



The Influence of Location and Gender on the Level of Total Quality Management

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Abstract- The aim of this paper is to identify the level of Total Quality Management (TQM) in Iranian schools. Additionally, the paper aims to investigate the influence of school location and gender of principals and teachers on the level of TQM. To achieve these aims, the researchers conducted a survey research to determine the level of TQM, and used independent sample t-test to determine the significance difference between the level of TQM based on the gender of principals and teachers. They also applied one-way ANOVA and Kruskal- Wallis H test to determine the significance difference on the level of TQM based on the location of schools. The findings of this study showed that, the level of TQM is high in Iranian schools. The researchers found that there is no significant difference between TQM's level among male and female principals and teachers. It found that, there is no significant difference between the level of TQM based on the principals' schools location. But there is a significant difference between the TQM's level according to teachers' schools location. The study revealed that the level of implementation of TQM as perceived by school principals and teachers according to gender and school location. This information is useful for the provincial education authorities in shaping future TQM implementation as well as for future researches.

Keywords: total quality management; location; gender; principal; teacher; iran.

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The Influence of Location and Gender on the Level of Total Quality Management

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Abstract- The aim of this paper is to identify the level of Total Quality Management (TQM) in Iranian schools. Additionally, the paper aims to investigate the influence of school location and gender of principals and teachers on the level of TQM. To achieve these aims, the researchers conducted a survey research to determine the level of TQM, and used independent sample t-test to determine the significance difference between the level of TQM based on the gender of principals and teachers. They also applied one-way ANOVA and Kruskal-Wallis H test to determine the significance difference on the level of TQM based on the location of schools. The findings of this study showed that, the level of TQM is high in Iranian schools. The researchers found that there is no significant difference between TQM's level among male and female principals and teachers. It found that, there is no significant difference between the level of TQM based on the principals' schools location. But there is a significant difference between the TQM's level according to teachers' schools location. The study revealed that the level of implementation of TQM as perceived by school principals and teachers according to gender and school location. This information is useful for the provincial education authorities in shaping future TQM implementation as well as for future researches.

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I. INTRODUCTION

TQM is a management philosophy, first developed by Edwards Deming after World War II to maintain, develop, and improve the quality of companies' products [1]. In fact, TQM is a comprehensive management model. It is a set of practices that focus on continuous improvement, fulfilling the customers' needs, and reducing rework. It also emphasis on increasing involvement of employees and more teamwork, process redesign, competitive benchmarking, constant measurement of the outcomes, long-range thinking, team-based problem solving, and closer ties with the suppliers [2]. TQM principles can be applied to every organization, such as buisnesses, service organizations, universities, and schools [3]. As the world is presently going through dramatic changes and education is considered the dominant competitive change instrument, so TQM could be a reasonable

approach for developing education. The question is what can TQM contribute to education? The literature review of TQM in education shows that many researchers such as Comer and Gates [4], Burke [5], and Pal and Dhodiya [6] confirmed that the use of TQM in education has been encouraged. Sallis [7] found that if an education organization employed TQM, mistakes will be diminished with various systems and procedures, and good group work will be practiced through careful and attentive scheduling.

In education, some factors such as the budget reduction, the low level of the graduates' knowledge and skills have led to the need for society and governments to embark on extensive reconstruction or improvement of the education systems [8]. The Iranian education system is not an exception to these changes. Education experts have always been looking for techniques or strategies to improve the quality of education and keep up with the world standards [9]. They have been trying to increase the quality of education with improving students' knowledge, continual school improvement efforts, and school benchmarking. In this way TQM came to the Iranian education system [10]. Education system of Iran has applied some of TQM principles, including attention to new teaching skills (problem solving and brainstorming), pre-service training for teachers, emphasizing in-service training of the teachers and principals, using class size with the world standards, conducting correct evaluation methods, applying team and group work in classes, improving teachers' knowledge and motivation, and organizing parental associations [10]. Manocherzadeh [11] in her research showed that there are four principles of TQM implemented in Iranian schools which are included continuous improvement, team work, continuous training, and customer satisfaction. She claimed that in schools where TQM was implemented, it resulted in students' satisfaction. Kamali [10] believed that while some or all of the above principles have been applied in different educational areas in Iran, the effect of the implementation has not been clarified.

