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Stimulation of Organizational Inertia: Identification of the Dimensions and Components of Organizational Inertia at Mazandaran University of Medical Sciences, Iran

Kosar Momeni Badeleh¹, Taraneh Enayati¹ 

¹ Human Science Faculty, Islamic Azad University sari branch, Mazandaran, Iran.

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*Corresponding author:

Taraneh Enayati, Human Science
Faculty, Islamic Azad University sari
branch, Mazandaran, Iran.

Email: enayati@iaue.ac.ir

Abstract

Background & Objective: Considering the current unstable environment, organizations are faced with numerous changes and should adapt to various environmental factors. The present study aimed to evaluate the dimensions and components of organizational inertia at Mazandaran University of Medical Sciences (MUMS), Iran.

Materials and Methods: This applied study was conducted based on an exploratory design approach. The sample population consisted of the administrators in the qualitative section and faculty members in the quantitative section. Data were collected via note-taking and semi-structured interviews in the qualitative section and using a 64-item researcher-made organizational inertia questionnaire in the quantitative section. Data analysis was performed in SPSS version 21 and the PLS software using exploratory factor analysis, confirmatory factor analysis, and structural equations.

Results: The results of exploratory factor analysis indicated that organizational inertia had organizational, environmental, and individual dimensions. The organizational dimension consisted of seven components, including supportive climate, continuous staff training, inertia in procedures, inter-organizational learning activities, environmental scrutiny, organizational structure, and leadership. The environmental dimension had two components of flexibility and environmental changes, and the individual dimension had eight components of knowledge inertia, continuous education, inertia in thought, inertia in practice, inertia of experience, inertia of learning, psychological inertia, and insight inertia.

Conclusion: From the viewpoint of the faculty members of MUMS, there is organizational inertia in the individual, organizational, and environmental dimensions of the university. Therefore, the university officials must modify the components of organizational inertia in order to counteract this phenomenon.



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Introduction

The educational system is considered to be the leading system in every country, and the development of a population requires the proper implementation of the educational system. Lack of adaptability to environmental changes is a major concern in the educational system in Iran. Today, the constant reuse of outdated knowledge for solving new problems has become a false principle in organizational decision-making and the policymaking processes in Iran. Consequently, these phenomena will remain static in the education sector until this situation becomes infeasible or undergoes changes due to external factors. Such lack of adaptability is rooted in the inactivity and immobility of organizations and is referred to as organizational inertia (1).

Organizational inertia adversely affects the capability of an organization to innovate, learn, and solve problems (2). In a state of organizational inertia, the organization is in a stationary state in the face of ever-increasing environmental changes, only using outdated methods for the management of the issues and problems that have arisen recently (3). Undoubtedly, solving new issues and problems requires creativity and innovation, while organizational inertia acts as a potent barrier to creative approaches (4).

Today, organizations are undergoing severe changes due to the current unstable environment, which obliges them to adapt to various environmental factors (5). Organizations should adapt their operations to environmental changes and modify their

organizational structure in accordance with new operational models (6). Increased competition, technology advancement, workforce diversity, and increased customer expectations are the factors that urge organizations toward change and development (7). If change, transformation, and innovation were not necessary, organizations would remain in the early stages of their formation without experiencing development and progress (8). Lack of variability and modification causes organizations to remain within their original framework, thereby blocking their progress. Such invariability and static state in an organization is known as organizational inertia.

The present study aimed to evaluate the dimensions and components of organizational inertia and evaluate the influential factors in the dimensions and components of organizational inertia at Mazandaran University of Medical Sciences (MUMS), Iran.

Materials and Methods

Study Design, Samples, and Setting

This applied study was conducted in 2018 using a combined qualitative and quantitative approach with an exploratory design. Since the descriptive survey

method was used in the quantitative approach, a monitoring descriptive method was used to address the current situation.

Data Collection

The sample population of the study was divided into two groups. In order to obtain the dimensions of organizational inertia after collecting the required qualitative data, a semi-structure study was performed via in-depth, exploratory interviews with 35 university administrators and faculty members with a minimum of 10 years of work experience. The participants were selected via purposive sampling.

The duration of each interview session was 30-55 minutes, and the obtained data sufficed after the ninth sessions. With regard to the sample size, the interviews continued for 10 other subjects. The obtained concepts, factors, and categories were used to lay the basis of designing a questionnaire in order to provide a model for organizational inertia exposure with an emphasis on mobile learning at MUMS. In addition, the dimensions and indicators obtained in the qualitative phase were subjected to the judgment of the sample population (434 faculty members of MUMS).

