The Possibility of Applying TQM in Dhamar Univeristy

Al-hanhanah Waleed Naji Mohammed[1] & Xiong Yongqing[1]

[1] Human Resource Department, School of Business / Central South University, P.R China

Correspondence: Al-hanhanah Waleed Naji Mohammed, Central South University,South Campus, Foreign Students Dormitory, Changsha, 410083, Hunan, PR. China. E-mail: waleednaji2014@yahoo.com

Abstract

This is a feasibility study intended to assess the possibility of applying Total Quality Management (TQM) in Dhamar University in Yemen. In this study, questionnaires were administered to select faculty members at Dhamar University using simple random sampling, and SPSS was used to analyze the data collected. Statistical treatments such as chi-square, One Way ANOVA and correlation were employed in the analysis. The study revealed that our main objective, which is successfully implementing TQM in Dhamar University, was slightly above average. Besides that, some interesting patterns and association were also discovered from the analysis. It was established that acceptability of TQM depended on faculty and job position of the member but in a weak manner. It was also revealed that the motivational level of faculty members is influenced by age, years of service, job position and faculty. Apart from establishing the how feasible it will be to implement TQM in Dhamar, this study was also necessary in the sense that it highlighted some obstacles that might hinder the implementation of TQM in Dhamar and suggestions were given for addressing them. This study can server as blue-print for implementing TQM in Dhamar as well as a resource material for future research.

Keywords: quality concept, total quality management, human resource management

1. Introduction

1.1 Overview

The wind of change and revolution that has been blowing across the Arab world for some time now is an indication that the Arabian people are now seeking to reconstruct their societies and ensure that high quality services are rendered in all sectors of their societies. As such, a study of the concept of Total Quality Management (TQM) is one that is timely and necessary considering the current plight of Arabia as a whole and Yemen in particular.

In many countries and many cultures, the issue of quality management in higher educational institutions (HELs) has been on the table for discussion for quite some time now. Education in some perspective is a form of learning in which the knowledge, skills, and habits are imparted or acquired through institutions in order to transform people into useful and productive human resource for their own benefit as well as that of their societies.

Universities occupy a central role in molding people and transforming nations around the world. Universities are the highest places of learning and can also be seen as the exit point for many seeking to join working society and as such demand for universities to produce employable graduates is essential and has become a hot issue in many talking point discussion around the world. Universities in Yemen today are not any different. Concern for quality has intensified, especially with the emergence of a new culture of competition among universities and the prestige given to universities with high academic rankings.

More importantly, with the year-to-year expansion of Dhamar University, the necessity for applying concepts like Total Quality Management to manage large number of student, improve quality of services and develop the methods of studies has become important more than ever before.

The problems of Dhamar University are not different from any other Yemeni university, even though some efforts have been made to address these challenges overs the years they still persist. As such, this study can also be seen as a means to measure the level of progress of the institution over the years compared with past records. In any case, Dhamar University should be ready to leave its bureaucratic ways of administration and embrace the new reality of the TQM method for optimal performance.

1.2 Research Objective and Relevance

The main objective of this study is to assess the possibility of applying TQM in Dhamar University. Dhamar has been facing several problems, summarized below, which necessitates the move to TQM:

• Inability to absorb increasing demand in the number of students who want to enroll.

• Imbalance between the annual increase of student's number and the quality of programs and outputs.

• Lack of dynamism in annual plans, programs, specializations, admission policies.

• Imbalance between output and market needs of human resources.

• Increased costs per students.

1.3 Previous Study

A number of studies have been conducted on the subject matter of TQM in Yemen in the past few years, but from our investigation no such work have been done on the possibility of applying TQM in Dhamar University.Among the related studies include Abdel Fattah Study (2000) who studied total quality management and its anticipated role in improving productivity in government entities. The study recommends focusing on the human aspect and giving it importance. Ali Abdullah Hussein Al-Amri (2012) Studied the total quality management practices in Yemen public universities, their study examined the conditions of TQM application and it's accomplishments in Yemen public universities. They pointed out a positive relation between TQM and all its elements and that the application of TQM has improved the performace of those institutions.The study also identified poor evealution practices and recommended systematic evaluation in most of the institutions.

