

## **Investigating Effectiveness of In-Service Training in the Public Sector**

*Mohammad Hossein Rahmati<sup>1</sup>, Seyed Mojtaba Hosseini<sup>2</sup>, Ali Alimadadi<sup>3\*</sup>*

*1. Assistant Professor, Faculty of Management & Accounting, Farabi Campus University of Tehran, Iran*

*2. Ph.D. student in Organizational Behavior, Specialty Doctorate Center of Payame Noor University, Tehran, Iran*

*3. MA in Executive Management, Faculty of Management & Accounting, Farabi Campus University of Tehran, Iran*

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### **Abstract**

This study that is aimed at investigating the effectiveness of "in-service training" courses in public sector organizations, as a result of the findings of a process modification training course in public organizations of Kermanshah province where 68 employees of 32 organizations of public sector (including governmental and non-governmental) scientifically studied 27 processes as a sample, during the course in various teams. At the end, reductions in "process activities number", "time needed for performing every process", and "distance passed in each process" were considered as indicators for effectiveness of the training course and are provided in a table in the results section. In order to collect information, some forms were designed and the participants filled them over this 3-day course. The results of statistical tests showed the effectiveness of training course on the results of process modification. In addition, by performing side tests, trend of improvement in time and distance was investigated by improvement in activities number which revealed that harmony in process modification should be considered.

### **Keywords:**

Effectiveness, In-service training, Kermanshah, Process modification, Public sector.

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\* Corresponding Author

Tel: +98-9358478437

Email: a\_alimadadi@ut.ac.ir

## **Introduction**

Nowadays, changes are more rapid, unusual, and fundamental than ever. Technological contacts along with competitive and cultural pressures have led to a whirlpool which can drown any organization (Jafari, Akhawan, and Rezaeenoor, 2009, p.1). In order to survive and live in such a situation, an organization has to make modifications in itself and its organizational processes, which can be done through improvement of the work procedures and processes (Hammer, 2008, pp.1-10).

The necessity of changing the systems and procedures of performing the works is an obvious mission which has been stressed frequently and requires more serious efforts. The traditional models of organizational systems are not able to cope with the rapid scientific and technological modifications in a proportionate way to the values and goals of the Islamic state in every direction. So, to reach the duties and goals written in the Third Phase of Development Law regarding the improvement of systems and procedures of performing the works, increasing the efficiency and effectiveness of public systems and etc., it is necessary to focus on the correction of the work performance procedures in the public systems (2<sup>nd</sup> ROEP, 2002, p.61). According to this Official Evolution Program, the Programming and Management Organization is bound to correct and develop all processes and procedures of performance until the end of the Quinquennial Program of Development, and carry out through executive systems (4<sup>th</sup> ROEP, 2002, pp.40-44).

On one hand, human assets are considered the most important wealth of an organization, but only if they are trained enough and their abilities are increased in an effective manner (Akhavan & Abu Bakar, 2009). As the technology improves today, workers need developed competences, while these competences have been insignificant some decades ago. So, it is necessary for supervisors to know their workers' competences and abilities and provide them with the modifications needed for their constant growth and development (Carlson, 2009, pp.2-3). Among the varieties of training, in-service training is one of most suitable and easily accessible ones that could be used to improve the human force and equip him with the needed knowledge and competences for development (Mardani, 2009, p.17).

According to Bradford, in-service training should be effective in recognizing the organizational deficiencies, curing them, improvement of the individual effectiveness, and the overall evolution of the organization (Ghasemi, 2003, p.25).

On the other hand, effectiveness is considered one of the main goals of an organization, and every organization tries to enhance such output. Training is an issue which can have an influential role in human force effectiveness, provided that – based on the educational needs of the people – we put it in the framework of an underlying program consisting of new, optimal, and developed knowledge, technology, and procedures of work performance (Salehizadeh, 2000, p.34).

Based on the aforementioned points, in-service training is considered as one of the main organizational instructions which affects the efficiency and effectiveness of the staff. In general, we can introduce the nature, necessities, and needs of the society modifications to the organization personnel through in-service training and create an attitude and ability in them to dynamically help the organization fulfill the goals of the society (Mardani, 2009, p.21). So, we should not use training as a fringe benefit or the last resort during the crises. Rather, we should create a consensus in the organization about the important role that training can have in the development of the organization in general (Costea, 2005, p.115).

However, despite the numerous efforts to conduct effective in-service training courses in the last decades, different operating staffs have stated the fact that the in-service training structure is not adequate and suitable in every context (Europaea, 2007, p.2). The effect of in-service training on the effectiveness of the staff has been supported in numerous studies (Malek, 1999; KhodaeMahmoodi, 2002; Amenpour, 1994; KhaleghiMoghadam, 1998; Andishmand, 1997; Mostafavi Pour, 2008; Ching, Phyra & Keomony, 2007; Kennedth R Bartlett, 2001).

