

Effects of TQM Practices on Banking Sector Performance: The Case of Jordan

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Abstract

This study investigated the impacts of TQM practices on banking sector performance in Jordan using DEA methodology and regression analysis between the years 2011-2013. The study sample was selected from 12 Jordanian banks recorded in Amman Stock Market. 300 questionnaires were distributed to participating banks. The response rate was 73.3%. The population of the study consisted of general managers, quality managers, branch managers, HR managers, and members of top management.

Data was analyzed using SPSS. Multiple regressions analysis was used to test study hypotheses. Data Envelopment Analysis (DEA) was used to estimate the efficiency scores for the Jordanian banks.

The results revealed that top management, technical systems, employee satisfaction, and customer focus of TQM practices have significant impact on banks performance and efficiency. Results provided supporting evidence that a strong relationship exists between TQM practices and organizational performance.

Keywords: TQM practices, Jordanian banks, organizational performance, quality, DEA, banks efficiency

1 Introduction

Banks play an important role in the economy by contributing in providing financial intermediation between borrowers and lenders, facilitates the economic activities, and representing the bulk of the nation's money stock. Since the nature of the banking industry is changing, evaluating the performance of the banks became a complicated process. Banks performance, as service organizations, is affected positively with internal quality (Krishnaveni and Divya 2006 and Vanniarajan, 2007). To provide both internal

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and external service quality in commercial banks, the quality service is highly essential (Kassem, 1988; Yavas et al., 1997).

The Jordanian banking sector represents a big share of Jordanian economy. The sector plays a major role in financing the economy's activities, contributing approximately 11% of the GDP in 2014. There are currently 26 banks presents in Jordan, 16 of which are national bank with a structural network of 767 branches. For the sector to play such a vital role in the revival of the country economy and future, the government of Jordan has introduced several laws and constitutions aimed at developing the financial institutions at this sector. The government effort is mainly targeting improving the quality of the offered services, increasing institutions abilities to offer services, and increasing institutions abilities to compete within the global market.

Total quality management (TQM) was originated in the manufacturing sector and developed into a management philosophy (Prajogo and Hong, 2008). Due to the success of implementing TQM in manufacturing, TQM practices have been adopted by the service sector. However, implementing TQM in service organizations is more challenging. Two substantial aspects of TQM can be identified: 'hard' (or "technical") and 'soft' or ("philosophical") aspects (Dale, 1996). The hard aspects of TQM include production-oriented aspects such as statistical process control, the use of benchmarking, and the flexible manufacturing systems (Samson and Terziovski, 1999). While, the soft aspects include top management commitment and involvement, employee empowerment, culture, shared vision and customer focus (Lenka and Suar, 2008). In this sense, several analyses have shown that soft and hard aspects of TQM effect organizational performance (Kaynak, 2003).

According to Hill (2008) total quality management establishes an approach of improvement in all quality aspects of the whole firm's processes, services, goods, and employees, as it also aims according to Wruck and Jensen (1994), for reallocating decision rights which results in a more effective utilization of specific knowledge in decision-making process; to enhance flexibility, effectiveness, and firm competitiveness to meet customer needs and expectations, thereby increasing efficiency.

Previous research' results indicated positive impact of TQM practices, this study aimed at investigating the impact of TQM practices on banks performance in Jordan, and to provide empirical evidences on whether or not implementation of TQM practices in banking affects the organization performance using Data Envelopment Analysis (DEA methodology), which has been rarely used in previous studies.

1.1 Study Objectives

The overall objective of this study is to measure the impact of TQM practices at Jordanian commercial banks on banks performance between the years 2011-2013. DEA methodology was used to analyze the financial ratios to identify some variables such as: banks' efficiency scores, slacks, ranks, and target inputs and outputs.

1.2 Study Framework

The proposed framework has five constructs: top management commitment, human resource management, technical system, employee satisfaction, and customer focus. The

organizational performance is measured through financial ratio analysis (y) utilizing data envelopment analysis (DEA) methodology.

1.3 Top Management Commitment

Effective and committed leadership is a prerequisite for successful TQM implementation. Rust and Oliver (1994) noted that managing the service quality in an effective way can lead to customer satisfaction while creating value. Others noted that top management commitment is considered the critical point in building the climate for success and to overcome operational complexities (Dale, 1994; Juran and Gryna, 1993; Berry, 1991).