Moozab study (2006) studied the role of administrative leadership in applying TQM in the governmental organizations, focusing on Yemen Ministry of Education. The study also concluded that managerial problems are among the major obstacles affecting the succesdful application of TQM in Yemen and emphasized on continuous improvement and modernizing on the ministry level. Specifically, they recommended reviewing the organizational structure of Ministry of Education, eliminating job conflicts, simplifying procedures and making adopting a flat organizational structure which is more ideal for TQM application. It also recommended that, the ministry need to cooperate with Social Development Fund in Yemen, eliminate bureaucracies and centralism while ensuring participatory decision making and transparency. It also recommends establishing TQM department in the ministry of education which should be charged with superintending educational quality standards.

2. Research Methodology

2.1 Research Design

This research will attempt to describe the TQM situation at Dhamar University in Yemen through questionnaire administration, which has been categorized into 8 outlooks. The first is aimed at determining the level of awareness and consciousness about TQM at Dhamar University. The second is aimed at identifying the current state of affairs in the delivery of services at Dhamar University. The third is to assess the current infrastructural and logistical availability at Dhamar University towards quality of service delivery. The fourth is designed to know the flexibility of the current organizational systems and the possibility of modifying them to adapt to TQM. The fifth is to assess the human resource development efforts by Dhamar University. The sixth is to identify human resources improvement policies. The seventh is to assess institutional concern towards stakeholder demand and satisfaction, and the eighth is to evaluate the acceptability of TQM if it is initiated at Dhamar University.

2.2 Population and Sample Procedure

The targeted population in this study is the 1406 faculty members of Dhamar University, out of which 701 are administrative officials. Dhamar University, according to 2013 statistics, has 9 faculties which include Dentistry, Engineering, Computer Science, Medicine, Administrative Sciences, Agriculture and Veterinary, Arts and Languages, Education and Applied Sciences.

The study sample has been categorized into administrative staff and non-administrative staff, and simple random sampling was used to select a representative sample to for each category. For the questionnaire survey, 300 questionnaires were distributed and 252 returned. Out of the return questionnaires, 7 were invalid, making the total number of valid responses to be 245. Thus the percentage of valid questionnaire is 81.7%, which is statistically acceptable.

2.3 Data Collection Procedures

The research in theory partly depends on availability of secondary data such as: books, journals, formal reports, past Ph.D. and Master's theses, studies, research, published and unpublished reports of higher educational institutions, and formal and informal report of higher educational institutions. In practical terms, the research majorly depends on a field survey through questionnaire administration. 300 questionnaires were administered among the population using simple random sampling. and 245 were entered into the SPSS for statistical analysis representing 81.7% of the sample population. The collection of the questionnaire was challenging due to the state of political instability and security situation in Yemen at the time of the survey.

2.4 Questionnaire

The questionnaires were vetted by some academic staff in the universities and some suggestions were made to improve the questionnaires in order to achieve the desired objectives. Based on these suggestions, we made some additions and deductions and finally came out with 16 questions. Cross tabulation and Chi square test were used in this study to analyze results.

2.5 Data Analysis Method

SPSS was used to analyze the collected data. SPSS (a Statistical Package for Social Sciences) was first released in 1968 after being created by Norman H. Nie and C. Hadlai Hull. It is among the most widely used programs for statistical analysis in social sciences.

3. Results

3.1 Descriptive Statistics for Independent Variables

The following tables show the descriptive statistics of the independent variables in our sampled population such as gender, age, and educational qualification, years of services and current position of every one.

