The Effects of Quality Practices on the Performance Measurement of Business Management

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***Abstract*—Total Quality Management is a standard of a continuous improvement of the process for maintaining the high standard of organization. The purpose of this research paper is to analysis the effect of TQM practices on the performance measurement of business organizations. A proposed research model and the hypothesis are tested by the cross sectional survey data collected from different organization in Bahrain. The dependent variable is the performance measurement of management leadership and the independent variables are employees training, employee's relation, supplier quality management, product design, quality data and reporting. The study shows that there is positive correlation of dependent variables with independent variables.**

***Index Terms*—TQM, Quality Control, ISO9001-2008, Industrial management, Business Management**

I. Introduction

Total quality management is a management perspective that practice to incorporate all organizational purposes (marketing, finance, design, engineering, and production, customer service, among other characteristics) to emphasis on gathering customer needs and organizational objectives [1]-[2].

Total quality management is defined as "a management approach of an organization, centered on quality, based on participation of all members and aimed at long-term success through customer satisfaction, and benefits to all members of the organization and the society"(ISO 8402:1994). TQM is a continuous procedure of development for individuals, and the whole organization. Commercial organizations yield a product that is intangible. Usually, the completed product cannot be seen or touched; rather, it is experienced [3].

TQM is extensively recognized as a management attitude. Many controversies exist regarding the fundamentals, planned by different investigators and professionals in relation to TQM. These fundamentals do not fully coincide, and not all such fundamentals that compose the total quality management theoretical framework can be called TQM without management factors being applied in the organizations where they are based [4].

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TQM is extensively recognized as a management attitude. Many controversies exist regarding the fundamentals, planned by different investigators and professionals in relation to TQM. These fundamentals do not fully coincide, and not all such fundamentals that compose the total quality management theoretical framework can be called TQM without management factors being applied in the organizations where they are based. TQM focuses on constant process development within organizations to provide larger customer value and meet customer needs. Meeting customer needs includes company processes focused on accepting, sharing, and replying to customers through marketing concept. Firms approving and applying the marketing concept are said to display a market orientation.

The research scholars [5]-[6] measure the relationship between TQM practices with organizational performance. These studies measure different mixed results of quality practices that effect the business management. This failure to obtain consistent results could be due to three significant differences among studies in terms of research design issues. First, in some studies conducted, "TQM is a single construct to analyze the relationship between TQM and firms" performance. Second, the levels of performance measured varies among the studies. Third, the analytical framework used to investigate the relation between TQM and performance also differs among the studies [7]-[8]. In other words, when the data analyses are based on a series of multiple regressions or correlations the studies fall short of investigating which TQM practices have direct and or indirect effects on various levels of performance [9]-[12].

Most of research scholars were trying to identify the direct and indirect effects of TQM practices on performance at multiple levels are rather limited and failed to respond conclusively to the following research questions:

A. Research Questions

- Relationships among TQM practices?
- TQM practices are directly and indirectly related to operating, market and financial performance?

This research is appropriate to practitioners because the findings reveals patterns in the implementation of TQM practices, which may provide significant information to managers who can use to solve implementation challenges and perhaps to improve

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performance. Moreover, the results of this study may provide support for continued implementation of TQM. The unsuccessful attempts have prompted criticisms of TQM in the popular press and caused some managers who might otherwise have had an interest in implementing TQM to question the wisdom of utilizing this management approach.

II. Research Methodology

Research Methodology is chosen as a function of the research situation, while both qualitative and quantitative methods involve weaknesses and strengths [13]. It is important that suitable measurement analysis should apply and get the reliable results.

III. Sample

The data was collected from different organizations from Bahraini which overall 300 employees participated. The questionnaire samples were distributed to 350 employees. The minimum sample size was 280. Almost 350 questionnaire samples were distributed. 300 filled questionnaire samples were received back from the participants. This survey was conducted during June-September 2016.

IV. Dependent Variable and Independent Variables

The questionnaire samples estimated five independent variables of TQM practices that effect performance measurement of business management. The leadership management in terms of affecting the business management is the dependent variables and independent variables are 1. Employees training that contain four items, 2. Employee's relations that contains five items, 3. Supplier quality management that contains four items, and 4. Product/service design that contains five items. 5. Quality data and reporting contains 5 items.

The participants write their choice on 5 point Likert scale scheme in which 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree and 1 for Strongly Disagree. After collection of data, analysis was done to obtain the results.