In the study at hand, the effectiveness of a training course for correction of the processes – which have been held in Kermanshah province – is examined, and the obtained results are presented. With this objective in mind, increasing the learners' competence level through measurement of the amount of improvement in such

indicators as the number of activities, the needed time, and the distance covered is determined in processes which have been corrected by them to eventually find out that whether this training course has yielded the intended effectiveness expected by the programmers of the training courses or not.

## Literature review

### In-service training

Training, in general, consists of systematic efforts to help the staff gain professional capacities and capabilities. These competences include knowledge, skills, or behaviors that are important for successful implementation of the work (Gerhart & Right, 2002, p.251).

In-service training is systematical teaching to employee's necessary knowledge, skills, and behaviors during their work life (Tok and Tok, 2009, p.125).

In-service training is planned actions for developing of training that prepare some opportunities for trainers and managers in which they develop their profession, and its goal is to improve knowledge and capabilities (Günes *et al*, 2011, p.1102). In order for the training to be effective, some issues should be considered. It may be necessary to change management type, and also training should be compatible with organizational culture (Sahinidis & Bouris, 2008, p.67).

In-service training refers to a type of training that:

- is done after employment of a person in an organization;
- sets the goal to prepare people for good accomplishment of tasks and responsibilities of their jobs;
- its main direction is toward gained jobs and tasks;
- mainly comes out in 3 core pivots: developing knowledge, improving skills, and modifying attitudes (Ford, 1999, p.11).
- In-service training assists the personnel to develop and improve their job-skills and goes after initiation of peoples' job-tasks (Yang *et al.*, 2008, p.198).

Moreover, Pear and Gutter (in FathiVajargah, 2005, p.6) consider the in-service training as a kind of systematic effort which as its main goal, seeks to coordinate and organize the future hopes, interests, and

needs of the individuals with the needs and goals of an organization in the form of the activities that are expected from individuals.

In-service training is laid in a location and situation that job is done-or at least in a job situation that greatly and accurately has been simulated and learning and acting often are synchronized (Fague, 2007, p.7). It should be noted that training with work and experience, is the most popular way of improving personnel in all levels of an organization (Akhavan & Abu Bakar, 2009).

Some researchers have highlighted that in-service training provides and builds a capacity in educators that supports positive behaviors. They have mentioned multidisciplinary, case study format, dynamic training process, comprehensive, and community building as the five features of their model for national in-service training (Dunlap *et al*, 2000, pp.23-26).

The main purpose of the in-service training is to:

- empower individuals to be successful in their professions,
- develop professionalism, make their adaptation to the changes and novel situations in their professional life, and
- improve their required performances to meet the needs. (Altun and Gok, 2010, pp.10-17).

### **Organizational Effectiveness**

Organizational effectiveness is an intricate concept, and there are different choices regarding how to measure, define, and achieve it (Gallant, 2006, p.10). In general, organizational effectiveness is defined as the ability of an organization to achieve the goals and sources that it needs to survive and enhance itself (Gallant, 2006, p.7).

Knowledge that includes no meaning is, indeed, information, and information changes to knowledge when individuals interpret it and mix it with their ideas and commitments, and give a meaning to it. In the next stage, wisdom –that is insight– is achieved through understanding the knowledge. This process is shown in Figure 1. If we use our insight, we will gain the competence, and when we mix our competence with other competences, expertise is created, and at last, when we master our expertise, we achieve mastery.

Moreover, a part of the effectiveness of the organizational trainings is determined through the measurement of the learner's competence

level. The effectiveness of the practical trainings is legitimized through creation of competence, capability, and action. To create competence mastery in learners, it is necessary to execute the learning and training in three stages, as shown in Figure 3 (Hosseinifard *et al.*, 2011, p.23, see Nunaka and Tachoci, 1995).

