The Effect of Total Quality Management (TQM) Training on Organization Culture and Behavioral Patterns of Telecommunication and Employees in Chaharmahal Bakhtiyari Province

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The principal aim of this study was to analyze the effect of TQM training on bringing change in the organizational culture and behavioral patterns of Telecommunication employees in Chaharmahal and Bakhtiyari. Twenty-five specialists, registered in training courses, consisted the experimental group and another non-registered group of 25 specialists, consisted the control group. Both groups, completed the behavioral patterns and the Organization Culture Inventory, a researcher-made inventory. Following 22 three-hour training sessions on TQM for the experimental group, both experimental and control groups were measured by the same inventories. Both instruments showed satisfactory reliability and validity. The results of the analysis of multivariate covariance showed that TQM training for the experimental group improved organizational culture and behavioral patterns. That is, there was a significant increase in the post–test scores of the experimental group compared to the control group. In a repeated follow–up after six months, it was evident that there was still a significant difference between the mean scores of the experimental and control groups. Thus, an improvement occurred both for the organizational culture ($P<0.01$) and the employee's behavioral patterns ($P< 0.003$). The results obtained indicated that 68% of the variance for the remaining scores of the organizational culture post–test and 62% of the remaining post–test scores for the employees' behavioral scores were due to the effects of TQM training. Thus, it can be concluded that the effects of training on the experimental group was positive.

Keywords: total quality management, employees training, organizational culture, behavioral patterns, learning organization.

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It can boldly be claimed that the phrase of "*Total Quality Management*" is the commonest commercial term employed in recent years to describe the efforts made to improve quality. In fact, to improve quality, the management requires a variety of tools one of which is the implementation of TQM, essentially a culture which subsequently turns into a tool. That is to say, first the idea of TQM must be conceived by every employee and after a while the concepts translated into practice and used as a tool for improving quality in the organization, based on the quality and participation of all the organization employees. The aim of TQM is to achieve long–term success by pleasing the customer and securing the interests of all individuals concerned (Bugdol, 2005).

Although, quality pervades the history of civilization, systematic studies and emphasis on the concept began in the early twentieth century, and then, thanks to the perseverance and efforts of professor Deming, academically found its way into the engineering and management literature (Evans, 2003). Over recent years, a variety of definitions have been attempted for TQM. Today the term TQM is suggestive of the long-term and total effort of the organization for creating the kind of culture which guarantees the production of high-quality products and services (Lew and Hayden, 1992). Total quality in an organization is used both as a culture and as a set of guiding principles for continuous improvement to satisfy the organization customers and employees (lewis, Pun & Lalla, 2006). The total quality management is considered both as a culture and philosophy and as a set of the guiding principles for indicating the bases of the continuous improvement in the organization and, in fact, it has been considered as the application of the quantitative methods and manpower for improving all the processes in the organization and excelling the customer's needs, both at the present and in the future (Keng Boon, Arumugam & Teo Seng, 2005).

In implementation of TQM, a number of key indices have been listed:
- Involvement of the top management.
- Stable concentration on domestic and overseas customers.
- Continued improvement of performance and production processes.

- Alternation and improvement of communications.
- Continued training of employees (Lew and Hayden, 1992).
  There are also some other necessary conditions listed by specialists as essential for improvement of quality and TQM, which include:
- People share insights and move towards specific preset goals, valuing teamwork.
- Managers use a decentralized management system, having others share in their decision-making.
- Changing the organizational culture and behavioral patterns of employees.

In addition, in recent years four strategies have been introduced as organizationally the most important for change: Technological, functional, behavioral and internally motivated (Zomorrodian, 1998). Of these, the most important is "behavioral". The principal goal of the behavioral strategy is change in behavior with an emphasis on the degree of skills, impression, vocational and social behavior and, above all, change and adjustment in the value system as well as in individual and group norms. Thus, the organization's staff prepare for change through continued training.