Table 1: The number of statistical samples differentiating the faculties of the MUMS.

Schools	Statistical Population	Statistical Sample	Ratio
Medical	248	117	0.571
Dentistry	43	20	0.10
Pharmacy	31	15	0.071
Pardis	12	6	0.028
Health	27	13	0.062
Nursing and Midwifery	28	13	0.064
Paramedical	18	8	0.041
Modern Technologies	7	3	0.016
Nursing, Amol	9	4	0.021
Paramedical, Amol	4	2	0.01
Nursing, Behshahr	2	1	0.004
Research Centers	5	2	0.012
Total	434	204	1

At 95% confidence level and measurement error of $\alpha=0.05$ and using the Cochran formula, 204

participants were selected via stratified random sampling based on the faculties of MUMS (Table 1).

To confirm the formal validity, the prepared questionnaires were submitted to experts for verification, and the content validity of the tool was confirmed in different stages. After identifying and determining the dimensions and components of each variable through a literature review and obtaining the viewpoints of the experts, an initial questionnaire was prepared and initially modified based on the feedback and recommendations of the experts. Following that, secondary modifications were performed to each variable with the help of the experts. Finally, the final modifications were made to each tool with the guidance of instructors and consultants.

In order to investigate the structures validity, the correlations between the current variables and relevant items in the questionnaires were determined using a measurement model. Figures S1 and S2 show the measurement model in the standard and significant coefficient estimates.

Structural validity encompasses convergent validity and divergent validity. In the assessment of convergent structural validity, the weight of all the factors should be statistically significant and higher than 0.7. Moreover, all variables must have a composite reliability (CR) > AVE correlation, with AVE representing the coefficients of the mean extracted variance. The AVE is defined as follows and should be higher than 0.5 for all the variables:

In the current research, divergent structural validity was assessed using the Fornell and Larcker test, which requires two variable correlation tables and an AVE table. Afterwards, $\sqrt{\text{AVE}}$ was placed on each variable instead of one, and each $\sqrt{\text{AVE}}$ value had to be higher than its own row and column values. Furthermore, Cronbach's alpha and combined reliability were used to measure the reliability of the instrument, as well as to examine the internal correlations between the questions outside the model and for each variable. As is shown in Table 2, the Cronbach's alpha of all the components was higher than 0.7, and the combined reliability values were also

higher than 0.7. Therefore, the reliability of the measurement model was confirmed.

Data were also collected via note-taking and semi-structured interviews to identify the dimensions of organizational inertia and mobile learning. By assessing the theoretical foundations and research background, the initial note-taking was carried out, and the dimensions and indicators were identified based on their categorization and tabulation.

On the other hand, the dimensions and indicators required for higher education were identified and determined by conducting semi-structured interviews with the participants and acquiring agreement.

Several methods were used to evaluate the qualitative section and enhance the credibility of the findings, such as the long-term evaluation of the data, continuous observation, trilogy assessment (data collection through various sources and methods), analysis of the conflicting data, and raw data interpretations. It is notable that early conclusions and immature results were avoided by consulting with experts.

All the involved supervisors considered the data comprehensiveness to be adequate after the interpretation, analysis, and description in terms of transferability. By following a unified method throughout the study, the researcher was able to validate the relative stability of the data over time based on the dependency criterion through the coding, accurate recording of the steps, combining, integrating, and summarizing the data. Moreover, the data impressibility was covered based on the reconsideration and corrective views of the participants and observers.

Some of the interview questions were as follows:

Research Questions about Organizational Inertia:

- What are the dimensions of organizational inertia?
- What are the main influential factors in overcoming organizational inertia?

- What are the most significant influential factors in the occurrence of organizational inertia?
- How can organizational inertia be overcome?

Table 2: Reliability of data collection tools.