1.4 Human Resources Management

An industrial relations/human resources perspective is valuable in understanding day-to-day operations. Resource-based view of the firm (Barney, 1991) supported the notion that HRM is a vital source of competitive advantage. HRM involves dealing with multiple issues to satisfy employees. Schneider and Bowen (1992) noted that if employees are treated as valuable assets and if those employees are satisfied, they will treat customers the same way, which will eventually achieve competitive advantage for the firm.

1.5 Technical System

Refers to the design of the services and the process management, service design is considered important dimension in meeting and/or exceeding customer satisfaction for the quality of the service and to enhance the business performance. Process management includes all the steps and technology required to deliver the service. Service delivery processes must be as much possible standardized and simplified so customers can receive or use the service without any frustrations (Milakovich, 1995).

1.6 Employee Satisfaction

Refers to the degree to which an employee feels that his needs are satisfied by his organization. Employee satisfaction can be achieved by treating employees equally and fairly through pay and reward systems, career advancement and promotions, job assignments (Folger and Greenberg, 1985).

1.7 Customer Focus

Is one of the most important factors in TQM, service organizations can achieve competitive edge over rivals by addressing this component. In service organizations, service providers should deal with their business in different way in contrast with manufacturing business sector. Customer satisfaction should be made the goal and the ultimate measure of service quality (Milakovich, 1995).

2 Literature Review

TQM is a management philosophy of continuous improvement, the pursuit of quality effectiveness in all the operational procedures and services in the organization. Elshennawy et al. (1991) stated that TQM is “a process of continuous improvement in the production and service systems, which includes all vertical and horizontal groups in the organization”. Deming’s 14 principles are the theoretical basis for TQM. Powell (1995) found 12 key factors of TQM, factors were: “the promises made by the managers, product management, satisfaction of the customers, supplier management, goal-directed systems, education and training, the open organizational culture, perfectionism, employee authorizations, the procedural improvement, the flexible procedural management, and product control”.

Studies by Al-khalifa and Aspinwall (2000), Baidoun (2004) and Al-Qudah (2006) on the banking sector in the Arab countries, utilized nine TQM practices: quality of communications and structure, top management commitment; employee empowerment and training; continuous improvement; quality measurement and benchmarking; policy and strategic planning; organizational culture; supplier’s relationship, and customer focus.

A study published in 2009 presented the importance of total quality management in the service sector of the Indian commercial banks and examined the level of implementation of TQM practices in three groups of Indian banks (Selvaraj M 2009). The study revealed that the most important TQM factors were: “Top-management commitment, Human resource management, Customer focus, Service culture, Technical systems, Employee satisfaction, and Social responsibility”.

A research study by Li et al. (2001), surveyed licensed bank in Hong Kong on the use of quality management practices. They tried to analyze the current status of quality management initiatives in Hong Kong and also compare the results with those from UK financial institutions in 1994. The result showed 68 percent success rate for quality initiatives.

(DEA) as a measurement technique for performance efficiency, which is a non-parametric approach of linear programming techniques for identifying relative efficiency of decision making units producing multiple outputs from multiple inputs. A bank in (DEA) is considered as the unit for converting inputs into outputs. Charnes et. al., (1978) were the first researchers to propose DEA technique for measuring productive efficiency in the service sector. Banking sector may include various private and public institutions. DEA models consist of two components: the first one deals with measuring efficiency. This component sets the nature of objective function of the linear programming model. DEA models can be formulated by considering two ways: output-oriented (maximization) or input-oriented (minimization). In output maximization, a bank is efficient if it is possible to augment any output without increasing any input or without decreasing any other outputs. Similarly, in the input minimization, a bank is efficient if it is possible to decrease input without augmenting other inputs or decreasing any other outputs (Charnes et al., 1981). The second component of DEA deals with the properties of the Production Possibility Set (PPS), which are identified by the constraints of linear programming model. Furthermore, production possibility set contains "all input-output correspondences which are feasible in principle" (Thanassoulis, 2001).

Returns to scale assumptions are one of the key issues connected to the definition of this (PPS). DEA models are built under different Returns to Scale (RTS) assumptions. The

original model proposed by Charnes et al. (1978) is known as CCR (Charnes, Cooper Rhodes) model. Their work was built on Farrell (1957). The CCR approach assumes constant returns-to-scale (CRS) and so, proportionality between inputs and outputs. This model is modified by Banker et al. (1984) and named as BCC (Banker, Charnes, Cooper) model which is assuming variable returns-to-scale (VRS). In comparison with other techniques for evaluating organizational performance efficiency, DEA techniques is considered as a better way to evaluate performance efficiency since it allows efficiency to change over time and requires no prior assumptions.