Further, by bringing change, TQM creates organizational culture consistent with the continued improvement and changing needs. In fact, organizations, service or manufacturing, utilize their valuable experience to reassess their goals and principal values, thus, improving their culture. Hence, a TQM organization is capable of self-revitalizing fundamentally (Saatchi, 1998). The organizational culture describes part of the organization's internal climate which links a host of shared assumptions, beliefs and values of the staff and which serves as guidance for their performance (Robins, 1998). Hofstede (1997), too, has noted that the organizational culture shapes the behavioral pattern, contributes to integration and serves as an unconscious force to activate the organization. Among these, the individual's resistance to change is considered as the most important challenge and obstacle, even though organizational change can bring good results both for the organization and the staff (Cahill and

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Landsbergis, 1995). This is at a time when most experts on organizational behavior maintain that any attempt to change an organization without reference to its culture must fail. As a result, managers have to learn about the culture of their respective organization so as to bring about and facilitate organizational change. Overall, to achieve TQM by changing the organizational culture and the employees' behavioral patterns, the top management must be fully committed to change both in words and by conduct and the organization must provide the training necessary so as to change and improve the employee's skills centered on values, beliefs and attitudes (Packard, 1996).

In this regard, the role of training is critical. Only training can change the organizational culture and, as a consequence, the employees' attitudes and behavioral patterns (Barrow, 1993). It can increase respect for creativity and teamwork (Khaki, 1996; Keng Boon, Bakar, Arumugam & Vellapan, 2007). Further, with respect to customers' needs analysis (Drensek and Grubb, 1995) and teamwork formation (Collman, 1995), TQM will help improve performance.

In a review of a number of studies, Crick (1996) reports that in view of its nature and content, TQM can create philosophical, technical and qualitative changes in organizations as well as some form of organizational learning. Sohal and Morrison (1995) maintain that there is a direct relationship between TQM and organizational learning, that is, using TQM leads to some form of organizational learning.

There has not been much experimental research on using TQM for creating change in organizational culture as well as in behavioral patterns. However, a number of rather diverse studies on organizational learning have been conducted with a view to change the organizational culture and the behavioral patterns of employees (Akpan, 2006; Koffman and Senge, 1993; Kim, 1992). The results of a study evaluating the effect of training on change in the behavior of firms' employees showed that using a method involving training and reinforcement of substitute behavior resulted in 52% increase in productivity and 64% in the quality of products (Luthans, 1983). In a study using the philosophy of TQM for a farming company,

Drensek and Grubb (1995) reported valuable results. The latter study, conducted on 800 employees, included one-year training sessions for employees on how to establish effective relations with clients and their colleagues. The results indicated relatively stable change in the employees. In a review of studies on the content of TQM programs, Crick (1996) reports that all such programs have led to organizational learning and change. In a study which involved organizing different work teams, Collman (1995) measured the effects of work teams on improvement of the system. For this purpose, he divided the 12 employees he had selected into two teams. Both teams contributed to the entire production process. The results were nothing but a waste of time. However, when he divided them into 6 teams, each consisting of two employees, trained in the TQM programs, the productivity and their performance improved. Over the 90s, by implementing the TQM project, the Iranian Radiator Manufacturing Company not only improved the quality of its products to such an extent that could be exported to Europe, but also made considerable profit (Deming, 1994). In a study conducted for Jahad-e-Sazandegi (a government development agency), Rajab Beigi (1994) pointed to the effects of using TQM in increasing participation and motivation of employees. In a quasi-empirical study entitled. "The Relationship of Training to Productivity", Ramzgooyan (1997) decided that by providing training in OD such as team-making, conflict-resolving, forming conflict-resolving teams and changing the organizational structure, work conditions and productivity can be improved.