Even though the education system in Iran is centralized, which means all of the administration, resources and direction is determined by the Ministry of Education (MOE). It is obvious that all provinces and cities did not get same resources and facilities, for example deprived areas still receive less resources and facilities compared to developed or developing

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province. Therefore, in this study the researchers focus on Lorestan which is one of the deprived provinces in Iran.

There are many initiatives to improve the education system [9] which include the implementation of TQM in secondary schools, but in Lorestan province (research population), TQM has not resulted in improvements to as high a level as expected [12]. Therefore this study tries to determine the level of TQM implementation in schools in Lorestan province and investigate the significant difference between the level of TQM according to school location and gender of participants. Based on the purpose of this study, four hypotheses have been addressed as follows:

Hypothesis one: there is no significant difference in the level of TQM based on a principal's school location.

Hypothesis two: there is no significant difference in the level of TQM based on a teacher's school location.

Hypothesis three: there is no significant difference in the level of TQM based on a principal's gender.

Hypothesis four: there is no significant difference between the level of TQM and a teacher's gender.

II. METHODOLOGY

Based on studies by Shyi-Huey [13] and Rampa [14], location is one of the demographic variables that has effected on TQM. This study was carried out in Lorestan province, one of the most deprived areas, in Iran. The Lorestan province has 10 cities located in two parts (east and west), and each part has five cities (total 10 cities). Some of the cities in this province are developing cities, and some of them are deprived. To determine the effect of location on the level of TQM, the researchers selected one developing and one deprived city in west part (namely: Khoramabad and Kohdasht) and one developing and one deprived city in east (namely: Borojerd and Azna) by simple random sampling, thus four cities in all.

The populations of this study were 1560 educators (teachers + principals) from 206 secondary schools. By using Cochran (1977) formula, the sample size was 320 educators.

To select 320 educators, at least 8 educators (1560÷206) had to be contacted from each secondary school. Therefore, a total of 40 secondary schools (320÷8) were selected from the four cities. Since each school has one principal; therefore the sample size included 40 principals and 280 teachers. Based on this calculation, simple random sampling used to select teachers in each school. For this purpose, a list of teachers in each selected school was obtained and 7 teachers were randomly selected.

The instrument used in the study was the 4 point Likert's scale questionnaire which was prepared by Rampa [14]. He granted permission to the researchers in this study to use his instrument. This questionnaire has two parts. The first part is biography data. The second part is about the implementation of TQM principles. The Cronbach's alpha value was 0.86 and this showed that the questionnaire has a quite satisfactory reliability [15].

III. RESULTS AND DISCUSSION

a) Demographic findings

As it shown in Table 1, the responding sample consists of 280 (87.5 percent) teachers and 40 (12.5%) principals.

Table 1: Distribution of Respondents

Position	Frequency	Percentage
Principal	40	12.5
Teachers	280	87.5
Total	320	100

Table 2 shows that for principals and teachers, 52.5% of respondents are females and 47.5% are male.

Table 2: Distribution of Respondents' Gender

	Principal		Teacher	
	N	%	N	%
Female	21	52.5	147	52.5
Male	19	47.5	133	47.5
Total	40	100	280	100

Table 3 presents the information on principals' gender. Out of 40 respondents, 21 (52.5%) were female principals and 19 (47.5%) were male principals. The distribution of principals' gender according to city were: 10 (25%) female and 10 (25%) male principals from Khoramabad, 3 (7.5%) female and 2 (5%) male principals from Kohdasht, 6 (15%) female and 6 (15%) male principals from Borojerd, and 2 (5%) female and 1 (2.5%) male principals from Azna.