Aly, et al. (1990) used the Charnes–Cooper–Rhodes (CCR) model to evaluate the technical efficiency, scale efficiency, and allocate efficiency for 322 independent USA banks in 1986. The number of full-time staff, fixed asset, capital and loanable funds were chosen as input variables; real states loans, commercial and industrial loans, consumer loans, miscellaneous loans, and current deposits were considered as output variables.

Athanassopoulos et al. (2000) examined 47 branches of the Commercial Bank of Greece; DEA results were used to implement the proposed changes in the bank performance measurement system. Wang, Huang, and Lai (2005) studied four state-owned banks and 12 private banks (a total of 16 commercial banks) in mainland China in 2004, capital and assets were considered as input items. Net income, return on total assets (ROA), returns on equity (ROE) were considered as output variables.

Performance evaluation and efficiency in the banking industry were researched globally. Few researches have been conducted on the banking industry at the Arab countries. Al-Shammari and Salimi (1998) concluded that Jordanian banks were inefficient over the period of 1991-1994 after evaluating the banks efficiency using a modified version of DEA.

Al-Faraj et al. (2006) concluded that Saudi banks should continue their efforts of utilizing the latest technologies to provide services in order to sustain competitive advantage. Their study revealed that the mean efficiency score of Saudi commercial banks were very satisfying compared to the world mean efficiency scores. The performance of the Saudi commercial banking industry using DEA was used to evaluate the technical efficiency of Saudi banks for the year 2002 and compared with world mean efficiency scores.

Sufian et al. (2009) studied and compared the Islamic banking sector in MENA countries and Asian countries using DEA. Islamic banking sector in MENA countries was found more efficient than in Asian countries. They also found out those banks small banks were more efficient than big banks.

Another study conducted on the Jordanian banking sector was by Ahmad (2000) who analyzed the efficiencies of 20 Jordanian banks, from '1990 to '1996, using both DEA and SFA. The two inputs (labor and deposits) and two outputs (loans and investments) were determined using the intermediation technique. The average cost efficiency of the banks was determined by using both methods. Results were compared; the efficiency was 73.5% using DEA and 77.5% using SFA. The results also showed that national banks were less efficient than foreign banks. Small banks indicated higher efficiency levels than big and medium size banks. Big banks were also found more profitable and more efficient.

3 Methodological Framework

The aim of this study was to examine the impact of five TQM practices: top management commitment, human resources management, technical system, employee satisfaction, and customer focus on organizational performance operationalized by technical efficiency of Jordanian commercial banks between the years 2011-2013. A survey questionnaire was utilized to measure TQM practices. The questionnaire was adopted from Selvaraj (2009), the previous five constructs of TQM practices were proposed to form the study questionnaire based on the literature review in the field. Specific questions were designed to investigate TQM constructs proposed by the research model.

3.1 Research Question

The research question for this study was “what is the impact of TQM practices on organizational performance?” Two hypotheses were proposed to answer the question.

3.2 Research Hypotheses

Ho: there is no impact for TQM practices on organizational performance

H1: there is an impact for TQM practices on organizational performance

3.3 Population and Sample

The population of the study was 12 Jordanian banks registered in the first market of the Amman Stock Exchange (Arab Bank (B1), Jordan Kuwait Bank (B2), The Housing Bank for Trade and Finance (B3), Arab Jordan Investment Bank (B4), Bank Al-Etihad (B5), Arab Banking Corporation/ Jordan (B6), Capital Bank of Jordan (B7), Societe General De Banque-Jordanie (B8), Cairo Amman Bank (9), Bank of Jordan (B10), Jordan Ahli Bank (B11), and Invest Bank (B12)). Total of (300) questionnaires were administered to participating banks, (220) questionnaires were returned with (73.3 %) response rate. The population of the current study consisted of general managers, quality managers, branch managers, human resource managers, and members of top management. The questionnaire was administrated to those who have a sound knowledge of quality management in their participating bank.