However, by utilizing quantities and statistical methods as well as changing manpower, TQM can improve the organization. In this study, changes in manpower can be viewed from the perspective of change in the behavioral patterns and strategies of employees. Most of the studies conducted on TQM are centered more on statistical change, improvement on work conditions and raising productivity and less on change in organizational culture and behavioral patterns of employees. In this study, the contribution of TQM has been measured by providing training in such areas as creative behavior, teamwork and team making, variability,

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customers' changes in attitude, vocational and social behavior as well as individual and group norms of the employees. To this end, the following hypotheses have been formulated:

1- Training in TQM improves the behavioral patterns of the experimental group.
2- Training in TQM improves the organizational culture of the experimental group.
3- The effects of training in TQM on the behavioral patterns of employees remain even after six months from the last TQM training session.
4- The effect of training in TQM on the organizational culture remains even after six months from last training session.

Study Variables Defined

Independent Variable: The independent variable used in this study is the training provided in TQM. Training in TQM involves training in attitudes, communication techniques, creativity, variability, manpower productivity, team work, morale for participation and customers. Training in each of the above areas was provided to the groups of employees in 22 sessions, three hours each, i.e., a total of 66 hours. The training was provided in a workshop fashion in order to maintain a vigorous interactive atmosphere.

Dependent Variables: The dependent variables used in this study included the organizational culture and behavioral patterns of employees. "Organizational culture", as used in this study, refers to the total scores subjects have made on Sussman and Deep's Organizational Culture Questionnaire (1989). It is comprised of questions on assumptions, beliefs and shared values prevailing and constituting the culture of the organization. The term "behavioral patterns of employees" refers to the total of scores the subjects have made on the researcher-developed behavioral patterns questionnaire. It is comprised of questions and issues on the employees' behavioral strategies such as attitudes, employees' impressions, vocational and social behavior, value system as well as individual and group norms.

Control variables: As the design of this study is quasi – experimental, such demographic variables as age, education, organizational position and work experience have been marked "Control Variables".

Method

Research, Nature and Design: The present work is a field experiment. The design consists of two groups: experimental and control, to which the subjects were randomly assigned. The design is a pretest-posttest one, with an experimental and control group and a follow-up.

Table1
Research Design (Pretest, Posttest with Experimental and Control Group and Follow- up)

Group	Randomly	Pretest	Independent	Posttest	Follow-up
Experimental	R	T1	X1	T2	T3
Control	R	T1	-	T2	T3

Statistical population and sampling procedure: The population for this study consists of all the specialists of the telecommunications company, exceeding 300 in number. 25 employees attending the TQM courses were randomly selected and assigned to the experimental group. Next, 25 specialists not attending the courses were assigned to the control group.

Research Instrument: For the purpose of this research, two researcher–developed questionnaires for the behavioral patterns of employees and the Organizational Culture Questionnaire (Sussman and Deep, 1989) were employed. They were handed out to the subjects in both groups at three stages: pretest, posttest and follow-up. The questionnaire for the behavioral patterns of the employees consists of 45 items regarding attitude, teamwork, participation, creativity and variability of the employees. Each question has been formulated on Likert's five division scale and scored accordingly. The Behavioral Patterns test has been developed using the literature and research related to flexible factors based on

manpower. This test studies factors such as the employee's attitude about variability, customer keeping, team work, creativity, organizational obligation, and vocational involvement and satisfaction. Sussman and Deep's (1989) questionnaire on organizational culture is comprised of 20 items set on a scale of zero to four. The validity of the questionnaires had been approved by 3 specialists. So, we calculated the content validity by studying the sources identifying the components and giving them to three independent referees to score each question. Then we decided on an agreement coefficient which was at an acceptable level. The reliability of the questionnaire upon initial administration and based on Cronbach's Alpha was estimated at 0.81 for the organizational culture and 0.84 (0.76, 0.79, 0.82 and 0.89 for the subscales: team work, participation, creativity, variability and customer centrism, respectively) for the behavioral patterns of the employees. Based on Pearson Correlation Coefficient, the concurrent validity of both questionnaires was estimated at 0.73.

Procedure, Data Analysis: The data for this study was analyzed using the 10th edition of the SPSS software. To compute the difference between the means of scores for the experimental and control groups, tools such as the analysis of covariance and on follow up, the analysis of variance were used to compare the means of scores.