Table 3: Distribution of the principals based on gender and location

City	Female		Male		Total	
	No	%	No	%	No	%
Khoramabad	10	25	10	25	20	50
Kohdasht	3	7.5	2	5	5	12.5
Borojerd	6	15	6	15	12	30
Azna	2	5	1	2.5	3	7.5
Total	21	52.5	19	47.5	40	100

Table 4 presents the information on teachers' gender. Out of 280 respondents, 147 (52.5%) were female teaches and 133 (47.5%) were male teachers. The distribution of teachers gender by city were: 70 (25%) female and 70 (25%) male teachers from Khoramabad, 21 (7.5%) female and 14 (5%) male teachers from Kohdasht, 42 (15%) female and 42 (15%)

male teachers from Borojerd, and 14 (5%) female and 7 (2.5%) male teachers from Azna.

Table 4 : Distribution of the teachers based on gender and location

City	Female		Male		Total	
	No	%	No	%	No	%
Khoramabad	70	25	70	25	140	50
Kohdasht	21	7.5	14	5	35	12.5
Borojerd	42	15	42	15	84	30
Azna	14	5	7	2.5	21	7.5
Total	147	52.5	133	47.5	280	100

As can be seen from Table 3 and Table 4, the percentage of distribution of principals and teachers by gender and location, are the same.

b) Level of TQM

Table 5 illustrates that the overall mean score of the Level of TQM in Lorestan province is high (Mean=3.12; SD=.65) based on principals' perception. The result shows two cities scored high on the level of TQM. They are Khoramabad (mean=3.30; SD=.57) and followed by Borojerd (mean=3.26; SD=.60). Two cities achieved medium level of TQM, they are Kohdasht (mean=2.98; SD=1.12), and Azna (mean=2.94; SD=.33).

Table 5 : Mean distribution of principals' opinion on level of TQM

Principal	Mean	SD	Level	Rank
Khoramabad	3.30	.57	High	1
Kohdasht	2.98	1.12	Medium	3
Borojerd	3.26	.60	High	2
Azna	2.94	.33	Medium	4
Overall	3.12	.65	High	

Note: Low (1.00 < M ≤ 2.00), Medium (2.01 < M ≤ 3.00), High (3.01 < M ≤ 4.00)

Overall, the result in Table 5 shows that, based on principals' perception, the level of TQM principles application is high in their schools. There is a similarity between the finding of this study and that described by Thummatassananon [16] who reported that the level of TQM was high in Sakon Nakhon (Thailand) based on administrators' opinions. In Iran, Jahanian [17] reported that the level of TQM, based on principals' views, was high in Tehran school. Likewise, the level of TQM was also reported high Kohkilyeh and Boyer Ahmad province by Bagheri [18]. However, in the city of Marvdasht, in Iran Salehi, Gheltash, and Ebrahimi [19], found that the level of TQM was medium.

Table 6 shows that the overall mean score of the Level of TQM, based on teachers' perceptions, is high (mean=3.08; SD=.72). The highest level of TQM was Borojerd (mean=3.13; SD=.71). The second city with a high score of TQM was Khoramabad (mean=3.12; SD=.67). The third city with a high score

of TQM level was Azna (mean=3.11; SD=.71), but the level of TQM in Kohdasht was medium (mean=2.97; SD=.83).

Table 6 : Mean distribution of teachers' opinion on level of TQM

Teacher	Mean	SD	Level	Rank
Khoramabad	3.12	.67	High	2
Kohdasht	2.97	.83	Medium	4
Borojerd	3.13	.71	High	1
Azna	3.11	.71	High	3
Overall	3.08	.72	High	

Note: Low (1.00 < M ≤ 2.00), Medium (2.01 < M ≤ 3.00), High (3.01 < M ≤ 4.00)

Overall, the result in Table 6 shows that the level of TQM is high in Lorestan province. The finding is consistent with a recent study by Thummatassananon [16] in Sakon Nakhon (Thailand), who reported high level of TQM according to teachers' opinions. The pervious study by Toremen, Karakus, and Yasan [20] in Malatya, (Turkey), also supported the current findings. In the study by Ibrahim [21] reported high level of TQM among teachers in Malaysia (Kedah).