V. Theoretical Model

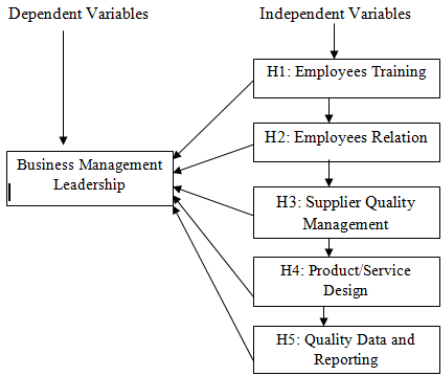

Figure 1. Theoretical model diagram of dependent and independent variables

V. Results and Data Analysis

To get the good results, the statistical tools like IBM SPSS 20. And the techniques were used to analyze data that are as. ANOVA, Regression, Correlation, Descriptive statistics (Mean and Standard deviation).

VI. Validity and Reliability of Data

The Reliability Statistics showed that Cronbach's alpha is 0.711 which indicates that it is up to the standard value as shown in Table I.

TABLE I. Reliability Statistics

Cronbach's Alpha	No of Items
0.711	6

VII. Demographic Analysis

The Questionnaires were distributed to overall 350 employees, but 300 Questionnaire returned. Most of the employees are male workers about 60.1%, and female workers were 39.9%. From Age 20 to 29 years are 40.1% and having work experience from 0 to 5 years. From Age 30 to 39 years are 30.1% and they have working experience from 6 to 10 years. From Age 40 to 50 years are 21.7% and having work experience from 11 to 15 years. Above 51 years 8.1% and having work experience above 16 years respectively. Finance department was the biggest department having 24.1% employees, International marketing department having 21.1%. The management department having 20.6%, production department having 19.1% employees and others have 15.1% respectively. The Education of Employers having 10th standard are 25.1%, 12th Grade having 20.7%, Bachelors are 36.4% and Masters and PhD having 17.8% respectively.

VIII. The Regression Analysis Results

The regression analysis was used to measures the results. The theoretical model fit for regression and shows Positive significant effect results as shown in Table III. To prove the model is fit for findings, R2, and Coefficient of determination, variance, analysis of variance (ANOVA) and the t statistic. To prove the impact of independent variable on dependent variable we perform linear regression and the results shown in Tables II to VI.

TABLE II Regression Variables Entered/Removed [a]

Model	Variables Entered	Variables Removed	Method
1	Employees training, Employees Relation, Supplier Quality Management, Product/service design, Quality data and reporting[b]		Enter

a. Dependent Variable: Business Management Leadership
b. All requested variables entered.

IX. Correlation Analysis

The descriptive statistics result show that the highest value is 3.2164 and the lowest is 2.8212. The Range of correlation between TQM practices is 0.154 to 0.511. All attributes shown positive relationship to significant p values < 0.001 as shown in Tables VII, VIII.

TABLE III. Regression Analysis

Variables	R	T-value	B-coefficient	F-value	R^2	p- value
Employees Training	0.511	10.6	0.511 0.472**	112.6	0.26	0.000
Employees Relation	0.392	7.60	0.392 0.378**	57.7	0.15	0.000
Supplier Quality Management	0.352	6.70	0.352 0.356**	45.01	0.12	0.000
Product/services design	0.180	3.26	0.180 0.179**	10.65	0.03	0.000
Quality Data and Reporting	0.170	3.07	0.170 0.110**	9.476	0.02	0.002
N	300	300	300	300	300	300

TABLE IV. Model Summary[B]

Model	R	R^2	Adjusted	Std. Error of the Estimate	Change Statistics				
					Change	F Change	df1	df2	Sig. F Change
1	.577[a]	.333	.323	.65560	.333	31.404	4	314	.000

a. Predictors: (Constant), Employees Training, Employees Relation, Supplier Quality Management, Product/service design, Quality Data and Reporting

b. Dependent Variable: Business Management Leadership.

TABLE V. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.489	6	13.498	31.404	.000[b]
	Residual	134.960	314	.430		
	Total	202.448	319			

a. Dependent Variable:Business Management Leadership

b. Predictors: (Constant), Employees Training, Employees Relation, Supplier Quality Management, Product/service design, Quality Data and Reporting

TABLE VI. Residuals Statistics[A]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.8920	4.9571	3.0273	.45996	320
Residual	-1.70709	2.16072	.00000	.65044	320
Std. Predicted Value	-2.468	4.195	.000	1.000	320
Std. Residual	-2.604	3.296	.000	.992	320

a.Dependent Variable: Business Management Leadership

TABLE VII. Descriptive Statistics Correlation

Independent Variables	Mean	Std. Deviation	N
Employees Training	3.0273	0.79664	300
Employees Relation	3.2164	0.76349	300
Supplier Quality Management	2.8212	0.72660	300
Product/Service Design	3.0338	0.73896	300
Quality Data and Reporting	3.2887	0.73506	300

X. H1 (Hypothesis I): Employees Training Effects the Business Management Leadership

The variance in performance measurement is 51.1% which shows relationship of employees training that effects management leadership are positive and the value of R=0.511 F=112.6 at p=0.000 and t value is 10.6, the results shows there is a positive relationship of employees training in terms of business management leadership. Therefore, based on results Hypothesis I accepted.