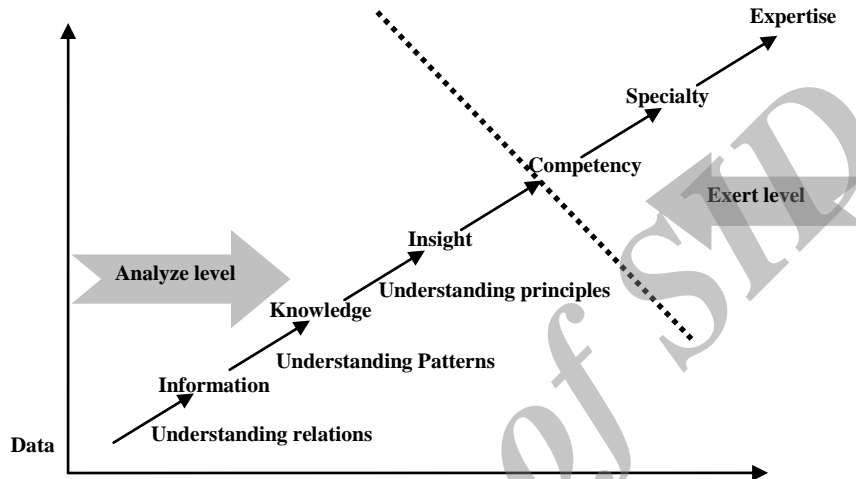


Fig. 1. The relationship between competence, knowledge, and insight (Hosseinifard *et al.*, 2011, p.23)

In Figure 2, the stage of “knowledge achievement” implies knowledge and how to do the work, the stage of “skills learning” implies ability, and at the last stage, learning “is achieving the ability or being able”. In this stage, the learner will have self-confidence, and the effectiveness of the trainings will have a scientific manifestation (Sanati, 2007, p.62).

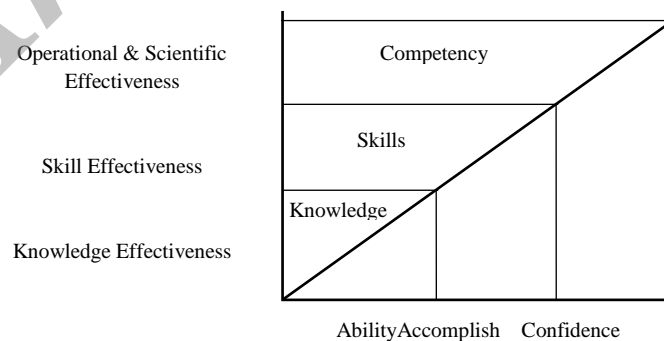


Fig. 2. Learning stages (Sanati, 2007: see Hezzel and Grilder, 2003, quoted from Soltani, 2006: 205)

### The Effectiveness of the In-service Trainings

With regard to the definition of effectiveness, it should be stated that in general, training increases the human force productivity in three ways:

- The trained individuals do more workload in a man hour and their work enjoys higher value.
- The trained individuals can distribute the present sources in a better way and in this way increase the productivity.
- Under similar conditions, the trained individuals can do more invention, discovery, and innovation, and this in turn would rapidly increase the productivity (Taheri, 2005, p.133).

The organization managers should use training to bridge the gap between effective behavior (proper competences, adequate knowledge, and positive attitude) and ineffective behavior (useless competences, inadequate knowledge, and negative attitude). To Bridge this performance gap, it is necessary to adopt a specific training course with the aim of changing certain competences and attitudes of the staff. This issue is more obvious when we examine the unique training model of “Bramly”.

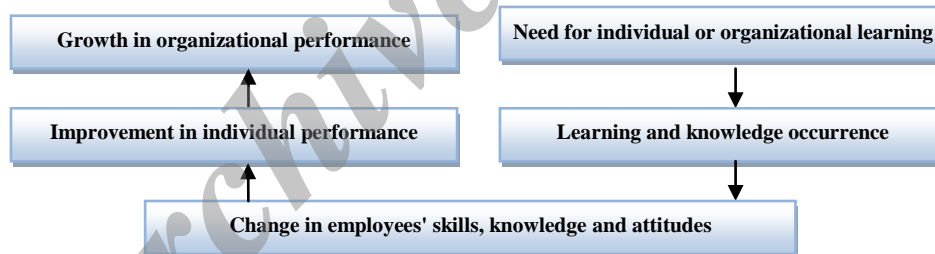


Fig. 3. The unique training model of “Bramly”  
(Mardani, 2009, 97-98, see Swart *et al.*, 2005, 192)

Entrance of in-service training in most fields of jobs - such as teaching (Saito *et al.*, 2006), banking (European Investment Bank Website, 2013), and etc. - attests its importance.

Attention to needed competencies of educators in a training course is very important. Comprehensive competency based in-service training (CCBIT) is a system that is introduced by Rycus and Hughes and strives to provide the "right training" to the "right people" at the "right time" in a 10-step process that can be summarized as follows:

- Define Targeted Trainees;
- Conduct Job-Task Analysis;
- Developing Competencies;
- Individual Training Needs Assessment (ITNA);
- Identification and Selection of Curricula;
- Selection and Preparation of Trainers;
- Development of Training Plan;
- Deliver Training;
- Implement Transfer of Learning (TOL) Activities;
- Evaluation and Feedback (Rycus and Hughes, 2000).

