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Presenting the Model of Improving the Effective Training System for Karaj Municipality's Employees: A Mixed Method Study

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Article Info	ABSTRACT
<p>Article type: Research Article</p> <p>Article history: Received 10 Apr. 2023 Received in revised form 21 Aug. 2023 Accepted 13 Oct. 2023 Published online 01 June 2024</p> <p>Keywords: Effectiveness, Education, In-service training, Municipal Employees, Mixed method study</p>	<p>Objective: The current article introduces the Model for Enhancing the Efficient Training System for Employees of Karaj Municipality, utilizing a Mixed Method approach.</p> <p>Methods: The study was conducted in two phases: a Qualitative segment employing qualitative content analysis, and a Quantitative segment utilizing correlation and exploratory factor analysis methods. The Qualitative part involved analyzing and conceptualizing data from semi-structured interviews with 12 specialists in organizational education, employing open, central, and selective coding stages. Subsequently, the Quantitative segment utilized a researcher-developed questionnaire (comprising 35 items) with a Likert scale to assess the perspectives of 101 managers and experts from Karaj Municipality.</p> <p>Results: A total of 62 codes were identified and categorized based on thematic affinity and concepts. Through a combination of indicators, 7 categories were derived within 5 principal dimensions. The data obtained from the exploratory factor analysis questionnaire in the Quantitative segment were examined using SMART PLS 2 and SPSS 16 statistical software. The fit indices in the tables demonstrate the suitability of the model, with all factor loadings and path coefficients being statistically significant. The results from the structural equation modeling output of PL Smart software indicate that all significant coefficients in the model exceed 1.96, affirming the relationships governing the components of the proposed model with 95% confidence.</p> <p>Conclusions: Consequently, the validity and reliability of the questionnaire were verified, along with the confirmation of relationships among the model's components.</p>
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Introduction

From the point of view of organizational theorists, the achievement of the organization's goals and adaptation to the complexities and uncertainties of the environment depends on the quality education of human resources ([Irajirad & Teimoorzade Namini, 2019](#)). Education is critical to education systems and should promote learning. Everyone should keep pace with technology to help build academic and professional skills, attitudes, and behaviors. Schools, colleges, educational centers, universities and other educational programs provide education all over the world ([Qaisra & Haider, 2023](#)). In fact, "training" is still the most effective human development strategy ([Irajirad & Teimoorzade Namini, 2019](#); [Sefidgar et al., 2020](#)) where the fundamental gap between organizations, the challenge of trained manpower and the development of capabilities The individual is to meet the needs of the organization ([Valipour et al., 2021](#)). From an organizational point of view, in-service training refers to those types of training that employees must receive after employment in order to be able to perform assigned duties and responsibilities in the best way. These trainings facilitate the acquisition of new knowledge and sciences, skills and abilities that are needed to improve the performance of employees ([Wang et al., 2015](#)).

In-service training can improve education, adapt to changing educational needs, help develop professionals, and help countries achieve development goals. It can also help employees improve their performance and lead the educational system ([Qaisra & Haider, 2023](#)). In-service training is actually training that is carried out simultaneously with official responsibilities to improve the qualifications and skills of employees ([Dilshad et al., 2019](#)). In-service training can be obligatory in association with formal professional development endeavors to uphold or enhance professional qualifications, or it can alternatively be discretionary with the objective of enhancing skills ([Sahamkhadam, 2020](#)). In-service training results in the cultivation of competencies; Competence can be delineated as a blend of knowledge, skills, and abilities essential to execute a particular task in a specific setting ([Fletcher, 2001](#)), which can be obtained through practice, pre-service and in-service training, and the guidance of mentors and instructors. Essentially, in-service training encompasses a series of initiatives aimed at enhancing the capability and proficiency of employees to execute their responsibilities more effectively, thereby aiding the organization in attaining its objectives ([Fateminejhad & Kolahjoei, 2013](#)). In-service training, aside from theoretical understanding, this form of training ought to amplify technical proficiency and service excellence

