

Results

Data analysis was used by structural equation model in order to analyze and measure the model of this research. Structural equation modeling is a statistical model for investigating the linear relationships between the latent variables and the observed variables. In other words, Structural Equation Modeling is a powerful statistical technique in which the model of measurement (the confirmatory factor analysis in which hypotheses determine whether the data were consistent with a certain factor structure that is included in the hypothesis) and the structural model (technical path analysis to examine the relationship and dependence among variables) are simultaneously combined with a statistical test. Through these techniques, researchers can either reject hypothetical structures (models) or confirm their correspondence with the data. The software used for this analysis in this research is SMART-PLS 3.2.4. This software analyzes structural equation models that have multiple variables and include direct, indirect, and interactive effects, which is appropriate to test the effect of moderation as well. In the following, the software, its outputs and their analysis are brought forward (21).

In SMART-PLS software, the t-value $T = \frac{\bar{x}_1 - \bar{x}_2}{\delta / \sqrt{n}}$ indicated the significance of the effect of the variables. If the t-value is greater than 1.96, then there is a positive and significant effect. If it is between +1.96 and -1.96, there is no significant effect, and if it is smaller than 1.96, it has a negative and significant effect. Also, the path coefficients (β), if higher than 0.60, means that there is a strong relationship between the two variables, if they are between 0.3 and 0.6, there is a moderate relationship and if less than 0.3, then there is a weak relationship (14). So the data from Table 4, which represents the analysis of research hypotheses, was obtained based on Figures 2 and

3. It can be concluded that the result of testing the first hypothesis (social capital has a significant effect on knowledge creation dimension of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.67 and t-value of 17.31 indicate that social capital has a significant and strong effect on knowledge creation. In the second hypothesis (social capital significantly affects the knowledge absorption dimension of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.61 and t-value of 6.76, it was concluded that social capital has a significant and strong effect on knowledge absorption. The results of the third hypothesis test (social capital has a significant effect on the knowledge organization dimension of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.60 and t-value of 7.21 shows that social capital has a significant and strong effect on knowledge organization. The results of the fourth hypothesis test (social capital significantly affects the knowledge storage dimension of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.61 and t-value of 6.21 indicate that social capital significantly and strongly affects knowledge storage. The results of the fifth hypothesis test (social capital has a significant effect on knowledge dissemination dimension of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.59 and t-value of 9.49 indicate that social capital significantly and moderately affects knowledge dissemination. The results of the sixth hypothesis test (social capital has a significant effect on knowledge utilization of knowledge management in Mazandaran University of Medical Sciences) with coefficient of 0.41 and t-value of 2.14 shows that social capital has a moderate and significant effect on knowledge utilization. Also, the P-value is smaller than the permissible limit (i.e., 0.50) based on Table 4 for all hypotheses, thus all the research hypotheses are confirmed.

