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Exploring the Relationship between Organizational Learning and Creative Problem-Solving Skills with the Mediation of Knowledge Management in Secondary Schools of District 1, Tehran

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ABSTRACT

Introduction: The present research aimed to elucidate the relationship between organizational learning and creative problem solving skills with the mediating role of knowledge management in secondary schools of District 1 in Tehran. **Methodology:** The study utilized a descriptive correlation design and surveyed a statistical population of 460 staff members from secondary schools in District 1 of Tehran. A multi-stage cluster sampling method was employed, and Cochran's formula was used to determine a sample size of 209 individuals. Data were collected using the Heppner and Petersun Problem Solving Inventory (1982), Senge's Organizational Learning Questionnaire (2001), and the Fang and Chi Knowledge Management Questionnaire (2009). To assess the research hypotheses, structural equation modeling, appropriate fit indices, path analysis, and the Kaiser-Meyer-Olkin (KMO) test, Bartlett's test of sphericity, and the Sobel test were utilized. SPSS and Lisrel software were used to analyze the data. **Findings:** The results indicated that a significant relationship exists between organizational learning and creative problem solving skills through the mediating role of knowledge management. **Discussion and Conclusion:** To improve knowledge management and foster creative problem solving in educational institutions, it is advisable to create a range of diverse opportunities for knowledge exchange through the introduction and advancement of a knowledge management system.

1. INTRODUCTION

The contemporary business environment has become increasingly complex, resulting in a wide range of issues and challenges across various domains for organizations. These complexities give rise to numerous uncertainties that must be addressed.

Evandi and Varawati (2021) argue that the current corporate landscape presents substantial complexities, leading to a range of challenges and issues across different domains. These challenges and issues may generate significant

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costs, such as financial and human resources, ultimately hindering the organization's productivity [1]. Studies and field investigations have demonstrated that addressing and resolving issues and challenges can resolve them, according to Fatmawati et al (2021). Therefore, exploring this field can potentially bring positive outcomes for organizations by alleviating negative consequences [2].

Liew et al (2008) propose innovative operational steps given uncertainty and complexities. The resolution of such problems requires creative actions to ultimately identify and implement effective solutions [3]. As emphasized by Aufa et al (2021), creative problem solving in contemporary organizations heavily relies on human resources that possess the capacity to harness, create, and process innovative ideas. Thus, organizations need to adopt specific measures and approaches to attract a more qualified workforce [4].

Smith (2001) posits that utilizing knowledge management strategies within organizations is an effective way to enhance creative problem-solving skills among employees. This involves effectively sharing both explicit and tacit knowledge among employees, providing them with the necessary tools for success [5].

Taub and Azevedo (2019) emphasize that effective implementation of innovative problem-solving relies on acquiring the necessary knowledge, enabling employees to bridge their skill and knowledge gaps and actively contribute to finding solutions [6].

Meanwhile, Ochoa et al. (2018) emphasize that organizations strive to foster an environment where employees can easily access their valuable knowledge and collaborate with each other, culminating in the creation of solutions across different levels. This highlights the importance of knowledge management, which can effectively address a multitude of issues and topics [7].

According to Dalkir (2017), knowledge management guarantees that individuals can properly leverage the knowledge and experiences of others, leading to informed actions and decisions based on insights gained from analyzing the experiences of others, and ultimately enhancing organizational performance [8]. Blikstein (2013) argues that achieving successful knowledge management processes necessitates organizational investment in infrastructure and resources throughout the company to provide support [9]. Jaber and Caglar (2017) suggest that effective knowledge management processes in organizations call for the establishment and development of organizational learning systems, according to research [10].

Tyndall (2017) highlights that organizations aim to promote employee learning through various activities. Learning can be facilitated by providing access to necessary resources and opportunities [11]. According to Susilo et al. (2018), organizational learning promotes the harmonization of all members by jointly acquiring knowledge on various issues. This process, in turn, facilitates the institutionalization of new topics within the organization [12].

In light of the above, creative problem-solving skills play a crucial role in achieving educational objectives. Despite the emphasis on problem solving methods in textbooks, they are not adequately utilized in schools, and teachers' abilities in problem solving are also suboptimal. Rarely do teachers encourage students to invent processes for a problem or devise their own problems based on an evaluation of a situation or data. Therefore, teachers themselves should be familiar with creative problem-solving skills and be able to employ them in the classroom. Accordingly, the primary goal of this study is to investigate the impact of organizational learning on creative problem solving, with an emphasis on the mediating role of knowledge management. The study aims to find an appropriate answer to the question: How does organizational learning through knowledge management influence creative problem solving?