and stimulate innovation ([Jalali & Berlian, 2014](#)). Training schemes should be structured in a manner that boosts the practical competencies of employees ([Shaheen et al., 2013](#)). A key characteristic of in-service training is its pragmatism. Previous investigations have indicated that job attributes and professional elements can influence employee engagement in in-service training ([Sajjadnia et al., 2015](#)). An efficient educational framework must satisfy the following prerequisites: 1. Establish a dependable correlation between strategic objectives and necessities and the methods to fulfill them; 2. Furnish a consistent and straightforward framework and outline of tasks to the trainees; 3. Foster communication across all elements and processes; 4. Highlight objective and measurable outcomes ([Yalpanian et al., 2021](#)).

Concurrently, devising an appropriate and valuable training program for employees can enhance performance and optimize the organization's investments. Nonetheless, there lacks a cohesive model in practice that can guide managers and experts of in-service training (Karaj Municipality) in the journey of needs assessment, design, execution, and assessment of these training sessions, a model that planners and implementers of in-service trainings (Karaj Municipality) can consult and implement: What factors should be considered during the needs assessment to ensure the alignment of the trainings with the genuine needs of the employees. What factors should be considered during instructional design to guarantee the efficacy of training programs. What factors should be taken into account when administering training programs to encourage enthusiastic employee participation in the courses. What factors should be considered when delivering the educational content to ensure the efficacy of the trainings. Subsequent to delivering the trainings, what factors should be considered for the evaluation to gauge the effectiveness of the trainings and pinpoint areas necessitating improvement.

On the other hand, municipalities as public sector organizations have direct effects on the society. Today, the municipality is an institution that has a major impact on the quality of life of citizens. Therefore, the development of the educational system of these organizations along with the changes of the present era is one of the most important criteria for the satisfaction of citizens and as a result the welfare of the society. Also, in the comprehensive document of the comprehensive scientific map of the country, special attention has been paid to the major goals of the field of science and technology in the country in the perspective of 2025, which are: "Achieving the first position of science and technology in the Islamic world and achieving an important scientific and

inspirational position" in the world and the establishment of a knowledge-oriented, justice-oriented society with competent, cultured and elite people to establish scientific authority in the world. In order to accomplish these objectives, it is imperative to adapt the educational system to meet the requirements of the emerging paradigm. Given the significance of determining influential factors in the process of providing training to employees, various studies have been carried out. These studies differ from the current one either in terms of methodology or in their specific objectives, as elaborated below. [Yalpanian et al. \(2021\)](#) identified three dimensions - organizational, behavioral, and educational - along with eight components. These components encompass the course's nature and content, the instructor, the learning environment, the instructional approach, organizational elements, thorough analysis, attitudes and motivation, and follow-up procedures. They highlighted the significance of training human resources at Azad University, which has proven to be impactful. Additionally, [Shakeri kalilabad et al. \(2022\)](#) emphasized the positive impact of implementing in-service training programs on enhancing employees' performance, skills, and capabilities. [Yulianto et al. \(2022\)](#) recognized that the qualification of employees significantly influences their commitment to work in the education and training sector, as well as their overall performance. Moreover, training plays a crucial role in enhancing employee performance. [Wang et al. \(2015\)](#) underscored the importance of evaluating trainees' learning performance, behaviors, and tacit knowledge to enhance their learning outcomes.

From the perspective of reconsidering the educational development process, organizational planners must focus on analyzing both the internal and external environments, addressing various weaknesses, strengths, threats, and opportunities. This highlights the significant role of education in organizational development and evolution. Hence, a coherent model is essential for the efficacy of employee training within the educational system, enabling the mitigation of system weaknesses while delivering effective training to managers and staff. There appears to be a greater emphasis on employee training, particularly in-service training, compared to previous times. This shift underscores the importance of quality education and a systematic approach to developing, implementing, and evaluating educational programs. Challenges such as the absence of adequate standards, deficiencies in the human resources structure of educational institutions, and a lack of managerial trust in education need to be addressed. Recognized as a crucial tool for human capital

development and organizational change, it is imperative for planners to prioritize these aspects to attain a qualitative enhancement in scientific research endeavors.