Data was analyzed and interpreted using (SPSS). Multiple regressions analysis was used to test the research hypotheses. Data Envelopment Analysis (DEA) was used to estimate the efficiency scores for the Jordanian banks. DEA is a linear programming technique (Charnes, 1978) and an effective performance measurement technique, which has many advantages over other traditional methods such as performance ratios and regression analysis (Manaadhar, 2002). DEA utilizes a multiple incomparable inputs and outputs of the organizations to calculate the efficiency scores.

A descriptive statistics was used to explore the general profile of the respondents and to investigate the effect of TQM practices on bank's performance. Financial ratios analysis in DEA methodology was used to measure the organizational performance (Cronbach, 1951).

The data used to measure the organizational performance is the financial ratios information available at Amman Stock Exchange. Two Inputs and three outputs of financial ratios are chosen for each commercial bank included in the study, which were:

Input 1 (x1) = Earnings per share = Net income after taxes/Number of subscribed shares.

Input 2 (x2) = Credits to total assets = (Credits granted x100) / Total assets.

Output 1 (y1) = Return on investment = (Net income after taxes x100)/ Total assets.

Output 2 (y2) = Return on equity = (Net income after taxes x100)/Shareholders' equity.

Output 3 (y3) = Cash and portfolio investment to deposits = (Cash and portfolio investment)/Deposits.

4 Data Analysis and Interpretation

This section presents the statistical techniques and data analysis conducted to answer the research question and hypotheses. Cronbach's Alpha was conducted to measure the reliability (0.887), results are shown in Table 1. Tables 2 and 3 show the results of descriptive statistics for TQM practices at participating banks.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Ba	N of Items
.887	.885	5

Table 2: Descriptive analysis for TQM practices at each participating bank

	TMC		HR		TS		ES		CF	
	Mean	SD.	Mean	SD.	Mean	SD.	Mean	SD.	Mean	SD.
B1	3	0.245	2.5	0.562	3.00	0.674	3	0.495	3	0.421
B2	2	0.421	2.5	0.673	2.50	0.824	2.4	0.389	3	0.562
B3	3.8	0.562	3.3	0.678	4.05	0.495	3.85	0.421	3.35	0.673
B4	3.45	0.673	3.3	0.876	3.55	0.245	3.4	0.562	4.2	0.824
B5	3.05	0.678	2.8	0.127	3.05	0.421	2	0.673	2	0.495
B6	2.5	0.876	2	0.674	3.00	0.562	2.5	0.674	2	0.245
B7	4.6	0.127	4.5	0.824	4.00	0.421	4.56	0.824	4.5	0.421
B8	3.45	0.674	3.3	0.495	4.50	0.562	4	0.495	4.2	0.562
B9	3.7	0.824	3.5	0.245	3.90	0.673	3.15	0.245	3.9	0.245
B10	4	0.495	3.5	0.421	4.50	0.876	3.8	0.421	3.2	0.421
B11	3.4	0.389	2.7	0.562	3.00	0.127	3.2	0.562	3.7	0.562

Table 3: Descriptive analysis for all participating banks

	number	Mean	Min	Max	SD
TMC	220	3.4125	1.5	4.75	0.7819
HRM	220	3.2166	1.4	4.8	0.7752
TS	220	3.3689	1.5	5	0.8634
ES	220	3.2152	1	4.1667	0.6772
CF	220	3.6598	1.3333	4.8333	0.6803

4.1 Correlation of TQM Practices

A correlation test was conducted, the results of the test revealed that there was no significant correlation at 0.05 significance level between TQM practices as shown in table 4.

Table 4: Correlation between all banks

		AvgTMC	aveHR	AveTS	AveES	AveCF
AvgTMC	Pearson Correlation	1	.665**	.792**	.661**	.425**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	220	220	220	220	220
AvgHR	Pearson Correlation	.665**	1	.810**	.574**	.407**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	220	220	220	220	220
AvgTS	Pearson Correlation	.792**	.810**	1	.708**	.444**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	220	220	220	220	220
AvgES	Pearson Correlation	.661**	.574**	.708**	1	.587**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	220	220	220	220	220
AvgCF	Pearson Correlation	.425**	.407**	.444**	.587**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	220	220	220	220	220

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

4.2 Efficiency Analysis

DEA method was used to measure efficiency for participating banks. A correlation was conducted between inputs and outputs variables from 2011 to 2013. A correlation Coefficient test was conducted between inputs (Earnings per share, and Credits to total assets) and out puts (Return on investment, Return on equity, and Cash and portfolio investment to deposits). Results are presented in table 5.