Table 1. Faculties

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	General Administration	76	31.0	31.0	31.0
	Dentistry	16	6.5	6.5	37.6
	Computer Science	12	4.9	4.9	42.4
	Engineering	14	5.7	5.7	48.2
	Medicine	32	13.1	13.1	61.2
	Agriculture	13	5.3	5.3	66.5
	Arts and Languages	25	10.2	10.2	76.7
	Education	23	9.4	9.4	86.1
	Applied Sciences	19	7.8	7.8	93.9
	Administrative Science	15	6.1	6.1	100.0
	Total	245	100.0	100.0	

Table 2. Gender participation in the survey

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	190	77.6	77.6	77.6
	Female	55	22.4	22.4	100.0
	Total	245	100.0	100.0	

Table 3. Age groupings of the study sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	under 25 years	9	3.7	3.7	3.7
	26 to 35	47	19.2	19.2	22.9
	36 to 45	106	43.3	43.3	66.1
	46 to 55	65	26.5	26.5	92.7
	56 to 65	18	7.3	7.3	100.0
	Total	245	100.0	100.0	

Table 4. Educations qualification of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High Diploma	23	9.4	9.4	9.4
	Bachelor Degree	90	36.7	36.7	46.1
	Master's Degree	43	17.6	17.6	63.7
	PhD	89	36.3	36.3	100.0
	Total	245	100.0	100.0	

Table 5. Years of service of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	57	23.3	23.3	23.3
	6 to 10 years	119	48.6	48.6	71.8
	11 to 15 years	57	23.3	23.3	95.1
	Over 15 years	12	4.9	4.9	100.0
	Total	245	100.0	100.0	

Table 6. Job position of participants at the time of the study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Directors	25	10.2	10.2	10.2
	Department Head	50	20.4	20.4	30.6
	College Dean	7	2.9	2.9	33.5
	College Dean Assistant	9	3.7	3.7	37.1
	General Manager	10	4.1	4.1	41.2
	Office Staff	87	35.5	35.5	76.7
	Lecturer	57	23.3	23.3	100.0
	Total	245	100.0	100.0	

3.2 Testing for Reliability

The second part of our questionnaire, as we have indicated, is categorized into 8 outlooks, each consisting of 2 questions asked targeting a specific objective of our study. Thus, we have a total of 16 questions with multiple choice answers in the second part of our questionnaire. Before we proceeded with our analysis, we performed a reliability test to ensure we were dealing with reliable responses from our respondents. To do this, the Cronbach Alpha was calculated. The resulting coefficient was 0.741, and all 16 items were valid.   For reliability tests, the closer the Cronbach Alpha value is to 1, the more reliable the data; and if the coefficient is greater than 0.7, the reliability is considered good. Since our Cronbach Alpha value of 0.741 is greater than 0.7, the reliability of our data is good.

Table 7. Reliability analysis

Cronbach's Alpha	N of Items
.741	16

3.3 Questionnaire Response Statistics

In this section, we look at the percentages of "Yes", "No" and "No idea" responses to the various questions in our questionnaire, and we make some predictions using the frequencies and percentages based on which further statistical testing may be required.

Table 8. (a) and (b): Questions about awareness of TQM

(a)Have you ever heard of the TQM concept?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	193	78.8	78.8	78.8
	No	52	21.2	21.2	100.0
	Total	245	100.0	100.0	

(b)   Do you think other staff members are aware of TQM?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	162	66.1	66.1	66.1
	No	40	16.3	16.3	82.4
	No idea	43	17.6	17.6	100.0
	Total	245	100.0	100.0	

Table 8(a) and (b) above present the participants responses on the awareness of the concept of TQM. This question was important in the sense that before we can do any objective study or analysis on the possibility of implementing TQM in Yemen, it is logical for us to determine the pre-existing awareness level of the concept. Hence, we have asked two simple questions aimed at evaluating the level of awareness among our sample population. From Table 8(a) we can see that 78.8% of the people are aware of TQM concept and from 8(b) we can see that the 66.1% responded that their colleagues are also aware of TQM. From the table of statistics above, we can presume that there is an above-average level of awareness of TQM among the teaching and administrative staff of Dhamar University. And that is good premises for us to continue our investigation on the possibility of applying TQM in Dhamar University.