2. LITERATURE REVIEW

In contemporary times, a substantial amount of individual and societal actions revolve around education and training. Education is considered to be one of the most essential institutions, serving as a fundamental pillar for the development of education, culture, economy, and society in any community. The establishment of a society's self-sufficiency and independence heavily relies on the foundation of its educational institutions. Human resources are the most valuable and essential asset available to any organization objectively. Likewise, education is an institution with the objective of nurturing competent, worthy, and specialized individuals for the community, enabling them to drive the wheels of the country's economic, industrial, and service sectors. The causal connections between these

two prominent institutions are crucial and undeniable. It is clear that the successful completion of this task requires educators with ample expertise, experience, analytical acumen, and the ability to solve problems creatively.

By being aware of issues and potential resolutions, teachers may use their competencies in diverse academic contexts. Therefore, there is a demand for personnel who can efficiently utilize innovative problem-solving skills in their professional endeavors. The development of students' problem-solving skills depends unquestionably on the problem-solving skills and ability of their teachers. According to Razzian's (2018) "Structural Model of Explaining Social Problem-Solving Skills in Teachers Based on Organizational Culture and Religious Orientation," utilizing problem-solving skills in education enhances the quality of students' learning and provides a model for fostering students' independence and ability to solve daily life problems [13].

Dehghan Manshadi (2018) conducted a study titled "The Relationship between Job Engagement, Organizational Learning, and Organizational Innovation among School Managers." The study showed a significant relationship between job engagement and both organizational learning and organizational innovation, indicating that these variables are closely related [14]. Abedini et al. (2017) demonstrated that organizational intelligence has a positive correlation with organizational agility and employee knowledge management, with the latter serving as a mediator [15]. The study concludes that enhancing organizational intelligence can lead to improved organizational agility and employee knowledge management. Fathi (2014) conducted a study titled "The Relationship between Knowledge Management and Organizational Learning with Organizational Citizenship Behavior of Teachers and Managers in Secondary Schools in Ardebil City during Academic Year 2013-2014." The findings demonstrate a significant positive correlation between organizational citizenship behavior and all components of knowledge management and organizational learning [16]. Jorabchi and Khosravi (2009) conducted a study to explore the concept of knowledge management and its influence on schools' success and teachers' performance [17].

The research findings indicate that the greater the level of teachers' acquaintance with knowledge management components (knowledge discovery and creation, utilization of student participation by teachers, sharing of student knowledge by teachers, employment of technology, teacher evaluation of students), the higher their mastery of these components and thus their performance.

Duru and colleagues (2019) conducted a study on how elementary school teachers prioritize problem solving strategies when tackling vocabulary problems. According to their findings, elementary school teachers utilize a range of problem-solving strategies, such as algebraic, calculation, and pattern-based strategies, prior to service. Consequently, the development of problem solving skills can promote positive changes in students' attitudes and enhance their math learning outcomes[18]. Zsoldos (2015) conducted a study on "Changing Attitudes of Teachers through Participatory Problem Solving." The study findings indicate that problem solving results in a positive change in students' attitudes and enhances their mathematics learning [19].

The research shows that no prior study has investigated the relationship between these variables in the country, thus making this study a pioneering effort in this area. This research aims to bridge the current gap in theoretical and empirical knowledge and clarify the divergent views on the linkage between organizational learning, knowledge management, and creative problem-solving. The acquisition of problem-solving skills among students is unquestionably shaped by the competence and problem-solving abilities of educators. Therefore, conducting problem-solving research can identify the challenges and issues that teachers encounter when teaching this subject. The research findings can provide benefits for education officials and stakeholders across different levels, including educational managers and teachers in the first district of Tehran province. Based on the aforementioned content, the following hypotheses are proposed:

Main Hypothesis: Knowledge management mediates the relationship between organizational learning and creative problem solving in high schools of the first district of Tehran.

Subsidiary Hypotheses:

- Organizational learning affects knowledge management in high schools of the first district of Tehran.
- Knowledge management affects creative problem solving in high schools of the first district of Tehran.
- Organizational learning affects creative problem solving in high schools of the first district of Tehran.