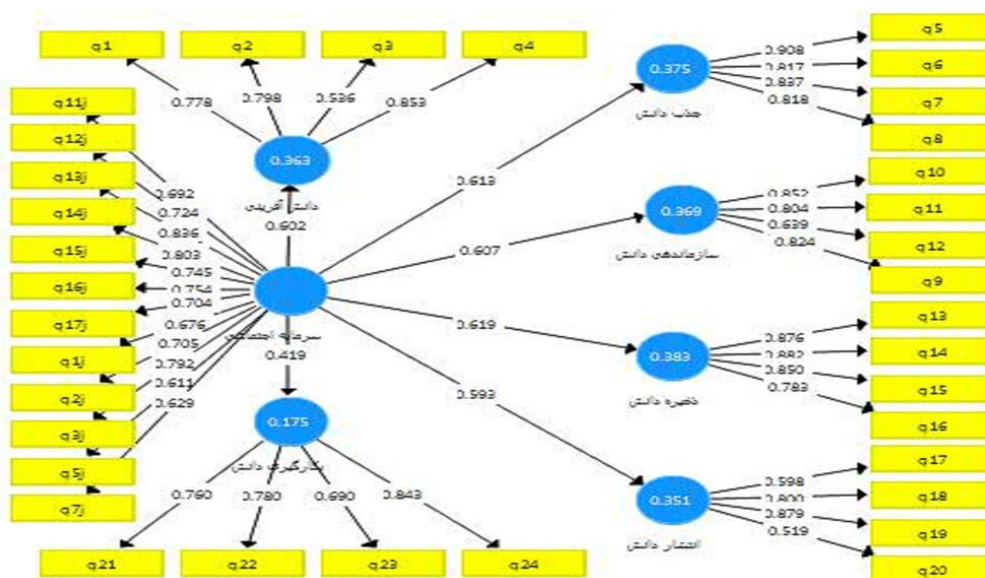


Figure 2. Structural model coefficients

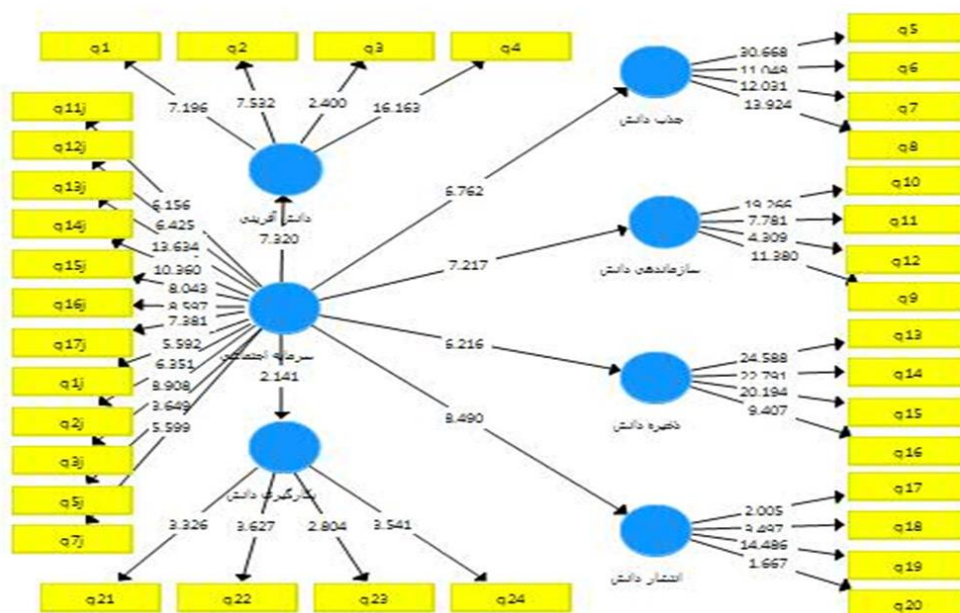


Figure 3. t-test results

It is necessary to examine the path coefficient of latent variables to examine the effect of independent variables (social capital) on dependent variables (knowledge management processes). As shown in Table 4, all the effects are positive, and strong (sometimes moderate) and significant, and

these effects of knowledge creation, knowledge absorption, knowledge organization, knowledge storage, knowledge dissemination and knowledge utilization were 0.60, 0.61, 0.60, 0.61, 0.59 and 0.41%, respectively.

**Table 1.** Convergent validity and reliability of measurement tools

| Research variables | The coefficient of Average Variance Extracted (AVE) | Coefficient of Composite Reliability | Cronbach's Alpha Reliability Index |
|-------------------------|---|--------------------------------------|------------------------------------|
| Knowledge Creation | 0.51 | 0.80 | 0.70 |
| Knowledge absorption | 0.59 | 0.85 | 0.78 |
| Knowledge organization | 0.71 | 0.9. | 0.86 |
| knowledge storage | 0.56 | 0.83 | 0.76 |
| Knowledge dissemination | 0.71 | 0.91 | 0.86 |
| knowledge utilization | 0.61 | 0.86 | 0.78 |
| Social capital | 0.52 | 0.92 | 0.91 |