### **Process**

Process is “changing a set of inputs (material, methods, action, and operations on the optimal outputs) in the form of products, information, services, and in general, results. In any area or duty of the organization, there are lots of processes. The output in a process involves what is transferred to a place or person (customer)” (Bamani and Alem Tabriz, 2009, p.16).

In a yet different definition, process is defined as those procedures that are carried out together that will result in goods or services that are valuable for customer (The second report of the Official Evolution Program, 2002, p.41). To start examination and analysis of any process, it is necessary at first to determine the nature of the process, data, and output (Bamani and Alem Tabriz, 2009, p.16).

### **The Stages of Correction and Improvement of Work Performance Procedures**

According to the doctrine of the official evolution programs, correction of work performance procedures includes 13 stages (Official Evolution Program of “enhancement of and keeping individuals’ dignity in official system”, volume 2, 2002, pp.43 – 52).

- Prioritizing the known procedures and choosing the intended ones
- The range and scope of the procedure
- Designing the questions
- Data collection
- Data categorization



- Data analysis
- Providing the new solutions (corrective suggestions)
- Preparing and developing the report
- Examination of the practicality of the suggested solutions
- Evaluation of the suggested solutions that have been carried out
- Implementing probable modifications – maybe coming from evaluation of the execution manner – to solve the probable problems, and preparation of the final report.

## **Research Method**

### **Research Objectives**

- Examination of the in-service training effectiveness on the enhancement of the learners' practical skills in the public sector.
- Examination of the amount of improvement in public organizations processes due to the human force training.
- Providing solutions and suggestions to improve the effectiveness of the in-service training in the public sector.

### **Research Questions**

- How does the training of the processes correction affect the improvement of the processes?
- How does the training of the processes correction affect the improvement of (decreases) the number of needed activities for each process?
- How does the training of the processes correction affect the improvement of (decreases) the needed time to perform each process?
- How does the training of the processes correction affect the improvement of (decreases) the traversed distance to perform each process?

### **Conceptual Framework of the Research**

According to Kirkpatrick's four-level evaluation model, the second level of evaluating training courses focuses on "learning" that is defined in a rather limited way: "principles, facts and techniques that were understood and absorbed by the conferees" (Kirkpatrick, 1959,

p.22). What have been taught in this case study, are some techniques of process modification. This training course had three results: decreasing required steps of a given process; decreasing required time in a certain process; decreasing covered distance for a specific process. Based on suggested theoretical grounds, the conceptual model of this study is as follows:

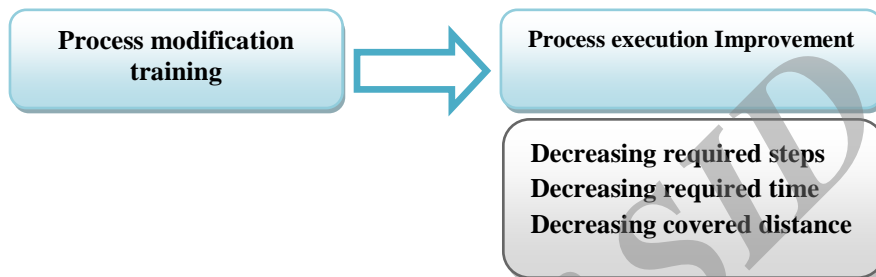


Fig. 4. Conceptual framework of the research

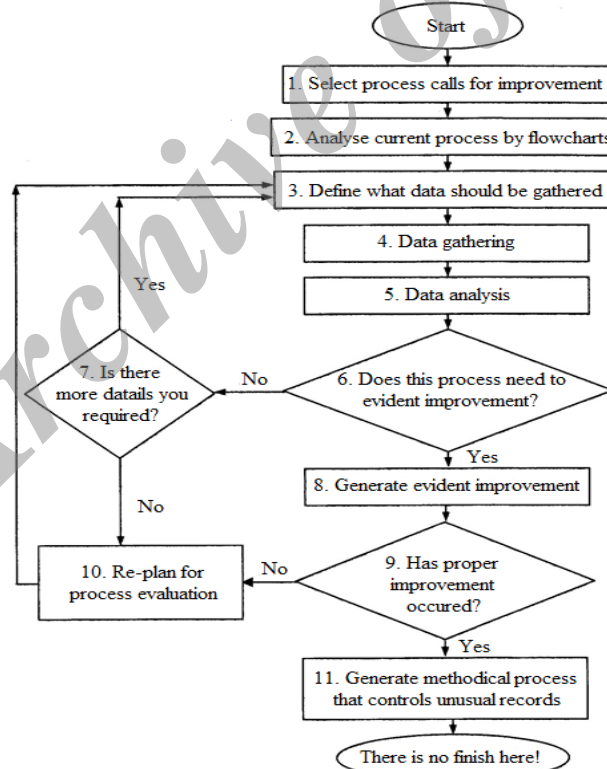


Fig 5. The step by step approach to develop or improve a process (Bamani and Alem Tabriz, 2009: 47)

Note that in the eyes of the training researchers and scholars, if the training can improve the skills in a way that the course indicators (in the research project at hand, these include the number of steps, time, and the distance of each process) increase at least 20 percent, that training will be considered effective.