Row	Hidden variables	Cronbach's alpha	Combined validity
1	Supportive behavior	0.918	0.942
2	Continuous training of staff	0.835	0.890
3	Inertia in procedures	0.913	0.945
4	Inter-organizational learning activities	0.899	0.937
5	Environment scrolling method	0.896	0.935
6	Organizational structure	0.949	0.959
7	Leadership	0.888	0.915
8	Flexibility	0.866	0.918
9	environmental changes	0.889	0.931
10	Knowledge inertia	0.882	0.927
11	continuous education	0.929	0.955
12	Inertia in thinking	0.849	0.910
13	Inertia in action	0.966	0.975
14	Inertia in experience	0.919	0.949
15	Learning inertia	0.862	0.916
16	Psychological inertia	0.947	0.958
17	Insight inertia	0.857	0.913
18	Understanding knowledge	0.971	0.973
19	Attracting knowledge	0.939	0.953
20	Acquisition of knowledge	0.914	0.932
21	Extraction of knowledge	0.879	0.913
22	Organizing knowledge	0.838	0.885
23	Applying knowledge	0.902	0.923
24	Organizational culture	0.894	0.922
25	Organizational structure	0.947	0.962
26	Organization technology	0.952	0.961
27	Human resources	0.925	0.944
28	Organization environment	0.926	0.948
29	Ease of use	0.901	0.939
30	Teacher preparation (behavioral and practical)	0.744	0.886
31	Student preparation (behavioral and practical)	0.891	0.932
32	Perceived self-efficacy	0.778	0.871
33	Learning independence	0.882	0.944
34	Intent to accept learning	0.838	0.925
35	Attitude	0.674	0.858
36	Subjective norms	0.921	0.950
37	Practical preparation	0.862	0.936
38	Specialized man power	0.971	0.986
39	Organizational rules	0.865	0.908
40	Required software features	0.903	0.935
41	Required hardware features	0.878	0.943

In each interview session, the objectives of the interview were explained to the participants. The duration of each interview was 30-50 minutes. The interviewer recorded the key points of each interview. After identifying the dimensions based on the theoretical foundations and interviewing the subjects, the initial questionnaire was prepared and modified in three stages. The dimensions and indicators were also evaluated, modified, and confirmed using the prepared questionnaire.

Data were collected using the researcher-made organizational inertia questionnaire, which consisted of 64 items in the organizational, environmental, and

individual dimensions and 17 components, including supportive behavior (9), continuous staff training, inertia in procedures (10), inter-organizational learning activities (11), environmental scrolling methods, organizational structure, leadership (12), flexibility, environmental changes (18), knowledge inertia (13), continuous education, inertia in thought (14), inertia in practice, experience inertia (15), learning inertia, psychological inertia, and insight inertia (16). These components were graded based on a five-point Likert scale (Very Low, Low, Medium, High, and Very High) within the score range of 1-5, respectively.

Table 3: Frequency and percentage distribution of the study subjects gender in the qualitative section.

Gender	Frequency	Frequency percentage
Male	7	70
Female	3	30
Total	10	100

Ethical Considerations

Written informed consent was obtained from the participants prior to enrollment. Before the research, the participants were informed of the subject and methodology of the study and assured of confidentiality terms and anonymity. In addition, the personal information of the bidders remained confidential during and after the study. Participation in the research caused no financial burden to the participants. It is notable that the research procedures were not in conflict with the religious and cultural norms of the sample population.

Results

Several methods were combined to enhance the accuracy and validity of the findings (e.g., member checking and peer checking). Furthermore, the following steps were carefully followed: holding a minimum of two meetings with the participants, conducting more than one interview session with most of the participants, taking daily notes during data

collection, close and long interactions of the research team with the participants for the accurate interpretation of the collected data during data analysis, and consulting with three consultants (main supervisor, educational deputy, and educational chief). The interpretations of the research team had to be confirmed by all the participants. The findings of the interpretation and analysis processes were enhanced by the research team and expert educational consultants. Transcripts, codes, and themes were also examined, and higher consensus was achieved between the research team and consultants. In order to reach the final consensus, the parts that were subject to disagreement were discussed as well. Table 3 shows the characteristics of the participants in the qualitative and quantitative sections.

In total, 204 faculty members met the inclusion criteria of the study (78 females and 126 males), and the Kolmogorov-Smirnov test was used to verify the normality of data distribution (Table 4). According to

the information in Table 4, the significance level was considered at 95% confidence interval with the measurement error for the research variables

($P > 0.05$). As a result, data distribution was considered normal, and the use of parametric statistical tests was allowed for the analysis of the inferential data.

Table 4: Analysis the normality of data distribution

Row	Variable	Sample size	Significance level
1	Organizational inertia	204	0.118

Table 5 shows the validity of the data collection tools as determined in the PLS-SEM software. According to the information in Table S1, the AVE values of all the components were higher than 0.5, which indicated the convergent validity of the model. Table S2 shows the supporting information, and the data indicate that the

factor weight of all the indices was higher than 0.7. Since the t-value coefficient of all the indices was out of the range of 2.58-2.58), all the factor weights were considered 99% significant. As a result, the model proved to have convergent validity again.