This research is significant due to its practical and effective nature, as it thoroughly identifies the crucial factors influencing the in-service training of employees within organizations. Furthermore, the study aims to pinpoint the effectiveness model factors in the in-service training of municipal employees and fulfill specific research objectives: first, recognizing the effective factors in Karaj municipality employees' in-service training; second, determining the structural layout of these factors in the training process; and third, validating the structural model of effective factors in the training process. The ultimate goal is to offer novel insights to executives, specialists, and scholars in the field.

Material and Methods

This study is of an applied-developmental nature with regards to its purpose and adopts a descriptive-survey approach in terms of methodology. An exploratory methodology combining qualitative and quantitative methods is utilized. The study employs interviews and questionnaires to address research inquiries. Inductive methods were used in the developmental approach to identify variables and establish a model. Intentional sampling, deemed appropriate for interviews, was employed. Qualitative methodologies were initially used, setting the foundation for subsequent phases. The next phase tested observed patterns through theme analysis, with validation conducted using confirmatory factor analysis through MART PLS 2 and SPSS 16 software, employing quantitative methodologies.

In the literature review phase, various sources such as papers, books, and treatises were examined to identify indicators. Interviews were conducted with 12 participants from Karaj Municipality, including managers and employees. The statistical population for model validation included university professors, managers, and experts from the municipality. This encompassed professors with doctorates in public administration and educational management, assistant managers, human resources, and training experts. The estimated settlement population in 2021 was 130 individuals. Research methodology involves sampling processes and determination of sample size. The study utilized theoretical sampling of a specific type through targeted strategies. Sampling continued until data saturation. Concept identification involved 12 interviews with individuals specialized in

educational management, including PhD holders, senior experts, managers, and those in public administration and human resources. Purposeful sampling was used in the second step for model validation and confirmatory factor analysis with a sample size of 101 Karaj Municipality employees (Table 1).

Table 1. Demographic characteristics of questionnaire respondents

Gende	N	Education level	N	Age	N
Female	42	Diploma and higher	13	20-30	13
Male	50	Bachelor	37	31-40	37
Without response	9	Master	45	41-50	35
		PhD	6	Above 50	12
Total			101		

Results

The coding process was done in several stages. First, the categories were identified in the open coding format, and then through the axial coding, the categories that were at the same level in terms of meaning were identified.

Based on the results of literature review and interviews, a total of 62 codes were identified. In the following, all the codes were categorized based on thematic affinity and concepts. In this way, 7 categories were extracted from the combination of indicators and five main dimensions were extracted from the combination of categories, which were confirmed by using the theme analysis technique and " MAXQDA " software and according to the opinion of experts. obtained, which is presented in the form of table 2.

Table 2. Coding conditions (causal, intervening, contextual) research strategies and outcomes

Selective coding	Axial coding	Open coding	Concepts of interview
Causal conditions	Planning (comprehensive executive)	Adaptation to job and specialized needs	Training courses are designed according to job needs
			Training courses are designed according to the specialized needs of employees
		Design based on organization's goals	Designing training courses based on the mission of the organization
			Designing training courses based on the mission of the organization
		The information method	Notification based on the topic

			Notification based on location
			Notification based on time
			Effective actions
			Effective measures to provide quality training courses
			Use results
			The results of training courses are used in decisions
			The results of training courses are used in planning
Outputs	Learner	The impact of training courses on employees' job promotion	Passing training courses is necessary for employee career advancement
		Employee Education History	In training courses, the level of motivation plays an effective role in the quality of employees' learning
			In training courses, the level of prior motivation of learners plays an effective role in the quality of employees' learning.
			In training courses, the students' previous knowledge plays an effective role in the quality of employees' learning.
			In the training courses, the previous skills of the learners play an effective role in the quality of the employees' learning.
		The performance and empowerment of employees	Participation in training courses is effective and useful in the way employees work.
			Participation in employee empowerment training courses is effective and useful.
		Individual education	In training courses, employees are separated in order to provide training according to the type of job.
			In training courses, employees are separated in order to provide training according to the job description.
		Successful passing courses	Successful completion of training courses is effective in salary promotion.
		The extent to promotion of employees' salaries and benefits	Successful completion of training courses is effective in the amount of employee benefits.
Intervening conditions	Teachers	Dominance	Mastery in teaching