Table 5: Correlation between inputs and outputs variables from 2011-2013

Bank's Financial data from 2011 to 2013 (numbers are reported in J.D)															
Name of Bank	return on investment			return on equity			earnings per share			credits to total assets			cash and portfolio investments to deposits		
	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
ARAB BANK	3.58	3.55	3.31	8.75	8.74	6.9	0.85	0.49	0.49	42.95	41.56	41.8	76.87	78.07	78.03
JORDAN KUWAIT BANK	4.82	4.88	4.92	11.74	12.39	11.52	0.47	0.46	0.4	32.04	38.77	34.9	34.38	47.66	34.33
THE HOUSING BANK FOR TRADE AND FINANCE	4.84	4.62	4.35	10.27	9.89	9.36	0.4	0.37	0.35	36.85	37.85	36.1	75.28	74.19	78.03
ARAB JORDAN INVESTMENT BANK	3.53	3.96	3.98	10.94	10.21	9.07	0.13	0.14	0.12	31.48	37.94	35.8	85.72	70.59	73.22
BANK AL-EHDAH	3.54	3.46	3.78	0.2	0.35	0.1	0.2	0.15	0.1	32.64	47.8	49.5	60.13	68.85	66.85
ARAB BANKING CORPORATION (JORDAN)	3.54	3.48	3.78	8.93	8.27	4.8	0.2	0.15	0.1	32.64	47.8	49.5	60.13	68.85	66.85
CAPITAL BANK OF JORDAN	4.19	3.04	3.83	13.32	8.86	0.53	0.21	0.13	0.01	35.85	38.79	47	74.99	64.83	63.8
SOCIETE GENERALE DE BANQUE - JORDANIE	2.82	3.28	3.7	6.23	4.3	5.42	0.07	0.05	0.07	33.98	33.67	37.6	84.37	85.18	74.83
CAIRO AMMAN BANK	3.84	3.66	3.94	15.44	14.63	16.37	0.41	0.35	0.37	43.6	49.76	48.8	65.21	55.49	59.11
BANK OF JORDAN	3.51	3.82	3.48	12.85	13.12	13.91	0.26	0.23	0.23	30.09	46.13	51	36.66	60.92	55.19
JORDAN AHLI BANK	3.92	4.05	4.27	5.63	8.87	9.16	0.1	0.16	0.18	43.96	48.07	45	50.69	60.87	62.13

Based on the results represented in table 6, correlation between inputs and outputs variables is positive and the requirements of isotonicity condition are satisfied for the DEA analysis (Chen and Chen, 2009). As shown in Table 6, the average of efficiency of the targeted banks from 2011 to 2013 was (100) percent.

Table 6: Average of efficiency of each bank from 2011 to 2013

banks	Efficiency			
	2013	2012	2011	AVE
B1	0.70	0.73	0.70	0.7106
B2	0.69	0.63	0.68	0.66767
B3	1.00	0.93	0.95	0.9603
B4	1.00	0.97	1.00	0.98913
B5	0.55	0.65	0.72	0.6378
B6	0.60	0.65	0.72	0.6546
B7	1.00	1.00	1.00	1.00
B8	1.00	1.00	0.97	0.9905
B9	1.00	0.89	0.96	0.94803
B10	0.87	0.99	0.89	0.91737
B11	0.80	0.74	0.76	0.7646

The results in Table (7) showed that the Pearson correlation between the inputs and outputs variables are positive and the requirements of isotonicity condition is satisfied for the DEA analysis (Chen and Chen, 2009).

4.3 Correlation between TQM Practices and bank's efficiency

A simple correlation test was conducted between TQM practices and participating banks performance measured by DEA. The correlation coefficient was 0.892 at a p-value of 0.001. Results showed that TQM practices and bank's efficiency were correlated and significant at 0.05 level (95% confidence interval).

A regression test was conducted with TQM practices as the independent variable and efficiency as the dependent variable. The p-value for the regression test is shown in table 7. The five TQM practices were examined in relation to their impact on bank's efficiency. With the limited data (11 banks), a multiple regression test will not be a reliable measure, so a simple regression test was conducted for each practice with bank's efficiency. Table 7 shows the results of the test.