Table5: Validity of data collection tools.

Row	Hidden variables	Variable code	AVE
1	Supportive atmosphere	AA	0.804
2	Continuous staff training	AB	0.670
3	Inertia in procedures	AC	0.852
4	Inter-organizational learning activities	AD	0.833
5	Environmental scrolling method	AE	0.828
6	Organizational structure	AF	0.770
7	Leadership	AG	0.642
8	Flexibility	AH	0.789
9	Environmental changes	AI	0.819
10	Knowledge inertia	AJ	0.809
11	Continuing education	AK	0.876
12	Inertia in thinking	AL	0.771
13	Inertia in practice	AM	0.907
14	Experience inertia	AN	0.861
15	Learning inertia	AO	0.784
16	Psychological inertia	AP	0.792
17	Insight inertia	AQ	0.778

As can be seen in Table 2, all the $\sqrt{\text{AVE}}$ values were higher their own rows and columns, which confirmed the divergent validity. In general, the convergence of the four convergent validity conditions was established, as well as the divergent validity conditions and structural validity. According to the information in Table S3, the Cronbach's alpha of all the components was higher than 0.7, and the composite reliability values were also higher than 0.7, thereby confirming the

reliability of the measurement model.

What are the dimensions of organizational inertia in MUMS?

In the present study, the organizational, environmental, and individual dimensions were identified and categorized based on the data obtained from the interviews with the participants. Table 6 summarizes the results of the integration process of the interviews.

Table 6: Integrating the indicators extracted from the subjects in the organizational inertia variable

Row	Dimensions	The number of indicators identified from each interviewee										Integrating indicators in each dimension
		1	2	3	4	5	6	7	8	9	10	
1	Organizational	6	8	4	7	8	5	6	5	6	4	30
2	Environmental	3	2	2	4	2	1	3	2	1	2	6
3	Individual	6	7	8	3	5	6	6	4	5	3	38
4	Total	15	17	14	14	15	12	15	11	12	9	64

Each indicator was cited and emphasized by the interviewers at least once and up to eight times. After the integration of the indicators, 64 indicators were identified and validated in the three dimensions (organizational, environmental, and individual). Following that, the indicators were used for the determining and ranking of the components through exploratory factor analysis. Furthermore, the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were employed to determine the adequacy and eligibility of the data to perform the factor analysis.

Statistical Analysis

Based on the obtained results, the KMO statistic value was calculated to be higher than 0.7 for both dimensions at 95% confidence level. According to the

results of Bartlett's test, the significance level was calculated to be less than 0.05 for all the variables, indicating inadequate evidence to support the null hypothesis. Therefore, the research hypothesis was confirmed, and the data were correlated. The data also had the adequacy and correlation required to perform the exploratory factor analysis. The percentages of the variance explained in the last column showed that 75.574%, 76.048%, and 78.905% of the changes in the questions of the organizational, environmental, and individual dimensions could be explained by the extracted components, respectively. The exploratory factor analysis was performed to determine the factor loadings of each dimension and its components.

Table 7: The results of KMO and Bartlett tests

Dimensions	KMO and Bartlett Statistics	Test result	Percentage of explained variance
Organizational	KMO=0.948 Sig=0.000	Confirming data adequacy and correlation	75.574%
Environmental	KMO=0.946 Sig=0.000	Confirming data adequacy and correlation	76.048%
Individual	KMO=0.911 Sig=0.000	Confirming data adequacy and correlation	78.905%

According to the findings, the organizational dimension had seven components, including

supportive behavior, continuous staff training, inertia in procedures, inter-organizational learning activities,