Table 9. (a) and (b): Questions on current state of affairs

(a)   Do you regularly evaluate your objectives, activities and applied?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	141	57.6	57.6	57.6
	No	104	42.4	42.4	100.0
	Total	245	100.0	100.0	

(b)   Are you satisfied with the current situation in services delivery?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	110	44.9	44.9	44.9
	No	135	55.1	55.1	100.0
	Total	245	100.0	100.0	

The questions in this section were intended to determine the current state of affairs in the various faculties and divisions of Dhamar University. From Table 9(a) we can see that 57.6% responded affirming their knowledge of regular evaluation practices in their faculties or divisions and from 9(b), 51.1% responded showing their dissatisfaction with the quality services they deliver. From this table of statistics we can see that that the current situation in terms of service delivery is below average which may be a result of the absence of TQM in Dhamar University, hence the need for TQM in Dhamar University and the essence of this research.

Table 10. (a) and (b): Questions about infrastructure and logistics

(a)   Are there new technologies, computers, machines and labs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	110	44.9	44.9	44.9
	No	135	55.1	55.1	100.0
	Total	245	100.0	100.0	

(b) Is there an effective system to maintain new equipment and labs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	115	46.9	46.9	46.9
	No	130	53.1	53.1	100.0
	Total	245	100.0	100.0	

The questions in this section were asked to assess the infrastructural and logistical availability as well as the maintenance efforts. And as we can see the availability of new technologies and the maintenance of facilities is slightly below average and that should be the more reason why TQM should be applied.

Table 11. (a) and (b): Questions on flexibility of current system

(a) Does Dhamar University has a flexible organizational chart?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	174	71.0	71.0	71.0
	No	71	29.0	29.0	100.0
	Total	245	100.0	100.0	

(b) Do you use the software to carry out most of your tasks?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	175	71.4	71.4	71.4
	No	70	28.6	28.6	100.0
	Total	245	100.0	100.0	

The questions in this part were asked to determine the flexibility of the current system if TQM were to be adopted. The statistics in table 11(a) can only valid if there is a high awareness level, because this question is technical and requires some knowledge of the TQM concept. So, before we proceed let's make reference to the statistics we obtained from Table 8 (a) and (b), and we can see from it that there is a high level of awareness hence we can consider the responses in 11(a) reliable .Now, coming to the table 11(a), 71.0% of participants believe the organizational structure of Dhamar University is flexible and can be modified. And 11(b) also shows that 71.4% assert the notion that computers were used in all official matters. These are promising factors for the possible implementation of TQM.

Table 12. (a) and (b): Questions on human resource development

(a)   Are there training programs to help staff improve their capacity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	148	60.4	60.4	60.4
	No	97	39.6	39.6	100.0
	Total	245	100.0	100.0	

(b)   Are you motivated in the work you do?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	132	53.9	53.9	53.9
	No	113	46.1	46.1	100.0
	Total	245	100.0	100.0	

The questions in this section were asked to determine the human resource development efforts by Dhamar University. These questions were necessary because for any quality management to take place or for TQM to be implemented successfully, it would require competent men and women to do it. Having said that, when we look at table 12(a), 60.4% of the participants assert the notion that there are training programs to help them improve human resource capacity. The quality of the training offered to the staff could be an issue, but this study focuses on determining whether there is a habit of training staff members at Dhamar University.   The quality of the training programs will be addressed after TQM has been introduced. So for now the mere effort of organizing and building training programs is enough for our investigation. And from table 12(b) we can see motivation the level is 53.9% which, we consider as average and a good premise for the implementation of TQM.

Table 13. (a) and (b): Questions about customer focus

(a)   Does the University conduct a survey to know stakeholders needs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	130	53.1	53.1	53.1
	No	115	46.9	46.9	100.0
	Total	245	100.0	100.0	

(b)   Do they conduct a stakeholder satisfaction survey every year?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	90	36.7	36.7	36.7
	No	155	63.3	63.3	100.0
	Total	245	100.0	100.0	

The questions in this section were asked to determine customer concern and demand satisfaction efforts by Dhamar University. Table 13(a) indicates that 53.1% of the sample population responded that Dhamar University conducts survey on stakeholder demands and 13(b) indicates that 36.7% of the respondents believe that the university conducts surveys to see whether stakeholders are satisfied with the response to their demands. As such we can see that stakeholder focus and demand satisfaction efforts are about average and less effort is given to ensuring customer satisfaction. This therefore suggests that Dhamar needs TQM, because with TQM the customer demand satisfaction which is currently lacking is at the heart of the management policy direction.

