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Obstacles of Applying Total Quality Management Principles in Banking Sector, Gezira State, Sudan (2021)

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ABSTRACT

Preface: Competition in providing high-quality service became a goal sought by service organizations, including banks. That was after service quality became the basic standard of institutional success and guaranteed their survival and continuity in the market. This study aimed at identifying the most important obstacles that confront the application of TQM principles in the Sudanese banking sector from the point of view of banks' employees. Method: The study relied on primary data collected through a structured questionnaire compassing a random sample of 100 individuals working in the banking sector in Gezira state. The study used descriptive analysis utilizing frequency tables, in addition to inferential statistics using factor analysis and Fisher Exact Test in the Chi-squared procedure in SPSS program version 20. Results: The study found a number of obstacles that prevent the application of TQM principles in Sudanese banks. Their rank came according to their contribution in the total variance of quality obstacles, as follows: organizational obstacles; obstacles relating to administrative leaders; obstacles relating to the dissemination of quality culture; obstacles relating to employees. The study also found that there were no statistically significant differences in the level of obstacles of applying TQM principles in the banking sector attributed to the variables of job rank, academic qualification, and years of experience except those related to the educational level of the bank employee. Recommendation: The study recommended the necessity of confronting these obstacles by banks and to find the required solutions for them..

Keywords: *TQM principles; Banking Sector; Quality Culture*

1. INTRODUCTION

Total quality management (TQM) has become a vital tool for the development of the banking system in developing countries. Many developed countries succeeded in applying the principle with variant success rates. In developing countries where believe in traditional banking still thrives, resistance to change has resulted in many obstacles to the implementation of a successful quality model. Sudan is one of those countries. This study attempts to investigate obstacles against a set of 28 defined TQM ingredients necessary for initiating an executable quality system. It applies this strategy by using data obtained from a number of bank employees taking the state of Gezira in Sudan as a case study.

State of the art

The TQM concept gained the attention of specialists in all aspects, locally and globally, as it entered many fields. Many organizations became fully aware of the necessity of the concept and its application in different businesses. TQM is not restricted only to commodities, but it also became a title for the services provided by different private and public organizations (Mullah, 2011).

The provision of high-quality services became a goal sought to be achieved by all service organizations, including banks, particularly after service quality became a basic standard that guarantees its success, competition, and continuity in the market (Sanjiv, 2005).

According to EL Khateeb (2006), TQM is a system that has many requirements, including the awareness with TQM philosophy and the commitment of top management to apply it through carrying out of strategic planning processes, concentration on customers, continuous improvement of performance, setting of standards, protective control that is based on preventing mistakes before they are being committed, motivating working staff and concern with training.

Ogail et al. (1996) see that there are many TQM principles, including concentration on customers, continuous improvement, cooperation instead of competition, preventive control instead of inspection, and adoption of scientific methodology in decision making.

Banking service quality focuses on the satisfaction of customers' requirements and wants or beyond that. It is the provision of an appropriate level of service based on their expectations, and it is equivalent to customer personal judgment, resulting from it the comparison between his expectations of the required service with his awareness of the actually provided service (Al Sarn, 2007).

Problem

The research problem is embodied in the following question: What are the obstacles to applying TQM principles in the banking sector?

Derived from this question, the following sub-questions were postulated:

- Are there organizational obstacles that prevent the application of TQM principles?
- Are there administrative leaders' obstacles that prevent the application of TQM principles?
- Are there obstacles relating to the dissemination of quality culture that prevent the application of TQM principles?
- Are there obstacles relating to employees that face the application of TQM principles?

- Are there obstacles relating to physical capabilities that prevent the application of TQM principles?
- Are there differences in the total level of obstacles of applying TQM principles attributed to the employees' characteristics: age, sex, academic qualifications, job rank, and years of experience?

Objectives:

- Main Objective:

The general research objective is to study the obstacles hindering the application of TQM principles in the banking sector in Gezira state and add new stock of data to the discipline in line with global TQM methodology enhancement.

- Sub – Objectives:

- To identify organizational obstacles and to specify variance-ratio that deviates them from the total variance of obstacles of applying TQM principles.
- To identify the administrative leaders' obstacles and to specify the variance ratio that deviates them deviates from the total variance of obstacles of applying TQM principles.
- To specify quality culture dissemination obstacles and to identify variance-ratio that deviates them from the total variance of obstacles of applying TQM principles.
- To specify the extent of contribution of obstacles relating to employees in the total variance of obstacles of applying TQM principles.
- To specify obstacles of logistical facilities and to identify the variance ratio that interprets them from the total variance of obstacles of applying TQM principles.
- To identify the differences in the total level of obstacles of applying TQM principles attributed to the variables: academic qualification, job rank, and years of experience.