On the contrary, the level of TQM in Iran as reported by teaches in Tehran (the Capital of Iran) was medium [17]. Similarly the level of TQM in Marvdasht city, Iran as studied by Salehi, Gheltash, and Ebrahimi [19] was reported at medium level.

c) Hypotheses Testing

Ho₁ : There is no significant difference in the level of TQM based on principals' schools location

To test this hypothesis, the researchers applied Kruskal-Wallis H test, because of the homogeneity of variance assumption which was not met (Sig. p=.002).

Table 7 : Kruskal-Wallis H test of the difference in the mean score of TQM level between different cities (principals' opinion)

Principal	Chi-Squre	5.78
	df	3
	Asymp. Sig.	0.12

Table 7 shows that there is no significant difference in the mean score of TQM level between different cities based on a principal's opinion (p > 0.05). This data means that principals of different location have rated the TQM level similarly. This also means that the principal's school location does not influence their opinion on the level of TQM.

The results of this study do not agree with the findings of Shyi-Huey [13], who reported that there was a significant difference between the level of TQM and principals' location.

Ho₂ : There is no significant difference in the level of TQM based on a teacher's school location

To test this hypothesis, the researchers applied one-way ANOVA analysis.

Table 8 : One-Way ANOVA test of the difference in the mean score of TQM level between different cities (teachers' opinion)

		df	Mean Square	F	Sig.
Teachers	Between Groups	3	0.55	2.77	0.04
	Within Groups	276	0.20		
	Total	279			

Table 8 illustrates that there is a significant difference in the mean score of TQM level in different cities based on teachers' opinions ($F = 2.77$, $Sig. p = 0.04$). This data means that teachers of different location rated the level of TQM differently. This also means that the location has influence on the level of TQM. To detect this significant difference, Post Hoc test was conducted and the result is presented in Table 9.

Table 9 : Post Hoc result of teachers

(I) City	(J) City	Mean Difference (I-J)	Sig.
Khoramabad	Kohdasht	.223*	.009
	Borojerd	.094	.130
	Azna	.144	.169
Kohdasht	Khoramabad	-.223*	.009
	Borojerd	-.129	.153
	Azna	-.078	.526
Borojerd	Khoramabad	-.094	.130
	Kohdasht	.129	.153
	Azna	.050	.644
Azna	Khoramabad	-.144	.169
	Kohdasht	.078	.526
	Borojerd	-.050	.644

*. The mean difference is significant at the 0.05 level.

As shown in Table 9 a teacher's view that the level of TQM is significantly higher in the city of Khoramabad that compare to Kohdasht ($Sig. P 009$).

The results of this analysis can be summarized as follows:

1. There is no significant difference in the level of TQM based on a principal's school location.
2. There is a significant difference in the level of TQM based on a teacher's school location.

It can be concluded that a principal's location had no significant effect on level of TQM, but location

had significant effect on TQM level based on teachers' opinions.

H_{03} : There is no significant difference in the level of TQM based on a principal's gender

According Test of homogeneity of variances, the significant value for Levene test for principals is $0.002 < 0.05$, thus based on this score, the homogeneity of variance assumption was not met. Therefore, instead of independent sample t-test, Mann-Whitny test was conducted to investigate the significant difference in the level of TQM based on principals' gender. On the other hand, independent sample t-test was conducted to investigate the significant difference in the level of TQM based on a teacher's gender.

Table 10 : Mann-Whitney Test for level of TQM and principals' gender

	TQM
Mann-Whitney U	144.500
Wilcoxon W	375.500
Z	-1.523
Asymp. Sig. (2-tailed)	.128
Exact Sig. [2*(1-tailed Sig.)]	.138 ^a

The result from Table 10 shows that there is no significant difference in TQM's level based on principal's gender ($Sig. p = 0.128 > 0.05$). It can be concluded that a principal's gender had no significant effect on the level of TQM.