		Dominating the class	
		The proportion of the evaluation method with the content of the lesson	Suitability of the evaluation method with the course content
		The proportion of social behavior	The suitability of the social behavior of the teacher with the capacity of the learners in terms of gender
			The appropriateness of the social behavior of the teacher with the capacity of the learners in terms of age
			The suitability of the social behavior of the teacher with the capacity of the learners in terms of education
		Collaborative teaching	Motivating learners through participation in discussions
		Use the new tool	Optimum use of new equipment
		Optimal use of technology	
		Central phenomenon	Appropriate standards should be considered for the training course
			Quality
			New and up -to -date content
			The newness of the educational chapters
			Newness of educational materials
			Up-to-date course materials
			Being up-to-date on the educational season
			Attention to the educational space
		Content	Suitability of educational space with educational issues
			Hybrid and virtual content
		Use of Internet technology	
Contextual conditions	Learning environment	and combining virtual training with face-to-face	
		Employment of educational findings in the educational environment Location quality	Providing conditions to check the results in the same environment
			In terms of light and brightness
			Proper ventilation
		How the participants are deployed	Good sound

					Attention to the type of characteristics of people in sitting
					How to place participants in training courses according to gender
					How to place participants in training courses according to age
					How to place participants in training courses, according to the job position
					Attractive
					to suite
					Office structure
					The teaching methods are suitable for providing optimal training to the employees
					Management structure Cultural structure
					The administrative structure of the organization has sufficient potential in support for providing trainings
Strategy	Creative innovation	Information technology structure Dynamic learning			Appropriate social structure
					Appropriate value structure
					To what extent is the culture of employees supportive of learning?
					Economic Structure
					The economic structure of the organization is optimal for financial support in providing training to employees.
					Appropriate software and hardware (teaching and learning systems) are used in providing training.
					The atmosphere of the organization is "encouraging", dynamic (creative) learning.
					The educational environment is "encouraging", dynamic (creative) learning.
					The structure that fits the creativity New and up -to -date teaching material
					The physical structure (tools and devices, etc.), according to the creativity (innovation) of the organization
					New and up-to-date educational content
					Educational creativity of the courses
					Learning approaches and methods
					Course instructors use various (creative) educational methods.

The results of this stage led to the following research model.

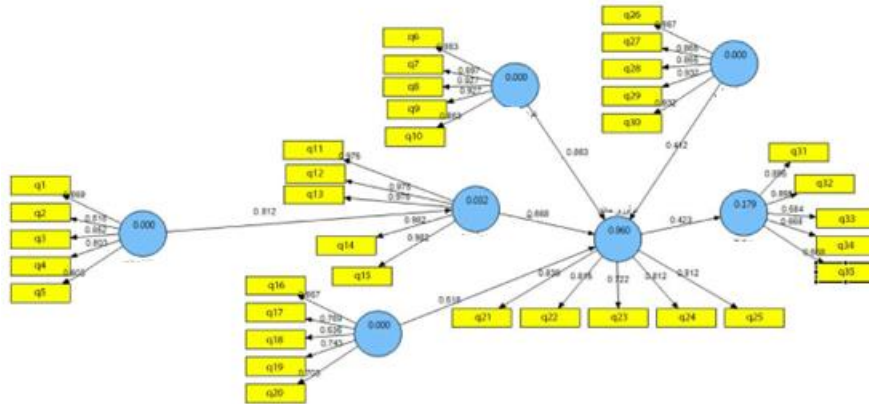


Figure 2. Paradigmatic model of in-service training

In the second stage of the research, the designed model was validated based on the designed questionnaire and using the confirmatory factor analysis method. In order to examine the relationships between variables, structural equation modeling has been used. After the descriptive analysis of the data, the inferential analysis of the data is done to check the validity of the structural model. There are steps to analyze structural equation modeling patterns with the Partial Least Squares (PLS-SEM) approach. Three methods of factor loading coefficients, Cronbach's alpha coefficients, composite reliability (multiple reliability) were used for reliability fitting, and all factor loadings are higher than 0.4, which indicates the appropriateness of the model.