3. DATA AND METHODOLOGY

3. 1. Data

The current research method is descriptive correlational. The target population of the study consists of employees in secondary schools of District 1 in Tehran, totaling 460 individuals. A multi-stage cluster sampling method was utilized for sample selection, and Cochran's formula was employed to determine the sample size, resulting in the selection of 209 participants. Questionnaires were distributed among the selected participants. The required data for the study were collected using the following questionnaires.

3.2. Methodology

3.2.1. Hepner and Petersun's (1982) Problem Solving Questionnaire

The Heppner and Petersun questionnaire evaluates problem-solving behavior comprehension via 35 items on a five-point Likert scale, ranging from 1 (strongly agree) to 6 (strongly disagree). The questionnaire contains three categories: Confidence in Problem Solving, Approach-Avoidance Orientation, and Personal Control. In all items and described factors, a positive evaluation of problem-solving ability is indicated by lower scores (Huang, 2005). Various studies have utilized the Heppner and Petersun Problem Solving Inventory, which has demonstrated acceptable reliability in independent samples and diverse cultural groups.

3.2.2. Senge Organizational Learning Questionnaire

The Organizational Learning Questionnaire was developed by Neefe (2011) to assess organizational learning based on the five disciplines of "Peter Senge." This questionnaire consists of 24 items and includes five dimensions: Personal Mastery (items 1-6), Mental Models (items 7-12), Shared Vision (items 13-16), Team Learning (items 17-21), and System Thinking (items 21-24). It is rated on a five-point Likert scale ranging from strongly agree to strongly disagree.

3.2.3. The Knowledge Management Questionnaire" by Fong and chi"

The Knowledge Management Questionnaire developed by Fong and Chi in 2009 consists of 42 items and 6 components, including Knowledge Acquisition (items 1 to 6), Knowledge Creation (items 7 to 12), Knowledge Storage (items 13 to 23), Knowledge Dissemination (items 24 to 34), Knowledge Application (items 35 to 37), and Knowledge Preservation (items 38 to 42). The questionnaire employs a six-point Likert scale (ranging from completely disagree to completely agree) with values assigned to each item ranging from 1 to 5. The Fong and Cheung Knowledge Management Questionnaire has been utilized in various studies and has demonstrated acceptable reliability in independent samples and different cultural groups.

3.2.4. Structural Equation Modeling

In the structural equation modeling framework, the pattern of relationships among latent variables is elucidated by comparing the estimated relationships with a standardized model. To demonstrate the significance of these influences, a significance model is employed. Additionally, fitness indices are utilized to assess the model fit for evaluating the adequacy of the model.

3.2.4.1. Appropriate Performance Indicators

One general indicator for assessing degrees of freedom in calculating goodness-of-fit indices is the kappa-two or chi-squared normalized index. This index is obtained by dividing the simple chi-squared by the degrees of freedom of the calculation model. A desirable range for this value is between 1 and 5. The LISREL software displays the chi-squared statistic and degrees of freedom in its graphical output. The root mean square residual (RMSR) must be less than 0.05 for acceptance. Additionally, indices like the adjusted goodness-of-fit index, non-normed fit index,

standardized root mean square residual, comparative fit index, and incremental fit index fall between 0 and 1. The closer these indices are to 1, the better the model fits the observed data.

It's important to note that the adjusted goodness-of-fit index and the non-normed fit index values aren't affected by the sample size. One of the key tests for evaluating model fit is through the use of structural equation models. The non-normed fit index ranges from 0 to 1, and it is recommended to have a value of 0.90 or greater. The goodness-of-fit index for degrees of freedom similarly ranges from 0 to 1.

An acceptable value for the standardized root means square residual is above 0.90, which serves as an indicator of model fit. In addition to this, the comparative fit index is also deemed an acceptable indicator of model fit when its value is above 0.90. The significance of the comparative fit index is akin to that of the standardized root mean square residual, except that the former reduces scores based on sample size. The incremental fit index should fall within a range of 0 to 1 for optimal results.