Table 1. (a) and (b): Questions about top management readiness

(a)   Does top management support improvement efforts?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	134	54.7	54.7	54.7
	No	111	45.3	45.3	100.0
	Total	245	100.0	100.0	

(b) Does top management work quickly to solve problems on performance?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	170	69.4	69.4	69.4
	No	75	30.6	30.6	100.0
	Total	245	100.0	100.0	

The questions in this section were asked to assess the readiness of top management with regard to the possibility of applying TQM. From 14(a), we can see that 54.7% of the participants asserted the notion that top management in the institution supports and encourages any efforts that lead to improving general performance and 14(b) shows that 69.4% affirm that top management in Dhamar University works quickly to solve problems related to performance. From the statistics above, we can say that the readiness of top management for the implementation of TQM is good and above average.

Table 2. (a) and (b): Questions on acceptability TQM

(a) Do you think TQM is a good concept for quality service delivery?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	185	75.5	75.5	75.5
	No	20	8.2	8.2	83.7
	No idea	40	16.3	16.3	100.0
	Total	245	100.0	100.0	

(b) Do you think Dhamar University needs TQM?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	187	76.3	76.3	76.3
	No	44	18.0	18.0	94.3
	No Idea	14	5.7	5.7	100.0
	Total	245	100.0	100.0	

The questions in this section were asked to evaluate the acceptability level of TQM, if it were to be initiated. From tables 15(a) and (b) we can see that 75.5% of the participants think TQM is good concept and 76.3% think there is the need to implement TQM in Dhamar University. From the statistics above, there is reason the suspect that acceptability of TQM among Dhamar University staff is very high.

3.4 Testing for Association between Awareness and Acceptability TQM

After performing cross tabulation and chi square test for association between awareness of TQM and acceptability using SPSS, we generated the following tables of statistics.

Table 3.(a), (b) and (c) Testing for association between awareness and acceptability TQM

(a) Cross-tabulation

			Do you think Dhamar University needs TQM?			Total
			Yes	No	No Idea	
Have you ever heard of TQM concept?	Yes	Count	183	9	1	193
		Expected Count	147.3	34.7	11.0	193.0
	No	Count	4	35	13	52
		Expected Count	39.7	9.3	3.0	52.0
Total		Count	187	44	14	245
		Expected Count	187.0	44.0	14.0	245.0

Table 16(a) is a cross tabulation between question 1 which is about awareness of TQM and question 16 which is about acceptability of TQM. And from the table we can see that there are differences between our observe counts

and expected counts and as such we shall perform chi-square test to determine whether these difference are statistically significant or whether they are as a result of sampling error.

Before we proceed with our Chi-square test, we can first state our test hypothesis as follows:

H0 (Null hypothesis): There is no association between awareness and acceptance of TQM.

H1 (Alternate hypothesis): There is an association between awareness and acceptance of TQM.

(b) Chi-Square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	173.216a	2	.000
Likelihood Ratio	162.827	2	.000
Linear-by-Linear Association	157.916	1	.000
N of Valid Cases	245		

Note. a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.97.

Table 16 (b) shows the results of our chi-square test, but first we need to read the item at the bottom and in chi-square table which tells us what percentage of the cells with expected counts less than 5. This is important because, in the chi-square test, if the percentage is greater than 20%,, then an assumption has been violated and a different course of action should to be taken instead. In this case, the percentage is 16.4%, which is less than 20%, so the basic assumption has not been violated. As such, we can proceed with the rest of our reading. With a Pearson chi-square value of 173.216a at a degree of freedom of 2 and an asymptotic significance value (p-value) of 0.000 which is less than 0.05, we reject the null hypothesis indicating that there is enough statistical evidence to support an association between awareness and acceptability of TQM in Dhamar University. In other words, we can say that the difference between our observed counts and expected counts is significant enough to suggest a relationship between awareness and acceptability of TQM. To know the effect-size we have to read our Cramer's V value because the table is bigger than a 2*2 table.