### **Research Type and Method**

Regarding the objectives, this study is an applied research project, and concerning the method of data collection, it is a field study, and with regard to nature and method, it is an evaluation study.

This article is based on the results of a 3-day training course entitled “Examination and Correction of the Processes”, which was held by Kermanshah Province Office in Kermanshah province. This course was held with the aim of training how to correct the processes in public sector organizations of the province, during which 27 processes were examined and corrected.

### **Research Scope**

The premise of this research project is to examine the effectiveness of the in-service training in the public sector in the light of the modification in knowledge and skill levels of individuals, and so it has not been intended to evaluate the modification in the learners’ attitudes. The time scope is summer 2010, and the spatial scope includes public sector organizations in Kermanshah province.

### **Population and Sample**

The population of this research project includes the staff of the public organizations of Kermanshah province and the sample consists of 69 workers of 32 such public organizations in Kermanshah. The related data is presented in Table 1.

The sampling is according to province governing selection and its method is clustering; that is, from among the public organizations of Kermanshah province, 32 organizations were chosen and then, some workers (1 to 5, relatively) from each organization were invited to the course as the sample, which in sum constituted 69 participants, including 51 males (75%) and 17 females (25%). Finally, these participants improved 27 processes whose indicators provide the information needed to answer the research questions.

### Data Collection Instruments

The main data collection instruments used in this research project were library research in the theoretical grounds part, and a researcher-made form in the field study part which was completed by the invited people in the training workshops.

### Data Analysis and Research Findings

The data analysis of this research project is presented in two parts. The first part, which is related to the descriptive data of the sample, is presented in Table 1. This table provides the statistics related to the participants in the light of their respective organization, their organizational unit, their gender, and the process under examination in the course.

Table 1. The frequency of the participants in the training course

Number	Name of Organization	Name of Main Unit	Number & Gender of Participants	Title of studied process
1	Post office	Office of post booths	2 males	Conveyance of mails
2	province's industrial estates Co.	-	1 male	
3	Province's backing stocks Co.	Office of Recruitment	1 female	Decree Issuance
4	Province's Customs Office	Kermanshah Customs	2 males & 1 female	Judicial Case Examination
5	Province's Libraries Office	Officials & Financials	1 male	Mobilization purchasing
6	Post Bank	Urban Branch	2 males	Money Lending
7	Bank Sepah	Urban Branch	1 male	
8	Regional Electricity Co.	Officials	1 male & 1 female	Decree Issuance
9	Health Service Insurance Office	Officials	1 male	
10	Retirements Org.	Officials	2 females	
11	Province's PE Office	PE Office	2 males	Decree Issuance
12	Islamic Propaganda Office	Officials & Financials	2 males	Decree Issuance
13	Province's commercial Office	Economical Basij Unit	2 females	Coupon Issuance
14	Province's Jails Office	Office of Recruitment	2 males	Decree Issuance
15	Charitable & Consecrate Office	Officials & Financials	2 males	Decree Issuance
16	Eco-system Maintaining Office	-	2 females	Organizing In-service Training Courses
17	Childs Nurture Centre	-	1 male	
18	Technical-Professional Training	-	1 male	
19	Imam Khomeini's Emdad Org.	Officials & Financials	2 males	HR attraction
20	Commercial & Grains Office	Officials & Financials	1 female	Requesting heirs dole