Table 2
Means, Standard Deviations and Standard Error Mean for the Three Groups (Pretest, Posttest and Follow-up)

Factor	Group	Test	Mean	Std. deviation	Std. error mean
Organization culture	Experimental	Pretest	37.84	5.25	1.05
		Posttest	42.36	4.12	.82
		Follow-up	42.04	3.92	.78
	Control	Pretest	39.12	4.73	.94
		Posttest	38.56	3.46	.69
		Follow-up	38.64	3.17	.63
Behavior patterns	Experimental	Pretest	105.6	19.29	3.85
		Posttest	121.72	16.11	3.22
		Follow-up	118.16	16.14	3.22
	Control	Pretest	101.21	20.49	4.09
		Posttest	102.16	20.17	4.03
		Follow-up	100.84	22.09	4.41

As seen from Table 2, means of the pretest, posttest and Follow-up scores for the experimental and control groups for organizational culture and behaviory patterns are shown.

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Table 3
Analysis of Multivariate Covariance for the Effect of Training in TQM on the Organizational Culture and Behavioral Patterns upon Controlling the Control Variables (Pretest Scores, Position, Age, Work Experience and Education)

Parameter	Factor	Sum of squares	Df	F	Sig.	Observed power
Pretest	Organizational culture	450.84	1	99.57	.000	1
	Behavioral patterns	12872	1	278.244	.000	1
Group	Organizational culture	224.309	1	49.54	.000**	1
	Behavioral patterns	1967.68	1	42.53	.000**	1
Education	Organizational culture	21.98	1	4.85	.033	.323
	Behavioral patterns	61.5	1	1.32	.255	.071
Age	Organizational culture	.224	1	.05	.825	.012
	Behavioral patterns	7.25	1	.157	.694	.016
Work experience	Organizational culture	.264	1	.058	.81	.012
	Behavioral patterns	1.73	1	.039	.845	.011
Position	Organizational culture	.974	1	.215	.645	.018
	Behavioral patterns	43.27	1	.935	.339	.05

P< .01**

As can be seen from Table 3, the difference between the scores for the organizational culture and behavioral patterns in the experimental and control groups is significant (P<0.000). The magnitude of difference or the effect of training is the variance of scores pertaining to group membership or the effect of training. Hence, hypotheses 1 and 2 are confirmed.

Table 4

Analysis of t-test for the Comparison of the Means of Scores in the Experimental and Control Groups at Follow-up for Checkup on the Behavioral Patterns Scores

Retest	Mean difference	Std. Error difference	Df	T	Sig.
Behavioral patterns	17.32	5.47	48	3.165	.003**

P<.01**

As the results from Table 4 indicate, the effect of training in TQM is still in force even after six months from the last training session.

Table 5

Analysis of t-test for the Comparison of the Means of Scores for the Experimental and control Groups at Retest for the Scores on the Organizational Culture

Retest	Mean difference	Std. Error difference	Df	T	Sig.
Organizational culture	3.4	1.009	48	3.37	.001**

P<.01**

As can be seen from Table 5, the effect of training in TQM on the organizational culture is still in force even after six months from the last training session.

Discussion and Conclusion

The results from Table 3 indicate that the means of scores of the behavioral patterns and organizational culture of the employees in the experimental group are greater than those in the control group. Further, according to the results from the same Table, it can be seen that the difference between the scores for both groups is significant. Hence, hypotheses 1 and 2, which hold that training in TQM improves the behavioral patterns and organizational culture of employees, are confirmed (P<0.000) .The Eta coefficient is 0.62 which indicates that 62 percent increase in the scores, is due to taking training courses on TQM. This is consistent with the results of previous studies including Luthans (1983) and Saunders (1998). Overall, in organizational change and TQM, the most important strategy is "*Behavioral*". The principal goal of the behavioral strategy is to change the behavior with an emphasis on the degree of skills, impression, vocational and social behavior, and above all, to change and adjust the value system as well as the individual and group norms. Hence, by undergoing continued training, the organization's employees prepare themselves for the organization's basic needs for change. Koffman and Senge (1993) maintain that an organization can survive the prevailing turmoil when and only when it ventures on some new form of organizational learning, which surpasses individual learning, replacing it with systemic thinking.