XI. H2 (Hypothesis II): Employees Relation Effects the Business Management Leadership

The variance of employees relation is 51.0%, the value of R=0.180. F=10.65 at p=0.000 and the value of t=3.264. So the results and calculations indicate that the Hypothesis II which is the correlation of employee's relation that effect business management is accepted.

XII. H3 (Hypothesis III): Supplier Quality Management that Effects the Business Management Leadership

The supplier quality management effects the business management leadership that shows 39.2% variance is positive relationship. The value of R=0.392. F=57.7 at p=0.000 and t=7.602 which shows Hypothesis III is accepted.

XIII. H4 (Hypothesis IV): Product/Service Design Effects the Business Management Leadership

35.2% variance in product/service design which indicate the value of R=0.352. F=45.01 at p=0.00 shows the model's goodness of fit, significant positive relationship between predictor and predicted variable is evident by the value of t=6.70. Therefore, based on the results Hypothesis IV is accepted.

XIV. H5 (Hypothesis V): Quality Data and Reporting Effects the Business Management Leadership

18.0% variance by quality data and reporting affects the business management leadership, the value of R=0.180. F=10.65 at p=0.000 and the value of t=0.624. Hence, on the basis of these results Hypothesis V is not accepted.

XV. Conclusion

The Research shows five indicators that affect the performance measurement of business management. The different variables were used as hypothesis to check the role of TQM practices that effect the performance measurement of business management leadership. The results show that the TQM practices effects the business management leadership.

The statistical analysis shows independent variables (employees training, employees relation, supplier quality management, product/service design, quality data/reporting) have a direct and positive impact on the dependent variable, the business management leadership, however the quality data and reporting shows negative relationship. All hypotheses accepted at the significance value of 0.05. Hence we concluded that practices are positively significant to business management leadership in different organizations.

TABLE VIII. Correlations the Descriptive Statistics and Correlation Analysis

Variables	Business management leadership	Employees training	Employees Relation	Supplier Quality management	Product/Service Design	Quality Data and Reporting	
business management leadership	Pearson Correlation	1	.272**	.194**	.154**	.511**	.350**
	Sig. (2-tailed)		.000	.000	.006	.000	.000
	Sum of Squares and Cross-products	202.44	52.856	35.914	28.905	95.523	101.445
	Covariance	.635	.166	.113	.091	.299	.318
	N	300	300	300	300	300	300
employees training	Pearson Correlation	.272**	1	.231**	.647**	.392**	.405**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	Sum of Squares and Cross-products	52.856	185.95	40.928	116.413	70.204	112.477
	Covariance	.166	.583	.128	.365	.220	.353
	N	300	300	300	300	300	300
employees relation	Pearson Correlation	.194**	.231**	1	.374**	.352**	.080
	Sig. (2-tailed)	.000	.000		.000	.000	.155
	Sum of Squares and Cross-products	35.914	40.928	168.416	64.131	59.996	21.094
	Covariance	.113	.128	.528	.201	.188	.066
	N	300	300	300	300	300	300
supplier quality management	Pearson Correlation	.154**	.647**	.374**	1	.180**	.307**
	Sig. (2-tailed)	.006	.000	.000		.001	.000
	Sum of Squares and Cross-products	28.905	116.41	64.131	174.195	31.201	82.62
	Covariance	.091	.365	.201	.546	.098	.259
	N	300	300	300	300	300	300
product/service design	Pearson Correlation	.511**	.392**	.352**	.180**	1	.170**
	Sig. (2-tailed)	.000	.000	.000	.001		.002
	Sum of Squares and Cross-products	95.523	70.204	59.996	31.201	172.360	45.511
	Covariance	.299	.220	.188	.098	.540	.143
	N	300	300	300	300	300	300
quality data and reporting	Pearson Correlation	.350**	.405**	.080	.307**	.170**	1
	Sig. (2-tailed)	.000	.000	.155	.000	.002	
	Sum of Squares and Cross-products	101.445	112.477	21.094	82.629	45.511	415.300
	Covariance	.318	.353	.066	.259	.143	1.302
	N	300	300	300	300	300	300

** Correlation is significant at the 0.01 level (2-tailed).

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