Number	Name of Organization	Name of Main Unit	Number & Gender of Participants	Title of studied process
21	Province's Civil Registry Office	Civil Office	2 males & 1 female	Birth Certificate Issuance
22	Inspecting Office	Officials & Financials	1 female	Decree Issuance
23	Agricultural Jihad	Management Development & HR Office	2 males	Retirement Decree Issuance
24	Economicals & Financials	Expenditures Office	3 males & 1 female	Financial Documents Auditing
25	Province's Housing & Urban Planning Office	Financial Office (Recruitment)	1 males	Daily Mission Decree Issuance
26	Province's Cooperatives Office	Official Office (Recruitment)	1 males	Daily Mission Decree Issuance
27	Schools Renovation Office	Technical & Executional Unit	3 males & 1 female	Status-form Checking
28	Meteorology Office	Monitoring Unit	3 males	Preparing and Reporting Weather Information of Airport Station
29	Province's Transportation Office	Planning & budgeting Office	1 males	Credit Card Issuance
30	Province's Roads Office	Planning & budgeting Office	1 males	
31	Rural Water and Sewage Co.	Planning & budgeting Office	1 males	
32	Head Office of Kermanshah State	Governor of Ghasrshirin	1 males	Irrigate System Transformation
33		Governor of Javanrood	1 males	
34		Governor of Eslamabad-Gharb	1 males	
35		Governor of Ravansar	1 males	
36	Head Office of Kermanshah State	Governor of Javanrood	1 males	Implementing a rural project
37		Mayor of Javanrood	1 males	
38		Governor of Dinvar	1 males	
39	Head Office of Kermanshah State	Architectural Office	3 males & 1 female	Responding to clients
40	Head Office of Kermanshah State	Security & Political Office	3 males	Deal with Damage Payments
Total	32 different organizations		69 persons	27 processes

As it was previously mentioned, one of the criteria for the measurement of the training course effectiveness is to modify the learners' skills and behaviors. So, the amount of modification in each process due to the training in comparison to the conditions before and after the improvement is presented in table 2. In this table, "number", "time", and "distance" respectively mean the number of activities needed to perform a process (unit: number), the time needed to

perform a process (unit: minute), and the traversed distance to perform a process (unit: meter).

**Table 2. An examination of the present conditions, corrected processes, and the percentage of the modification in each process due to the training**

Number	Title of process	Before Improve			After Improve			Effect of Training (%)		
		Steps	Time (Min)	Distance (Meter)	Steps	Time (Min)	Distance (Meter)	Steps	Time (Min)	Distance (Meter)
1	Conveyance of mails	26	362	2041	23	355	2039	11.5%	1.9%	0.1%
2	Decree Issuance	9	200	330	7	90	220	22.2%	55.0%	33.3%
3	Judicial Case Examination	27	185	361	23	151	213	14.8%	18.4%	41.0%
4	Mobilization purchasing	15	150	1550	12	133	1240	20.0%	11.3%	20.0%
5	Money Lending	25	280	124000	18	140	50	28.0%	50.0%	100.0%
6	Decree Issuance	15	133	2180	13	117	2170	13.3%	12.0%	0.5%
7	Decree Issuance	13	300	100	9	240	59	30.8%	20.0%	41.0%
8	Decree Issuance	23	8640	1100	12	2880	30	47.8%	66.7%	97.3%
9	Coupon Issuance	15	183	380	8	64	70	46.7%	65.0%	81.6%
10	Decree Issuance	11	40	200	6	25	110	45.5%	37.5%	45.0%
11	Decree Issuance	8	30	200	6	15	100	25.0%	50.0%	50.0%
12	Organizing In-service Training Courses	17	48	100	13	38	78	23.5%	20.8%	22.0%
13	HR attraction	11	1210	300	9	1200	250	18.2%	0.8%	16.7%
14	Requesting heirs dole	10	360	120	6	240	100	40.0%	33.3%	16.7%
15	Birth Certificate Issuance	11	117	1090	10	50	100	9.1%	57.3%	90.8%
16	Decree Issuance	9	160	330	7	90	220	22.2%	43.8%	33.3%
17	Retirement Decree Issuance	10	3600	115000	10	480	11000	0.0%	86.7%	90.4%
18	Financial Documents Auditing	23	1370	120000	11	1045	120000	52.2%	23.7%	0.0%
19	Daily Mission Decree Issuance	11	60	250	5	20	140	54.5%	66.7%	44.0%
20	Daily Mission Decree Issuance	18	140	440	13	95	350	27.8%	32.1%	20.5%

Number	Title of process	Before Improve			After Improve			Effect of Training (%)		
		Steps	Time (Min)	Distance (Meter)	Steps	Time (Min)	Distance (Meter)	Steps	Time (Min)	Distance (Meter)
21	Status-form Checking	27	5230	6460	20	3200	4220	25.9%	38.8%	34.7%
22	Preparing and Reporting Weather Information of Airport Station	12	19	240	7	10	200	41.7%	47.4%	16.7%
23	Credit Card Issuance	10	15685	20000	7	10670	10000	30.0%	32.0%	50.0%
24	Irrigate System Transformation	16	190	350	9	100	170	43.8%	47.4%	51.4%
25	Implementing a rural project	13	1860	21500	11	1800	21400	15.4%	3.2%	0.5%
26	Responding to clients	13	180	300	8	60	110	38.5%	66.7%	63.3%
27	Deal with Damage Payments	19	250	600	12	150	50	36.8%	40.0%	91.7%

In order to examine the amount of this training course effectiveness, the workers' competence regarding the improvement of the processes was examined in the light of the three main indicators of the percentage of reduction in the number of activities, the percentage of time reduction, and the percentage of the distance reduction (the last three columns of Table 2), and this question was proposed that whether, on average, we have had at least 20% of improvement in these indicators ( $H_1: \mu > 20$ ) or not ( $H_0: \mu \leq 20$ ).