The root means square error of approximation, commonly used in most confirmatory factor analyses and structural equation models, is better if it is lower. This index reflects the average discrepancy between observed and model data. According to MacCallum, Browne, and Sugawara (1996), if the value of this index is less than 0.1, the model fit is excellent. If it falls between 0.10 and 0.50, the model fit is good, and if it is between 0.50 and 0.80, the model fit is moderate. However, most researchers follow the rule that if the root mean square error of approximation is less than 0.10, the model fit is good, and if it is greater than this value, the model is poorly designed. This index is visible in the graphical output of the LISREL software.

4. RESULT

To ensure the adequacy of the sample and justify factor analysis, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were performed using SPSS software. The results of the tests indicate that the KMO statistic is 0.62, and since the KMO value is greater than 0.60, the sample adequacy is established. The value of Kaiser's Measure of Sampling Adequacy (KMO) being greater than 0.60 suggests that the data is suitable for factor analysis.

The value of the Kaiser-Meyer-Olkin statistic being above 0.60 suggests that the sample is adequate for factor analysis. Additionally, Bartlett's test of sphericity yields a statistic of 749.65, which is statistically significant at a 95% confidence level (p-value < 0.001). Hence, factor analysis is justified.

Table 1. The Size of Kaiser-Meyer-Olkin (KMO) and the Result of Bartlett's Test of Sphericity

	The amount obtained
KMO	0.62
Bartlett's Test	749.65
Significance Level of Bartlett's Test	0.000

The results of Table 2 indicate that the Comparative Fit Index (CFI) is 0.99, a value close to 1. The Goodness-of-Fit Index (GFI) is 0.92, and the Adjusted Goodness-of-Fit Index (AGFI) is 0.99, both of which are also close to 1. Therefore, the goodness-of-fit indices suggest that overall, the research model is reliable and credible.

Table 2. Goodness-of-Fit Indices for the Conceptual Research Model

Index	**X^2**	**df**	**CFI**	**GFI**	**AGFI**	**RMSEA**
Factor Analysis Model	5097.19	1272	0.99	0.92	0.99	0.11

4. 1. Hypothesis Testing in The Research

3.2.4.1. Primary Research Hypothesis

Knowledge Management Plays a Mediating Role in the Relationship Between Organizational Learning and Creative Problem Solving in Secondary Schools of Region 1 in Tehran. In investigating the first research hypothesis, the z-value of the relationship between organizational learning and creative problem solving through the mediating variable of knowledge management (6.005) is greater than the critical value in the table. This indicates that there are significant relationships between organizational learning and creative problem solving through the mediating variable of knowledge management.

Table 3. The Relationship between Organizational Learning and Creative Problem Solving through the Mediating Variable of Knowledge Management

Type of Relationship	Z-score	Comparison with Critical Value	Significance Level
indirect	6.005	1.96<6.005	significant

3.2.4.2. First Subsidiary Hypothesis

Organizational learning has an impact on knowledge management in secondary schools of District 1 in Tehran. In testing the hypothesis, the t-value (8.58) for the relationship between organizational learning and knowledge management exceeds the critical value from the table. This indicates the presence of a relationship between organizational learning and knowledge management. Moreover, considering the path's standardized coefficient (0.66), it can be stated that the intensity of the influence is greater than average.

Table 4. The Relationship between Organizational Learning and Knowledge Management

Type of Relationship	Path Standardized Coefficient	t-value	Comparison with Critical Value	Significance Level
Direct	0.66	8.58	1.96<8.58	significant
Direct	0.55	8.41	1.96<8.41	significant
Direct	0.58	2.5	1.96<2.5	significant

3.2.4.3. Second Subsidiary Hypothesis

Knowledge management has an impact on creative problem solving in secondary schools of District 1 in Tehran. In testing the hypothesis, the t-value (8.41) for the relationship between knowledge management and creative problem solving is greater than the critical value from the table. This indicates the presence of a relationship between knowledge management and creative problem solving. Furthermore, considering the path's standardized coefficient (0.55), it can be stated that the intensity of the influence is greater than average.

Table 5. The Relationship between Knowledge Management and Creative Problem Solving

Type of Relationship	Path Standardized Coefficient	t-value	Comparison with Critical Value	Significance Level
indirect	0.55	8.41	1.96<8.41	significant

3.2.4.4. Third Subsidiary Hypothesis

Organizational learning has an impact on creative problem solving in secondary schools of District 1 in Tehran. In testing the fourth hypothesis, the t-value (2.5) for the relationship between organizational learning and creative problem solving is greater than the critical value from the table. This indicates the presence of a relationship between organizational learning and creative problem solving. Furthermore, considering the path's standardized coefficient (0.58), it can be stated that the intensity of the influence is greater than average.