Kim (1992), too, maintains that TQM is effectively related to the organizational learning and the thinking styles of the employees. Barrow (1993), likewise, reminds that organizational learning and TQM are strongly related. Hence, by providing continued training, a learning organization and a consequential TQM can be implemented. The Eta coefficient has been estimated at 0.68 which indicates that the 68 percent increase in the scores is due to taking training courses on TQM. The results of these hypotheses are consistent with those of the previous studies noted earlier. Taken as culture and thought and also as a body of guiding principles, TQM is aimed at revealing the pillars of improvement in the organization. In fact, it is the application of quantitative methods and

manpower which improves all the organizational processes to make them surpass the customer's needs both at the present and future. In reality, only training can change the organizational culture and, as a result, the attitudes and behavioral patterns of employees (Barrow, 1993).

Training can increase the concern for creativity, innovation and team work (Khaki, 1996; Keng Boon et al., 2007). The result of this hypotheses is consistent with those of Khaki (1996), Drensek and Grubb (1995) and Rajab Beigi (1994). Caudron (1996) maintains that by training in TQM which brings about relatively tangible changes in the communications, performance structure of the organization and the organizational culture can be improved. Also, according to Tables 4 and 5, the effect of training in TQM shows to have been stable on the behavioral patterns and organizational culture. Hence, hypotheses 3 and 4 which claim such stability are supported. Overall, the literature on organizational change is based on the principle that although changes can hardly be effected in organizations, they are relatively stable. Cahill and Landsbergis (1995), too, have pointed to the contribution of changes in creating and improving new conditions. In his review of a number of studies conducted on the content and nature of TQM programs, Crick (1996) has reported that all such programs head to organizational learning and change. In fact, studies conducted on the different ways of executing TQM, have each addressed the merits and urgency of implementing it. Some have emphasized further participation of employees and strengthening their motivations. Others have pointed to the degree of customer satisfaction. Still, others have pointed to the effect of applying training in TQM to improve the organizational culture and the behavioral patterns of employees. Application of TQM by providing for the total participation of management and employees can give rise to some form of organizational learning and systemic thinking. Organizational learning and systemic thinking entail improvement on production, raised productivity and employee and customer satisfaction. The results of these hypotheses are consistent with earlier ones conducted on organizational learning as well as on generational development and change. They can be compared with the

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results of studies conducted by Hayden and Dellan (1999), Shoal and Morrison (1995) and Sashkin and kiser (1993).

Suggestions and Recommendations:

- It has been suggested that, all companies and institutes which plan to establish a total quality management system, besides giving priority to the quantities and statistical methods and also engineering techniques, put into operation and emphasis flexible factors, especially flexible factors based on manpower.

- Communications company management should increase the rate and level of training, both punitive and qualified, and involve more sections of the organization in the total quality management system by continuous training.

- Considering that, one of the main principles of the total quality management system is the employees' continuous training, it is suggested that the effect of training on all employees or parts of the organization be studied completely and continuously in future research.

- Considering the mutual effect of flexible and inflexible factors on each other and on the organization's employees, it is suggested that the mutual effectiveness and mutual impressionability rate of these factors be studied in future research.

Shortcomings and Limitations:

- Selecting the experimental group (carried out by a strategic committee) was optional, not accidental and although the control group had been selected after homologizing with the experimental group, we can pose it as the first limitation of the research.

- We have studied only a few flexible factors related to the establishment of the total quality management system in this study. So, for generalizing the research results as the flexible factors effect, the necessary prudence should be done.

- Considering that in the establishment of a total quality management system, both flexible factors and inflexible factors are needed, it seems that studying one of these factors as the effectiveness factor is inadequate.

References

Akpan, R. C. (2006). Individual difference in TQM change compliance: A study of service organizations in Negeria, *The TQM Magazine*, 18(2), 103-117.

Barrow, J.W. (1993). Does total quality management equal organizational learning? *Quality Progress*, 26 (1), 39-43.