To do so, the independent sample T-test was performed using SPSS, and the following results were obtained:

**Table 3. The results of the independent sample T-test regarding the average improvement of the research indicators concerning the corrected processes**

Process Improvement Indices	T	Df	Sig	Lower	Upper	Result
Decreasing required steps	3.304	26	0.003	3.4311	14.7302	Supported
Decreasing required time	4.156	26	0.000	9.1442	27.0495	Supported
Decreasing covered distance	3.705	26	0.001	10.0968	35.2599	Supported

As it is obvious in table 3, the SPSS output shows that the significance level in all indicators is less than the error rate of 0.05, and the upper and lower limits are both positive. This provides enough

evidence to reject  $H_0$  and accept  $H_1$ ; that is, the average of every indicator of the process improvement has been enhanced more than the examined level (20%). (Of course, the significance of the processes improvements is supported at the 95% level of confidence for: the number of activities indicator to 23%, the time indicator to 30%, and the distance indicator to 29%). Therefore, it can be conceived that this training course has enjoyed a good level of effectiveness, although the processes correction issue is a specialized one and the course has been held in a very short range of time (24 hours).

Moreover, in order to rate the processes indicators in the light of the amount of improvement, the Freedman test was used to indicate that whether there was a significant difference among the amount of improvement in those indicators or not.

**Table 4. The results of the Freeman test regarding the ratings of the research indicators improvement in the corrected processes**

Process Improvement Indices	Mean Rank	$\chi^2$	Df	Sig
Decreasing required steps	1.80	1.717	2	0.424
Decreasing required time	2.09			
Decreasing covered distance	2.11			

Since the obtained significance level is higher than 0.05, the presence of any significant difference between the average of the ratings in the confidence level of 95% is rejected. This shows that the effectiveness of the training course has not been due to any specific indicator, and it could be claimed that all indicators have been improved consistently.

### Secondary Analysis

Based on the information obtained from this study, we can examine the training effectiveness along with the amount of the process improvement effectiveness. As the improvement in the number of the activities of a process can rationally affect the improvement of the time and distance of that process, the question that comes to mind is that how this effect happens? The presumption that rises from the literature is that deletion of certain stages that are needed to perform a process can be effective till such deletion is done with regard to the unnecessary, parallel, or combinable stages. On the other hand, wrong

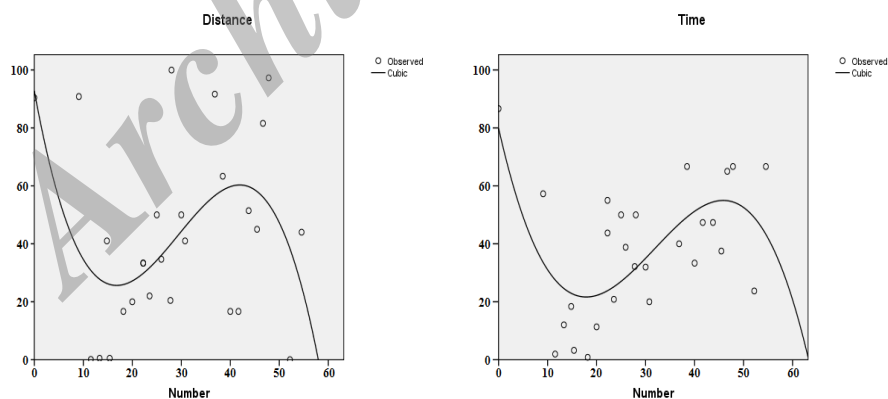


deletion or combination can lead to non-improvement of the time or distance.

So, using SPSS and with considering “percentage of decreased steps” as the independent variable, we designed separate curves which used “percentage of decreased time” and “percentage of decreased distance” as their dependant variable, in all possible situations. The linear and logarithmic relationships (which, in most of the studies, are representative of the usual practices in the relationships between variables) were rejected in all situations with the 0.06 level of significance. It means that the relationships between the variables intended in this study cannot be explained using the simple relationships. The best practice that was obtained from these curves was related to a cubic curve which enjoyed a smaller level of significance in both cases.