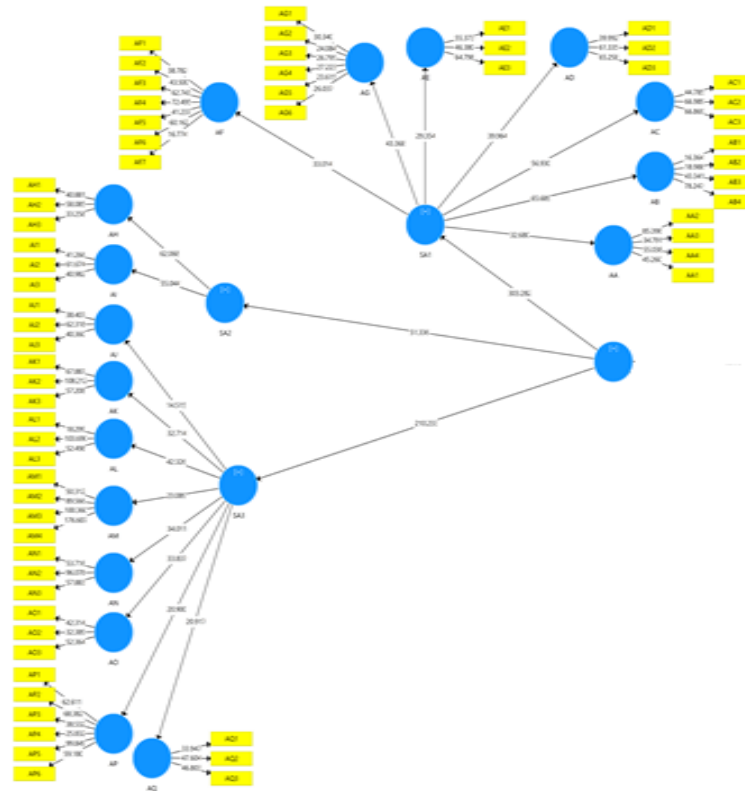
environmental scrolling methods, organizational structure, and leadership. The environmental dimension had two components of flexibility and environmental changes. The individual dimension consisted of eight components, including the knowledge inertia, continuous education, inertia in

thought, inertia in practice, experience inertia, inertia in learning, psychological inertia, and insight inertia. At the next stage, the confirmatory factor analysis was used to address the research question, and the results are represented in Table 8 and Figure 1.

Table 8: The results of the findings of confirmatory factor analysis for organizational inertia variable.

Variable	Dimension	t-value	Standard coefficient	R2	Component	t-value	Standard coefficient	R2
Organizational Inertia	Environmental	303.282	0.981	0.962	Supportive atmosphere	32.680	0.848	0.719
					Continuous staff training	65.689	0.912	0.832
					Inertia in procedures	56.930	0.884	0.781
					Inter-organizational learning activities	39.964	0.859	0.739
					Environmental scrolling method	29.354	0.829	0.687
					Organizational structure	33.014	0.849	0.721
					Leadership	43.368	0.885	0.784
					Flexibility	62.068	0.902	0.813
	Individual	210.233	0.973	0.946	Environmental changes	55.044	0.897	0.805
					Knowledge inertia	14.515	0.699	0.489
					Continuing education	32.714	0.836	0.699
					Inertia in thinking	42.326	0.890	0.792
					Inertia in practice	23.089	0.807	0.651
					Experience inertia	34.011	0.825	0.681
					Learning inertia	33.837	0.838	0.702
					Psychological inertia	29.900	0.793	0.628
					Insight inertia	20.917	0.794	0.630

Fig 1: Confirmatory factor analysis for organizational inertia variable.



According to the results of confirmatory factor analysis (Table 8), the t-values at 95% confidence level were out-of-range in all the dimensions of organizational inertia. Furthermore, the values of the three dimensions were above the strong scale. The standard coefficients between the organizational inertia variables were estimated at 0.981, 0.890, and 0.973 for the organizational, environmental, and individual dimensions, respectively, indicating the positive, significant correlations between the organizational inertia variables and the three dimensions.

The obtained results showed positive, significant correlations between the organizational dimension and its components. The highest and lowest standard coefficients (0.902 and 0.897) were observed in the components of flexibility and environmental scrolling

methods, respectively. Considering the values of the parameter, the two components are above the strong level.

According to the findings, the environmental dimension and its components had positive, significant correlations. The highest standard coefficient (0.902) was observed in the flexibility component, while the lowest standard coefficient (0.897) belonged to the component of environmental changes. The values of the parameter indicated that both components were above the strong level.

Positive, significant correlations were observed between the individual dimension and its components. The highest standard coefficient (0.890) belonged to the component of inertia in thought, while the lowest coefficient (0.699) was attributed to knowledge inertia. Considering the values of the

parameter, except for the component of knowledge inertia, which was relatively strong, the other components were above the strong level.