(c) Symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.841	.000
	Cramer's V	.841	.000
N of Valid Cases		245	

With an approximate significance value of 0.000, which is less than 0.05, and a Cramer's V value of 0.841, which is between +0.7 and +1.0, the interpretation we can make is that there is a strong positive association between awareness and acceptability of TQM in Dhamar University. In other words there is enough statistical evidence to suggest that acceptability of TQM in Dhamar University depends strongly on the staff awareness of the concept.

3.5 Analysis of Motivational Level Based on Age

In this case, we have age as independent variable and motivation as our dependent variable. Thus, we can state our null and alternative hypothesis as follows:

H0: There is no difference in faculty members' motivational level based on age.

H1: There is a statistically significant difference in faculty members' motivational level based on age.

Table 4. (a), (b) and (c): Analysis of motivational level based on age

(a)   Descriptive statistics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
under 25 years	9	1.78	.441	.147	1.44	2.12	1	2
26 to 35	47	1.66	.479	.070	1.52	1.80	1	2
36 to 45	106	1.37	.485	.047	1.27	1.46	1	2
46 to 55	65	1.38	.490	.061	1.26	1.51	1	2
56 to 65	18	1.61	.502	.118	1.36	1.86	1	2
Total	245	1.46	.500	.032	1.40	1.52	1	2

Table 17(a) is our descriptive statistics, and when we look at the means, we can see that there are some differences. We also have to mention that the lower the mean, the higher the motivational level. The under-25 group has the lowest mean. We can also see equal means among the middle age groups, specifically the 36 to 45 and 46 to 55 age groups.

But before we proceed any further, we have to look at our test of homogeneity to ensure that we have met the assumption of homogeneity of variance. For homogeneity of variance, if the significance value is greater than 0.05, then the assumption has not been violated.

(b)   Test of Homogeneity of variances

Levene Statistic	df1	df2	Sig.
1.976	4	240	.099

From table 17(b) using Lenene's test, F (4, 240) = 1.98 and a significance value of 0.10, the assumption on homogeneity of variance is tenable, and we can assume equality of variance.

(c)   ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.460	4	1.115	4.742	.001
Within Groups	56.422	240	.235		
Total	60.882	244			

From table 17(c) we can see the sum of squares values and in our case the sum of squares between groups is the difference in motivational levels due to age, while the sum of squares within groups is the difference due to random chance. The ANOVA was not significant, given F (4, 240) = 4.74, and p = 0.001. Hence, we reject the null hypothesis that there are differences in faculty members' motivational levels based on their ages.

The strength of the relationship assessed by $\eta^2 = 0.073$ was weak, with age accounting for 7.3% of the variance in motivational levels. Below is our mean plot ,and if we look at it, we can observe an upward trend in motivational level as age advances from under 25 years to 36-45 and slightly a stable trend as age advance to 45-55 and finally a downward trend as age get to group 56 -65, which is the retirement age.
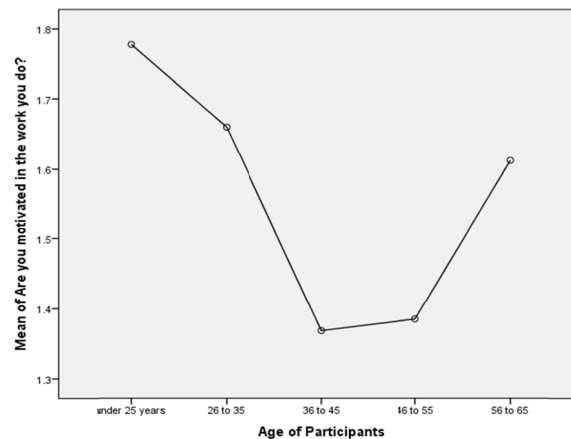
Figure 1. Mean plot for motivation based on age

But from the mean plot alone we cannot exactly determine where the significant differences in the means occur among the groups. However, what we do know is that there are some significant differences somewhere. To know where those differences occur, we have to look at the results of our Post hoc test in the table of multiple comparisons of means. But, due to lack of space and the size of the table on multiple comparisons of means, we shall only talk about it with showing the table. At 95% confidence level with p = 0.02, we can see that there is a significant difference of 0.292 in the means between groups 26 to 35 and 36 to 45.