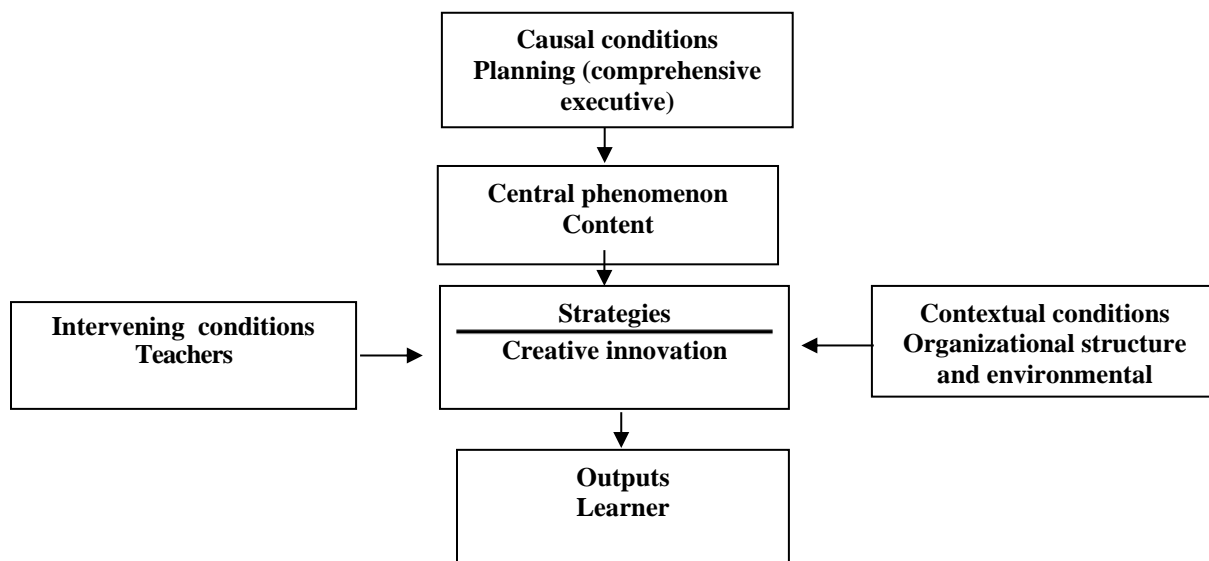


Figure 2. Factor structure of the research model

In the following, the influence of the identified factors on each other has been examined:

Table 3. Investigating the influence of the identified factors on each other in the research model

Path	Path coefficient	T value	Result
Planning (comprehensive implementation) and educational content	0.81	5.34	Confirmed
Educational content and innovation and creativity	0.67	7.97	Confirmed
Organizational conditions and innovation and creativity	0.86	15.87	Confirmed
Educational environment and innovation and creativity	0.41	7.52	Confirmed
Organizational conditions on innovation and creativity	0.51	3.16	Confirmed
Innovation and creativity and the consequences of education	0.42	5.59	Confirmed

Based on the numbers at the 95% confidence level based on Table 3 and figures considering that the T statistic is greater than 1.96; As a result, all relationships are confirmed.

Discussion

From the perspective of reconsidering the educational development process, organizational planners must focus on analyzing both the internal and external environments, addressing various weaknesses, strengths, threats, and opportunities. This highlights the significant role of education in organizational development and evolution. Hence, a coherent model is essential for the efficacy of employee training within the educational system, enabling the mitigation of system weaknesses while delivering effective training to managers and staff. There appears to be a greater emphasis on employee training, particularly in-service training, compared to previous times. This shift underscores the importance of quality education and a systematic approach to developing, implementing, and evaluating educational programs. Challenges such as the absence of adequate standards, deficiencies in the human resources structure of educational institutions, and a lack of managerial trust in education need to be addressed. Recognized as a crucial tool for human capital development and organizational change, it is imperative for planners to prioritize these aspects to attain a qualitative enhancement in scientific research endeavors.