**Table 5. The results of applying the cubic curve on the research indicators**

Indep. Variable	Dep. Variable	R <sup>2</sup>	F	Df		Sig	Cons.	X <sup>3</sup> Coef.	X <sup>2</sup> Coef.	X Coef.
				1	2					
Decreasing required steps	Decreasing required time	0.436	5.921	3	23	0.004	79.919	-7.9494	0.291	-0/003
	Decreasing covered distance	0.257	2.653	3	23	0.073	92.825	-9.2333	0.385	-0/004



**Fig. 6. The improvement of the number of activities affects the time and distance improvement**

These results show that the cubic curve is acceptable if there is a relationship between the improvement of the number of activities and the time improvement with a confidence level of more than 99%, or if

there is a relationship between the improvement of the number of activities and the distance improvement with a confidence level of more than 90%. Although we did not obtain the confidence level of 95% in the second curve, but as it was mentioned, this curve has had the best practice. Figure 6 shows the diagrams of these curves.

A careful inspection of these curves reveals that:

- The improvement in the number of activities causes a strong improvement in the time and distance at first, which is probably due to the effects of the unusual or exceptional data within the research data; that is, there have been processes that have enjoyed strong improvement in other indicators after a few activities were deleted or combined or the present activities were creatively modified.
- The normal process starts from the minimum point and after the improvement in the number of activities, the time and distance are also improved and then, this process stops in the maximum point (in the middle of the curve). At this point (which, with a very good approximation, is located in the 50%-point of the time and distance improvement in return for a 50% improvement in the number of activities), the optimal situation – that is, the integrated improvement of the process – happens.
- After this stage, with the increase in the improvement of the number of the activities, the improvement of the time and distance decrease.

All these points show that a reduction in the number of activities does not necessarily lead to the consistent improvement of the time and distance of the process, and we should notice the integrity of the process improvement.

Moreover, to examine the effects of other variables (conditions) on the aforementioned analysis, the following tests were also performed:

- At first, the 27 mentioned processes were divided into two groups of line and staff. The line processes were those processes that were directly related to the respective organization, such as the process of delivering the postal goods in the post office. Otherwise, the intended process is a staff-related one, such as purchasing the equipment by the head office of the public

libraries of the province. Performing the independent sample t-test revealed that there was not any significant difference between the mean of these two groups.

- In a yet different division, the 27 processes under examination were divided into four groups, including the issuance processes, the examination and answering processes, the financial processes, and the project processes. The presence of any meaningful difference among different processes in the light of the means of the research indicators was rejected through ANOVA test.
- After the processes were corrected, they were divided into personal and group categories. The presence of any meaningful difference between these two categories in the light of the means of the research indicators was rejected using the independent sample t-test; that is the subject of consultation has had no meaningful effect on the amount of the training effectiveness.

The abovementioned tests show that different conditions have no effect on the results of the processes correction and on the results of the previous analyses.

### **Conclusion and Suggestions**

When defining the effectiveness, the focus is on the amount of attainment of the objectives. Therefore, when the intended subject is the training course effectiveness, the focus is on the amount of the impressions of the training course material on the learners' insights, knowledge, and competence. In this study, therefore, the amount of the effectiveness of the processes correction training course on the learners and participants' competence has been measured. In the research project at hand, a total of 27 processes have been examined and three conditions for each process are mentioned in the Table, which include the current condition of the process, the corrected condition, and the amount of modification due to the training. In each process, the numbers of activities, the time used to accomplish the process, and the distance traversed to do the activities have been examined. The results show that all examined processes have experienced the positive modifications (the improvements in the

number of activities, time, and distance) during the correctional examination, which reveals the effectiveness of this training course. The detailed illustrations of these modifications are presented in tables 2 and 3. Moreover, the secondary results of the research project show that the decreasing number of activities does not necessarily lead to the consistent improvement in the time and distance of the process, and we should focus on the integrated improvement of the process.

In order to solve the problems and improve the effectiveness of the in-service training courses in the public sector, we can use the experiences gained from the training course for the correction of processes in the Kermanshah province and present some suggestions. Accordingly, these two sets of suggestions are offered.

The suggestions related to the improvement of effectiveness of the in-service training courses:

- Designation and administration of the training courses based on the educational policies and decisions of the public and the province office;
- Serious support of the in-service trainings by the officials (especially the top-level officials of the province) and participation of the top-ranking officials in the training courses;
- Educational needs analysis and programming based on the needs, in the light of the learners' occupational needs;
- Conducting specific training courses which correspond to the operational and specialized needs of every organization;
- Using the educational professionals' opinions to design the in-service training courses for the staff;
- Investment on and educating the specialized tutors and teachers in all fields and using them in the different courses;
- Focusing on the enhancement of the skills in the training courses and going beyond teaching the concepts and theories only;
- More investment on the correction of processes in the public sector through administration of the specialized training courses.

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