The objectives are also tested as null hypotheses.

Study Significance:

The significance of the research comes from the role played by the banking sector as one of the pillars that assist the country's progress and development. Also, there is scarcity in studies relating to this topic, in Sudan and Gezira state in particular, as far as the researcher knows. This study could also be an addition to the previous studies in the field with respect to studying the obstacles of applying TQM principles in the banking sector in Gezira state, giving them weights and ranks them according to their effect and thus their performance.

Method:

The research study relied on both descriptive and inferential analytical methodology as it suits this type of study.

Study Area:

Gezira State is located in central Sudan with a population of 6.1 million in 2014 and includes large agricultural projects, including the Gezira scheme. It is capital is Wadmedani. It is the most urbanized state after Khartoum**.**

- Data

Primary data were collected through a structured questionnaire where questions concerning the obstacles of applying TQM principles in the banking sector were asked.

- Study Sample

The study population is represented by managers, deputy managers, head departments, and employees working in the banking sector in Wad Medani, making a total of 25 banks. The sample size was determined according to a simple formula suggested by Yamane 1967

$$n = \frac{N}{1 + Nd^2}$$

Where:

N: total number of employees in all banks in Gezira state with their different job ranks

n: sample size

d: required precision

By applying the formula shown above, at $d = 0.079$

$$n = 300 \div (1 + 300 \times 0.079\text{^}2) = 104$$

The sample size is 104. The number of returned questionnaire forms was 4, making the actual sample size 100 employees with a response rate of 96.2%.

- Validity and Reliability

Table (1) shows the result of the internal consistency method for measuring the reliability coefficients of the study tool. It is clear that the value of Alpha Cronbach of (0.97) is a high value indicating that the sufficiency of the research tool.

Table (1) Reliability Coefficient

	Number of Paragraphs	**Reliability Coefficient**
Total Measure	28	0.97

Source: The Researcher from the Field Survey (2021)

Table (2) indicates that the validity coefficient value equals 0.98, which is a high value indicating that the questionnaire designed by the researcher proves its validity in measuring what it was set for to measure.

Table (2) Validity Coefficient

	Number of Paragraphs	**Validity Coefficient**
Total Measure	28	0.98

Source: The Researcher from the Field Survey (2021)

Previous Studies

As far as the researcher knows, there are a limited number of studies that dealt with the topic of obstacles of applying TQM principles in the banking sector. These include the study of Ahmed (2017) that arrived at several obstacles represented by IT infrastructure obstacles, security obstacles, financial obstacles, and organizational culture obstacles. Nahshal (2013) showed that there was moderate knowledge concerning the culture and procedures of quality and moderate knowledge concerning obstacles of the application of the

system among the staff of the *Shamil Bank of Yemen and Bahrain.* The study by Talib(2013) pointed out that the most important obstacles are the lack of top and middle management commitment, failure to develop and sustain a quality–orientated culture, high expectations of quick results from TQM initiatives, management reluctance in imparting training and education programs to employees for a better understanding of TQM philosophy and use, lack of consensus, absence of employee empowerment, poor planning, nonexistence of communication, lack of direction and purpose., deficiency of continuous improvement culture, absence of coordination between departments, and employee resistance to change. Mansour (2007) identified the following obstacles preventing banks from implementing TQM: Lack of resources; short-term goals; internal environment; communication; deficiency of training; skills of employees; cost constraints; measuring quality. As for Al Hori et al. (2004) study, it was concluded with a number of obstacles; these were IT infrastructure obstacles, technical obstacles, and security structure. The study also concluded that there exists a high-level awareness of these obstacles and that they affect the level of service quality. The results of Abdul Rahman (2005) study showed that the lack of providing an appropriate banking environment is considered as an obstacle facing the application of modern technology; also, the lack of awareness by top management leads to the difficulty of providing banking services. Al Hazal (2001) study showed that most obstacles are represented by the difficulty of changing organizational culture in a way that conforms to TQM requirements, poor training and education programs, and weak commitment to quality improvement programs by employees.

Through previous studies, it is clear to us that there are a number of obstacles that prevent the application of TQM principles in the banking sector. The most evident of these are organizational culture, lack of resources, poor infrastructure, finance, training, and education.

Results

Descriptive statistics

- Basic Characteristics of the Study Sample

From Table (3), we notice that nearly two-thirds of the respondents, 63%, were males and more than two-thirds of the sample members were under 40 years old, and 18% are between 40-49 years old, only a small percentage of them are over 50 years old. Concerning academic qualifications of the respondents, more than half, 55%, were bachelor holders, almost a quarter of them were master holders, 18% of them have a post-graduate diploma, and 3% of them obtained a doctorate degree.