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employees and fulfill specific research objectives: first, recognizing the effective factors in Karaj municipality employees' in-service training; second, determining the structural layout of these factors in the training process; and third, validating the structural model of effective factors in the training process. The ultimate goal is to offer novel insights to executives, specialists, and scholars in the field.

The central phenomenon, which encompasses the educational content, comprises 5 subcategories (codes) relating to practicality, quality, attention to the educational environment, mixed and virtual content, as well as novelty and currency of the content, as evidenced in the works of [Wang et al. \(2015\)](#) and [Murray and Donegan \(2003\)](#). It can be posited that a more cheerful and pleasant environment fosters heightened mental activity and enhanced creativity.

The contextual factors involve the educational environment, encompassing aspects such as the venue, quality, participant arrangement, application of educational discoveries, and the overall atmosphere, aligning with the findings of [Davies et al. \(2013\)](#). [Davies et al. \(2013\)](#) asserts that the quality of the venue, participant arrangement, application of educational discoveries, and the atmosphere significantly influence innovation and creativity. The second organizational infrastructure code consists of 5 subcategories (codes) pertaining to administrative, management, cultural, economic structures, and information technology infrastructure. The research strategy incorporates service innovation, encompassing learning approaches, dynamic learning, structures conducive to creativity, novelty and currency of teaching materials, creative methodologies, and dynamic management administrative structures. It can be argued that organizations displaying greater openness to structural or personnel changes and acting with increased flexibility tend to exhibit higher levels of innovation and creativity.

Moreover, the quantitative findings, based on the table, indicate interrelations among the factors identified in the foundational data model. The path coefficient between planning (comprehensive executive) and educational content is 0.812, with a t-statistic of 5.340. The path coefficient between educational content and innovation and creativity is 0.668, with a t-statistic of 7.972. The path coefficient between organizational conditions and innovation and creativity is 0.863, with a t-statistic of 15.878. The t-statistic for innovation and creativity is 0.412, and for creativity and educational outcomes, it is 0.512, with a t-statistic of 5.598. Consequently, all relationships are corroborated. Based on the present discoveries, it is recommended:

1) Formulating and composing a strategic document aimed at enhancing human capital development by meticulously planning the organizational training process within Karaj Metropolitan Municipality. 2) Carrying out comparative research that concentrates on thriving organizations in the realm of organizational training, utilizing organizational training models to refine and revise the ultimate model in this study. 3) Anticipating insights from advisory panels concerning the execution of the final model for the organizational training process within Karaj Municipality. 4) Revising and upgrading the compiled model biennially due to the constant and escalating technological changes, utilizing needs assessment and the pathology of the organizational training process within Karaj Municipality. 5) Establishing centers dedicated to evaluating and enhancing the organizational training process for all staff members and executives of Karaj Municipality. 6) Advancing the academic and theoretical discourse on organizational training within Karaj Municipality through: a) constructing databases that emphasize the organizational training process within Karaj Municipality, b) conducting workshops and training sessions to acquaint employees and managers with the organizational training process in Karaj Municipality, c) organizing training workshops in Karaj Municipality to foster a culture of expertise and knowledge and to lay the groundwork for designing and implementing the training process for employees and managers of Karaj Municipality. 7) Assessing and engaging competent employees and managers possessing educational expertise as consultants and instructors in the organizational training programs of Karaj Municipality. 8) Establishing appropriate incentives and motivation for employees and managers to actively engage in the organizational training programs offered by Karaj Municipality. 9) Specifying the requisite qualifications and credentials prior to embarking on organizational training programs (pre-examination). 10) Expanding the resources available in libraries and in-service centers for the benefit of human resources. 11) Providing a platform for ongoing training of human resources and facilitating their academic and professional progression. 12) Appraising the training performance of recipients and delivering constructive feedback to enhance their development.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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