Table 2. Correlation matrix and investigation of divergent validity of social capital and knowledge management processes

| Variable | Knowledge Creation | Knowledge absorption | Knowledge organization | knowledge storage | Knowledge dissemination | knowledge utilization | Social capital | Square Root (AVE) |
|-------------------------|--------------------|----------------------|------------------------|-------------------|-------------------------|-----------------------|----------------|-------------------|
| Knowledge Creation | 1 | | | | | | | 0.71 |
| Knowledge absorption | 0.70 | 1 | | | | | | 0.76 |
| Knowledge organization | 0.59 | 0.75 | 1 | | | | | 0.84 |
| knowledge storage | 0.60 | 0.71 | 0.68 | 1 | | | | 0.75 |
| Knowledge dissemination | 0.65 | 0.71 | 0.59 | 0.70 | 1 | | | 0.84 |
| knowledge utilization | 0.49 | 0.63 | 0.48 | 0.60 | 0.67 | 1 | | 0.78 |
| Social capital | 0.60 | 0.61 | 0.60 | 0.62 | 0.60 | 0.42 | 1 | 0.71 |

Table 3. Share index, redundancy and coefficient of determination

| Variable | Measurement model Share index | Structural model Redundancy index | The coefficient of determination |
|-------------------------|----------------------------------|--------------------------------------|----------------------------------|
| Knowledge Creation | 0.26 | 0.12 | 0.36 |
| Knowledge absorption | 0.51 | 0.24 | 0.37 |
| Knowledge organization | 0.35 | 0.20 | 0.36 |
| knowledge storage | 0.51 | 0.26 | 0.38 |
| Knowledge dissemination | 0.22 | 0.13 | 0.35 |
| knowledge utilization | 0.30 | 0.05 | 0.17 |
| Social capital | 0.62 | | — |

**Table 4.** Summary of the results of testing hypotheses

| The Paths | Path coefficient | t-test value | P | The effect rate | Test results |
|--|------------------|--------------|-------|-----------------------|----------------------|
| Social capital → knowledge creation dimension of knowledge management | 0.60 | 7.32 | 0.000 | Strong and positive | hypothesis confirmed |
| social capital → knowledge absorption dimension of knowledge management | 0.61 | 6.76 | 0.026 | Strong and positive | hypothesis confirmed |
| Social capital → knowledge organization dimension of knowledge management | 0.60 | 7.21 | 0.000 | Strong and positive | hypothesis confirmed |
| Social capital → knowledge storage dimension of knowledge management | 0.61 | 6.21 | 0.000 | Strong and positive | hypothesis confirmed |
| Social capital → knowledge dissemination dimension of knowledge management | 0.59 | 9.49 | 0.000 | Moderate and positive | hypothesis confirmed |
| Social capital → knowledge utilization dimension knowledge management | 0.41 | 2.14 | 0.000 | Moderate and positive | hypothesis confirmed |

Discussion

The findings of the data analysis indicate that there is a positive and significant relationship between social capital and the dimensions of knowledge management, such that social capital has a significant effect on the development of knowledge management in Mazandaran University of Medical Sciences, and enhances the level of knowledge management at this university. In explaining these findings, it can be said that social capital is a form of capital that facilitates the access to vital information and resources in order to enhance the performance and appropriate use of environmental opportunities. Therefore, the authorities and stakeholders of this important and valuable social institution are recommended to create an appropriate environment for the growth and development of social capital in order to pave the way for knowledge enhancement

and sustainable competitive advantage in the organization.