Bugdol, M. (2005). The implementation of the TQM philosophy in Poland, *The TQM Magazine*, 17(2), 113-120.

Cahill, J. & Landsbergis, P.A. (1995). *Reducing occupational stress: presented at work Stress and health "95 conference*. September 1995, Washington D.C.

Caudron, S. (1996). How is drives TQM. *Personal Journal*, 72(8), 48B-48O.

Collman, D. (1995). The proper distribution of TQM. *Quality Progress*. 28(February), 75-77.

Crick, S. (1996). TQM, Learning organization, culture, and HRD: Is there common ground? *Available http://World.std.com*.

Deming, A. (1996). *Surviving Crisis*, Tehran: Rasa cultural center.

Drensek, R.A, & Grubb, F.B. (1995). Quality quits: One company's successful attempt at implementing TQM. *Quality Progress*, 28 (2), 91-95.

Evans, J. (2003). *Total Quality Management*, e.a. approach, Inc.

Hayden, M. & Dellan, S. (1999). Total quality involvement in the classroom**,** College Student Journal, sept, 31-37.

Hofstede, G. (1997). *International Management*, Singapore: McGrraw-Hill Co.

Keng Boon, O. & Arumugam. V. & Teo Seng, H. (2005). Does soft TQM predicts employee's attitudes. *Journal of TQM Magazine*, 17(3), 279-289.

Keng Boon, O. & Bakar, N. & Arumugam, V. & Vellapan, . L. (2007). Does TQM influence employee's job satisfaction? An empirical case analysis. *International Journal of Quality & Reliability management,* 24(1), 62-77.

Khaki, Gh. (1996). The Effect of Applied Training in Increasing Creativity for furthere Proposals, *Collection of Articles Presented at a Seminar on Manpower Productivity.* Tehran, Public Administration Training Center.

Kim, D.H. (1992). *Toward learning Organizations: Integrating total quality control and system thinking.* Cambridge, MA: Pegasus communications.

Koffman, F, & Senge, P.M. (1993). Communities of commitment: *The Heart of Learning Organization*. 5-23.

Lew, J., & Hayden, J. (1992). Installing TQM education into the design and construction profession. *As proceeding of the 28th Annual Conference Auburn University- Auburn, Alabama ,*April 9-11.1992: 35-42.

Lewis, W. G. & Pun,. K. F. & Lalla, T. (2006). Exploring soft versus hard factors for TQM implementation in small and medium-sized enterprises, *International Journal of productivity and performance management*, 55(7), 539-554.

Luhans, F. (1983), OB Mod: Meeting the productivity challenge with human resources management. *Personal*, 60(2), 28-36.

Packard, T.(1996). *TQM and Organizational Change and Development*, Reid Monmouth and Associates, Inc.

Rajab Beigi, M. (1994). *Implementation of TQM at the Training Planning Office of the Ministry of Jehad Sazandegi.* M.A. thesis, Tehran University

Ramzgooyan, Gh, (1996). A study on Training and Productivity. *Collection of Articles Presented at a Seminar on Manpower*

Productivity. Presented in Tehran, Public Administration Training center.

Roobins, A .(1998*). Organizational Behavior*. 8th, ed. Prentice Hall, Inc.

Saatchi, M .(1998). *Psychology of Productivity*. Tehran, Virayesh Publishers.

Sashkin, M, & Kiser, K.J. (1993). *Creating and supporting a TQM culture. In Putting total quality management to work.* San Francisco: beret-Koehler.

Saunders, M. (1998). Electronic support for occupational learning. *Journal of Organizational Culture.* 14(3), 125-132.

Sohal, A. & Morrison, M. (1995). Is there a link between total quality management and learning organizations? *TQM Magazine*, 7(3), 41-44.

Sussman, L, & Deep, S. (1989). *The Communication Experience in Human Relations***,** 2nd Ed, Cincinnati Ohio: South-Western

Zomorrodian, A. (1998). *Management of Change*. Tehran, Publication of Sazman Modiriat Sanati.