Table 6. The Relationship between Organizational Learning and Creative Problem Solving

Type of Relationship	Path Standardized Coefficient	t-value	Comparison with Critical Value	Significance Level
indirect	0.58	2.5	1.96<2.5	significant

5. CONCLUSION

The purpose of this study was to analyze the correlation between organizational learning and creative problem solving in District 1 secondary schools of Tehran, with a focus on the mediating function of knowledge management. Results suggest that knowledge management acts as a mediator between organizational learning and creative problem solving within these academic institutions. Previous research indicates that prioritizing learning and knowledge management is critical for organizational success and improvement. Knowledge management in schools emphasizes the utilization of knowledge for decision-making and creative problem-solving in educational settings. Experts have found that learning promotes innovation, and in today's competitive environment, organizations that increase their learning capabilities are more likely to succeed. In a high-achieving school, staff members participate in problem identification and resolution, allowing them to learn from new experiences, improve processes, and enhance their abilities. Possessing creative problem-solving skills indicates the dedication of staff and teachers to effectively address educational needs. This study emphasizes the importance of continuous learning to enhance the intellectual capital of employees, teachers, and knowledge management, which is crucial to the success of schools. The findings of Abedini et al. (2017), Fathi (2014), and Zsoldos (2015) align with our research.

Another research finding suggests that organizational learning affects knowledge management in secondary schools located in District 1 of Tehran. Educational organizations, such as schools, benefit from a systematic approach that establishes principles for identifying, assessing, organizing, storing, and utilizing knowledge, leading to organizational learning. Effective knowledge management can enhance both training and learning, and it is imperative to maintain a continuous cycle of learning throughout all school processes to ensure efficient management. The quality of a school is undeniably associated with the expertise and excellence of its staff, notably its teachers. Therefore, teachers, known as the core of a school and the primary facilitators of educating the younger generation, are expected to possess contemporary knowledge and information literacy skills in today's era. This will enable them to consistently enhance their abilities and acquire new knowledge. Thus, implementing knowledge management and organizational learning strategies can bolster the quality of educational and learning processes, enhance scholarly interactions, and facilitate knowledge and experience sharing among students and teachers with specialized knowledge. This can enhance the competitiveness and sustainability of schools. Therefore, a thriving school should cultivate an organizational environment that integrates organizational learning and knowledge management. The research aligns with Abedini et al. (2017) and Fathi's (2014) studies.

Additionally, the research findings assert that organizational learning affects creative problem-solving in District 1's secondary schools in Tehran. Proper principles should accompany an active educational environment to direct the learning process instead of relying on chance and randomness. Problem-solving skills are a crucial element in managing the learning process. According to organizational learning theory, an organization is considered an open system with the ability to predict, identify, define, design, and solve problems. These findings align with the research of Razzian (2018), Dehghan Monshadi (2018), and Duru et al. (2019).

The research suggests that knowledge management systems should be implemented and developed to create diverse opportunities for exchanging knowledge. Additionally, the integration of information technology in educational institutions must be prioritized. To facilitate the achievement of goals and promote continuous teacher

learning, databases and knowledge bases should be established and made accessible to managers and teachers. In order to further support this initiative, schools should create a designated learning center and provide sufficient space for its use. In order to improve knowledge management and promote organizational learning in schools, it is suggested that training courses be provided to meet the knowledge requirements of staff and teachers in the areas of personal skills, mental models, common visions, and systemic thinking. It must be noted that this study had a limited scope, focusing solely on employees of secondary schools in District 1 in Tehran. Therefore, caution must be exercised when extrapolating the findings to other educational staff and employees at different schools. Moreover, this study is constrained by the use of a singular research tool (questionnaire) and self-reported participation. Thus, replicating this investigation at other institutions with multiple research methods, including interviews, observations, and document analysis, is recommended for future research.

Declaration

We acknowledge that we used ChatGPT to enhance the academic writing of our manuscript while ensuring the originality and integrity of our work.

Transparency Statement

The data supporting this study are available upon reasonable request to the corresponding author, subject to ethical and confidentiality considerations.

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Declaration of Interest

The authors declare that they have no competing interests.

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