The findings of this research were in line with the findings of Nourian, Mohseni, Diani, Manu, Das and Tang, Adler and Krone, Leonardo and Wenborn, Timon, Chen and Chang, each somehow examined the effect of social capital and its dimensions on knowledge management and its processes. In explaining the results of this study with other findings of this research, it seems that social capital as one of the positive and influential predictors of successful implementation of the knowledge management strategy should be sufficiently considered. Therefore, it can be stated that the extent to which the University of Medical Sciences strengthens its organizational communication network with both its employees as the domestic actors, and customers and students as the foreign actors, can create a sustainable



competitive advantage for themselves and lay the groundwork for the development of organizational knowledge management activities. In the highly variable and dynamic environment of today, organizations have realized the necessity and importance of using knowledge-based assets to gain a sustainable competitive advantage and see their growth in using unlimited capitals. Therefore, the use of non-physical capitals (intellectual and social capitals) is among the success factors of the establishment and application of knowledge management approach in organizations. Based on the research findings, it seems necessary to pay attention to the intellectual and social capital of the organizations as a positive and influential predictor of successful implementation of knowledge management strategy. Successful implementation of knowledge management strategy and attention to its effective factors can help to increase the pace of the performance of the university staff in increasing the rate of innovation and creativity, increasing the accountability to the rapid and unpredictable changes in the external turbulent environment, and ultimately increasing the efficiency of the organization and promoting the quality of clinical services (9, 10, 12, 13, 14, 15, 16, 17, 18 & 19). Moreover, the results of this study were in line with the study of Moghala et al. (4), on the relationship between social capital and knowledge management. So, it can be stated that the expansion of social capital plays a significant role in the development of knowledge management. The existence of social capital in an organization and the effective interaction between employees will facilitate the registration, creation, deployment and sharing of knowledge. Also, strategic focus on human resource management practices that positively affect the organization's social capital can enhance social communication between employees, because the human resource management practices can have a significant effect on the company's social capital in the information processing environment and knowledge sharing. The results of this research were consistent with the study of Azadi entitled "Investigating the relationship between social

capital and knowledge management of the organization". In explaining the results of this research, it can be stated that social capital leads to better sharing of knowledge, preserving organizational knowledge, establishment of trust-based relations, creation of a co-operation spirit (within the organization, between the organization and clients and partners) contribution in education, increase of activities related to the stability of the organization, and common understanding) (11).

Considering the confirmation of the hypotheses of this research, Mazandaran University of Medical Sciences needs to work hard to improve the effective and efficient management of its organizational knowledge in order to promote the level of social capital and its dimensions (cognitive, relational and structural capital). The investment of organizations to develop this capital through the development of effective communication, the improvement of the communication process and interaction among employees and managers within and outside the organization, the creation of a culture of cooperation, mutual trust and teamwork all contribute to the promotion of social capital in the organization and will lead the organization towards an innovative, creative and learner organization. Another result of the research reveals that social capital was a good predictor for the creation, absorption, organization, storage and dissemination of knowledge in the organization in Mazandaran University of Medical Sciences. Therefore, it can be expected that improving social capital in the University of Medical Sciences will enhance knowledge management in the above processes.

The only limitation of the research was that the questionnaire was distributed in the summer and a number of professors were absent.

Conclusion

What should be mentioned as the final result is that organizations are well aware that mere investment and attention to physical and financial capital in today's world cannot be fruitful for



them; therefore, it is necessary to invest more in social, intellectual and knowledge capital to ensure the survival and effectiveness of their performance. In other words, identifying, improving and strengthening social capital and its dimensions as one of the important capabilities of the organization in creating, sharing and utilizing organizational knowledge can develop knowledge-based activities, improve knowledge management strategy and gain sustainable competitive advantage.

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Conflict of interests

There are no conflict of interests to be declared.

Author's contributions

Molaiy Eil Zolh A and Shah Bahrami E designed research; Shah Bahrami E and Molaiy Eil Zolh A conducted research; Molaiy Eil Zolh A and Nasairi M analyzed data; Molaiy Eil Zolh A and Nasiri M and Shah Bahrami E wrote the paper. Molaiy Eil Zolh A had primary responsibility for final content. All authors read and approved the final manuscript.



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