According to the results of exploratory factor analysis and confirmatory factor analysis, the organizational inertia variable encompasses the organizational, environmental, and individual dimensions. The environmental dimension had two components of flexibility and environmental changes, and the individual dimension had eight components, including knowledge inertia, continuous education, inertia in thought, inertia in practice, experience inertia, learning inertia, psychological inertia, and insight inertia.

Discussion

Inertia and flexibility are antonymous terms in the literature regarding organizations. In the present study, the results of exploratory factor analysis indicated that organizational inertia had three dimensions (organizational, environmental, and individual). In addition, the organizational dimension had seven components, including supportive atmosphere, continuous staff training, inertia in procedures, inter-organizational learning activities, environmental scrutiny methods, organizational structure, and leadership. The environmental dimension had two components of flexibility and environmental changes, and the individual dimension had eight components (knowledge inertia, continuous education, inertia in thought, inertia in practice, inertia of experience, inertia of learning, psychological inertia, and insight inertia).

According to the results of exploratory factor analysis, mobile learning had two dimensions of structure and process. The structure dimension encompassed 10 components, including ease of use, teacher preparation (behavioral/practical), student preparation (behavioral/practical), perceived self-efficacy, learning independence, intent to accept learning, attitude, subjective norms, practical preparation, and specialized workforce. The process

dimension had three components, which were organizational rules, required software features, and required hardware features.

According to the results of the present study, organizational absorption capacity had behavioral and structural dimensions, each of which consisted of five components, including knowledge perception, knowledge acquisition, knowledge extraction, knowledge organization, and knowledge utilization. According to the findings, flexibility had a positive impact on the organization, and higher flexibility was associated with higher organizational efficiency.

Inertia is manifested variably in various organizations; such examples are the suppression of the valuable information in the organization, rigid and inflexible rules, and over-commitment to the organization. Organizations systematically interact with their environment, which guarantees their survival. If an organization eliminates the surrounding communication and information channels, it will not become aware of the developments, which in turn debilitates their credibility. Lack of flexibility does not allow the organization and its members to adapt to environmental changes, thereby leading to stagnation and inertia throughout the organization. Therefore, identifying the dimensions and components of organizational inertia helps organization to properly recognize this phenomenon and adopt effective solutions (17).

The findings of the current research revealed organizational, environmental, and individual dimensions in relation to organizational inertia. Among the 17 components that were discussed in the research, the seven components of the supportive behavior, continuous staff training, inertia in procedures, inter-organizational learning activities, environmental scrolling methods, organizational structure, and leadership were classified into the organizational dimension. On the other hand, the components of flexibility and environmental changes were associated with the environmental dimension, and the components of knowledge inertia, continuous

education, inertia in thought, inertia in practice, experience inertia, learning inertia, psychological inertia, and insight inertia were classified into the individual dimension. This finding is consistent with the results obtained by Sepahvand et al. (2017), which indicated that the lack of understanding of environmental changes largely contributed to the occurrence of organizational inertia.

In another study, Ebrahimi (2015) emphasized that knowledge inertia is the most important influential factor in organizational inertia, which encompasses learning inertia and experience inertia, affecting the dimensions of organizational inertia (insight inertia, inertia in practice, and psychological inertia) (18). Similarly, Hagg (2014) claimed that cognitive inertia is among the dimensions of organizational inertia in various firms, which is in line with the results of the present study (19).

Conclusion

Today, organizations should operate in a systematically open manner and interact with their external environment in order to survive in an ever-changing environment. The lack of flexibility prevents the organization and its employees to adapt to environmental changes and exchange information with the surrounding environment, which in turn leads to personal stagnation and inertia throughout the organization. Moreover, organizational inertia prevents organizations from identifying the environmental threats to the organization, thereby decreasing the adaptability speed of the organization to the environment.

According to the results, organizational inertia consists of the environmental dimension, which has two components, revealing that the following measures could be taken to delay and prevent the inaction of the organization:

- o Supporting the organizational staff to overcome the habit of using previous experiences;
- o Providing relevant training to enhance the ability of the employees to apply new knowledge;

- o Encouraging the employees to learn new ideas and techniques;
- o Motivating employees to change their old behaviors and thoughts, while seeking and using new resources;
- o Assisting employees in using innovative power;
- o Following a shared leadership style in the organization;
- o Teaching employees new skills;
- o Using new problem-solving approaches in the organization;
- o Using information systems;
- o Promoting systematic thinking among the employees;
- o Changing human resources learning systems;
- o Developing personal learning to improve organizational learning;
- o Using a systematic problem-solving process

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