The findings of this study are supported by Shyi-Huey [13], who reported that there was no significant difference in all TQM factors based on an administrator's gender. In the same vein, Aksu [22] found that there was no significant difference in level of TQM based on an administrator's gender.

H_{04} : There is no significant difference in the level of TQM based on a teacher's gender

To test this hypothesis, the researchers applied an independent sample t-test to compare the level of TQM between female and male teachers.

Table 11 : t-test for TQM level based on teachers' gender

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	-.97	278	.33	-.05
Equal variances not assumed	-.97	277.38	.32	-.05

The result from Table 11 has shown that there is no significant difference in TQM's level based on teacher's gender ($t (278) = -0.97$, $p = 0.33 > 0.05$). This data means that a teacher's gender had no significant effect on the level of TQM.

The findings of this study are consistent with the Toremén, Karakus, and Yasan [20] study. They concluded that there was no significant difference in the level of TQM between male and female teachers. Thakkar, Deshmukh, and Shastree [23] reported that there was no significant difference between male and female teachers in the level of perception of TQM level in education.

On the contrary, other studies have indicated that there was a significant difference in the level of TQM in secondary school teachers based a teacher's gender in Mysore (India) [24]. The mean score of female teachers were higher than the male teachers. They also believe that female teachers are more honest and dedicated to their work.

IV. DISCUSSION AND RECOMMENDATIONS

The findings of this study show that a principal's school location had no significant effect on level of TQM, but location is one of the demographic variables which have effect on level of TQM based on teacher perceptions. As mentioned earlier, teachers in Khoramabad rated the level of TQM in their school (Mean=3.12) significantly higher compared to Kohdasht teachers (Mean=2.97). As Khoramabad is both the capital and the largest city of the Lorestan province, so the schools located in this city have more facilities and resources than schools in other cities in the province. While Kohdasht is one of the deprived cities in the Lorestan province; therefore, their schools have fewer resources and facilities compared to schools in Khoramabad. For this reason, the level of TQM in Khoramabad is higher and significantly different from that in Kohdasht. The result of this study has revealed that gender does not have any influential effect on the level of TQM implementation for principals and teachers. The outcomes of the present study made information available to the Ministry of Education in Iran, education administrators, policy makers, principals, and teachers to develop the level of TQM, with emphasis on students' satisfaction. In the case of Iran, it is recommended that the Ministry of Education be the driving force to establish a TQM department within the ministry headquarters. This department could study the current situation and develop a policy that ensures quality in schools and initiate new approaches as appropriate to tackle the situation. They can organize workshops and seminars on a regular basis, both centrally and regionally, to help educators develop their skills and knowledge about TQM. School principals and teachers should try to strengthen and stay at a high level for TQM. They should adapt themselves with new skills and make changes.

V. CONCLUSION

TQM was originally designed for industry. However, many researchers and educators believe that TQM can be applied to education systems and schools [25-27]. The principles of TQM could be applied as a tool for boosting the student's moral, raising productivity, saving time, empowering people at all levels, and providing higher quality services to customers [27]. This research paper tries to determine the significant difference in the level of TQM based on location and gender among principals and teachers in the province of Lorestan, Iran. As the general findings, the level of TQM was high based on principals and teachers opinion.

Based on results, there is no significant difference in TQM's level based on a principal's and a teacher's gender. Additionally, there is no significant difference in the level of TQM based on a principal's location. But there is a significant difference in the level of TQM based on a teacher's location. Teachers in the deprived city of Kohdasht rated the level of TQM as significantly lower the teacher in the more affluent city of Khoramabad. It can be concluded that a principal's and a teacher's gender, and also principal's location had no significant effect on level of TQM. The finding of this study also confirmed that the idea suggesting that the level of TQM is difference between male and female principals and teachers is not true.

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