3.6 Analysis of Motivational Level Based on Years of Service

In this case, we have years of service as our independent variable and motivation as our dependent variable is years of service .Therefore, we shall state our null and alternative hypothesis as follows:

H0: There is no difference in faculty members' motivational level based on years of service.

H1: There is a statistically significant difference in faculty members' motivational level based on years of service.

Table 5. (a), (b) and (c): Analysis of motivational level based on years of service

(a)   Descriptive Statistics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than 5 years	57	1.63	.487	.064	1.50	1.76	1	2
6 to 10 years	119	1.42	.496	.045	1.33	1.51	1	2
11 to 15 years	57	1.39	.491	.065	1.26	1.52	1	2
Over 15 years	12	1.42	.515	.149	1.09	1.74	1	2
Total	245	1.46	.500	.032	1.40	1.52	1	2

Our next step shall be look at our test of homogeneity table to see if we have met the assumption of homogeneity of variance and determine what course of action to take if otherwise.

(b)   Test of Homogeneity of variances

Levene Statistic	df1	df2	Sig.
.682	3	241	.564

From table 18(b) using Lenene's test, F (3, 241) = 0.68 and has a significance value of 0.56. In case since our significance value is greater than 0.05, and we have not violated the assumption on homogeneity of variance. Hence, we assume equality of variance and can now read our ANOVA table.

(c) ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.201	3	.734	3.014	.031
Within Groups	58.680	241	.243		
Total	60.882	244			

From table 18(c) the ANOVA was significant, F (3,241) = 3.014 and P = 0.03. Thus, there is significant evidence to reject the null hypothesis, indicating that there is enough statistical evidence to support the claim that differences in motivational levels among faculty members of Dhamar University are due to years of service. The strength of the relationship assessed by $\eta^2 = 0.04$ was weak, with years of service accounting for 4.0% of the variance in motivational level.
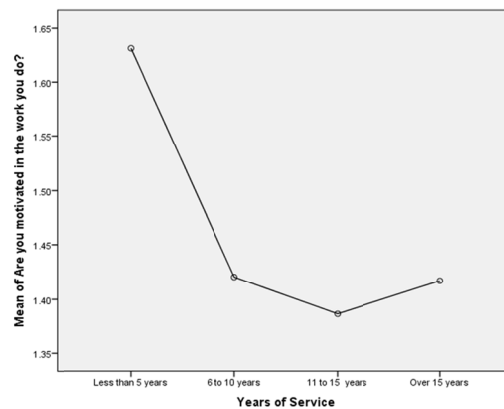
Figure 2. Mean plot for motivation based on years of service

From the mean plot above, we can observe an increasing trend in motivational level as years of service increases from less than 5 years to 11-15 years, which then slightly decreases as years of service moves beyond 15 years. Beyond 15 years is when most faculty members approach retirement age, and they become less active. We can see that it has some similarities to Figure1, which is a mean plot for motivation dependence on age.

4. Conclusion

This study was conducted with the paramount objective of assessing the possibility of successfully applying TQM in Dhamar University. To this aim, opinions of faculty members of Dhamar University were solicited through administration of a questionnaire. To answer the research question, a number of possibility factors such as awareness of TQM, current state of affairs in Dhamar, logistical and infrastructural readiness, flexibility of organizational systems, human resource development efforts and policies in Dhamar, top management readiness, customer focus and acceptability of TQM, were measured and the average percentages of the responses was taken.

The average possibility value after the likelihood factor analysis was 60.1% which therefore indicate that there is 60.1 % possibility of successful of applying TQM in Dhamar University if it is initiated. This figure is slightly above average and that is promising.

Some interesting patterns and associations were also discovered from the survey upon further statistical analysis. It was discovered that acceptability of TQM was dependent on faculty and job position of the member but the strength of the dependence was weak. It was also revealed that the motivational level of faculty members is influenced by age, years of service, job position and faculty.

Acknowledgments

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