Table 7: Correlation among TQM practices and efficiency between banks

TQM Domain	TMC		HRM		TS		ES		CF		Efficiency	
	corrl.	p-value	corrl.	p-value	corrl.	p-value	corrl.	p-value	corrl.	p-value	corrl.	p-value
TMC			0.892	0	0.787	0.004	0.834	0.001	0.643	0.033	0.799	0.003
HRM					0.732	0.01	0.809	0.003	0.751	0.008	0.836	0.001
TS							0.801	0.003	0.55	0.079	0.855	0.001
ES									0.804	0.003	0.879	0.000
CF											0.852	0.001

Regression test of TQM practices and bank's efficiency:

Table 8: Results of regression

Variables	R ²	Adjusted R ²	p-value
TQM Domain			
Top Management Commitment (TOPM)	0.639	0.599	0.003*
Human Resources Management (HRM)	0.699	0.666	0.001*
Technical System (TS)	0.731	0.701	0.001*
Employee Satisfaction (ES)	0.773	0.748	0.000
Customer Focus (CF)	0.726	0.696	0.001
Notas: * <= 0.05, ** <= 0.01, *** <= 0.001			

4.4 Correlation between TQM Practices and Bank's Efficiency

A correlation Coefficient test for TQM practices and bank's efficiency was conducted. As presented in table 7, Results showed that TQM practices and bank's efficiency were correlated with each other at significant level 0.05 (95% confidence interval). Apparently Employee Satisfaction practice ($r=0.879$, at p-value 0.001) and Technical system practice ($r=0.855$, at p-value 0.001) have higher impact on bank's efficiency than the other practices with Top management commitment practice ($r=0.799$, at p-value 0.003) having the lowest impact. The results support hypothesis

Ha: There is impact for TQM practices on bank performance at 0.05 significant level.

4.5 Regression Analysis

A regression test was conducted to investigate the impact of the five TQM practices (independent variable) on banks efficiency (dependent variable). The results of the tests were five statistically significant models. The first model, Top Management Commitment

(I.V) was used to predict bank's efficiency. The result of the test showed statistical significant at 0.05 level. (P-value = 0.003, Adjusted $R^2 = 0.599$).

The second model, Top management commitment (I.V) and Human resources Management (I.V) were used for prediction. The result of the test showed statistical significant at 0.05 level (p-value = 0.001, Adjusted $R^2 = 0.666$).

Third model, Top management commitment (I.V), Human resources Management (I.V), and Technical System (I.V) were used to predict bank efficiency. The results were (p-value = 0.001, Adjusted $R^2 = 0.701$), which is significant at 0.05 level.

Fourth model, Top management commitment (I.V), Human resources Management (I.V), Technical System (I.V), and Employee satisfaction (I.V) were used to predict bank's efficiency. The results were (p-value = 0.000, Adjusted $R^2 = 0.748$), which is significant at 0.05 level.

Fifth model, Top management commitment (I.V), Human resources Management (I.V), Technical System (I.V), Employee satisfaction (I.V), and Customer focus (I.V) were used to predict bank's efficiency. The results were (p-value = 0.001, Adjusted $R^2 = 0.696$), which is significant at 0.05 level.

It can be noticed from the regression analysis that when Customer Focus was added to the model the adjusted R^2 decreased from 0.748 to 0.696, which indicates that this variable can be removed from the model.

5 Conclusion

The results of this study revealed that Top management commitment, Human resources management, Technical system, Employee satisfaction and Customer focus of TQM practices have a significant impact on banks' efficiency. The results also provide a supporting evidence of a strong relationship between TQM practices and organizational performance, which supports H_a : There is an impact for TQM practices on bank performance at 0.05 significant level.

TQM does have a significant impact on bank's efficiency. An organization could use this framework to benchmark and track the extent of TQM practices effects on organizational performance surrogated by efficiency. The findings could provide important implications for top management to evaluate their technical system practices and employee satisfaction in order to be consistent and support TQM implementations.

This study contributes to the TQM literature by validating the direct relations among TQM practices and the impact of these practices on organization's performance. In addition, this study operationalized bank performance as efficiency calculated by data envelopment methodology. The findings of this study supported the positive impact of TQM practices on banks' performance, and support the study hypothesis. The results also pointed out to the important role that technical system and employee satisfaction can play in supporting TQM programs within an organization.

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