With respect to job rank, nearly two-thirds of the respondents, 64%, were employees. Also, a quarter of the respondents are heads of departments, and 14% percentages of them are managers or managers.

Half of the respondents, 51%, have more than ten years of experience, a third of them have less than five years of experience, while 16% percentage have experience ranging from 5 years to 9 years.

From these results, one may conclude that respondents are of high experience and adequate academic qualifications that enable them to understand the objective and the aspects of this study.

Table (3) Basic Characteristics of the Study Sample

Variables	Frequencies	Percentages
Sex		
Males	63	63%
Females	37	37%
Total	**100**	**100%**
Age		
18 years—29 years	29	29%
30 years and less than 39 years	39	39.0
40 years and less than 48 years	18	18%
50+	14	14%
Total	**100**	**100**
Academic Qualification		
Bachelor	55	55%
Postgraduate Diploma	18	18%
Master	24	24%
Doctorate	3	3%
Total	**100**	**100%**
Job Rank		
Manager	7	7%
Deputy Manger	7	7%
Head of Department	22	22%
Employee	64	64%
Total	**100**	**100%**
Years of Experience		
Less than 5 years	33	33%
5 – 9 years	16	16%
10 years or more	51	51%
Total	100	100%

Source: The Researcher from the Field Survey (2021)

Likert Scale

Table (4) shows the attitudinal scale parameters of the Likert scale in percentage. The majority of respondents, 58.4%, either agree or strongly agree. The table reflects that a little more than 58% of bank employees in Gezira state are aware of the ingredients of the TQM. Those who either disagree strongly or disagree represent 36.7%, and those who do not know represent 6.3%. This is suggestive that our set ingredients of TQM may be robust. In narrative terms, the bank employs reflected high agreement in nearly 61 percent of the set ingredients with an average score of 3.89 points in the Likert scale isomer.

Table (4): Likert Scale Classification of sample responses (Percentage)

Variables	Disagree very much	Disagree	I do not know	Agree very much	Agree	Narrative expression on level of agreement
An ambiguity of strategies of applying TQM principles	1	0	0	93	6	High
Absence of administration that continuously works on quality assurance of banking services	56	30	1	10	3	Low
Unavailability of organizational atmosphere that encourages distinction of performance	60	31	1	7	1	Low
Limitedness of professional development programs for employees	53	24	1	19	3	Low
Weakness of social services provided for employees	1	2	3	75	20	High
Weakness of financial incentives offered to employees	2	16	28	32	21	Medium
Lack of concern with the conduction of studies and scientific research	1	4	7	64	25	High
Lack of concern with strategic planning	1	6	6	66	21	High
Weakness of working as a team culture	4	21	19	36	21	High
Lack of dissemination of quality culture	2	6	7	64	21	High
Organizational culture is inappropriate with quality requirements	1	4	3	75	16	High
Unavailability of specialists in TQM	11	14	1	58	15	High
Non-existence of measures for measuring customers' satisfaction level	13	46	2	26	13	Low
Lack of sufficient awareness of TQM principles by administrative leaders	18	42	14	16	9	Low
Lack of convenience of applying TQM principles by administrative leaders	6	35	2	26	31	High
Lack of tendency change by administrative leaders	9	18	3	36	35	High
Lack of understanding employee needs by administrative leaders	15	3	7	64	25	High
Lack of concern with suggestions and complaints by administrative leaders	2	6	6	66	20	High
Lack of concern with internal and external changes by administrative leaders	3	22	19	36	21	Medium
The humanitarian relationship between administrative leaders and employees is poor	10	15	1	58	15	High
Lack of sufficient awareness of TQM principles by employees	14	45	2	26	13	Low
Lack of convenience of applying TQM principles by employees	16	45	8	27	4	Low
Lack of employees' tendency to change	8	37	7	30	18	Medium
Weakness of trust among employees	6	45	3	40	6	Low
Weakness of working as a team among employees	12	51	6	20	11	Low
The financial capabilities of banks are weak	15	3	7	64	25	High
Buildings and premises are inappropriate	2	6	7	64	21	High
IT infrastructure is poor	1	2	3	75	20	High
Average	**13.0**	**22.7**	**6.3**	**42.8**	**15.6**	**High**

Source: The Researcher from the Field Survey (2021)

Factor Analysis

- Background:

The broad purpose of factor analysis is to summarize data so that relationships and patterns can be easily interpreted and understood. It is normally used to regroup variables into a limited set of clusters based on shared variance. Hence, it helps to isolate constructs and concepts.

Factor analysis operates on the notion that measurable and observable variables can be reduced to fewer latent variables that share a common variance and are unobservable, which is known as reducing dimensionality (Bartholomew, Knott, & Moustaki, 2011).

- Steps for factor analysis:

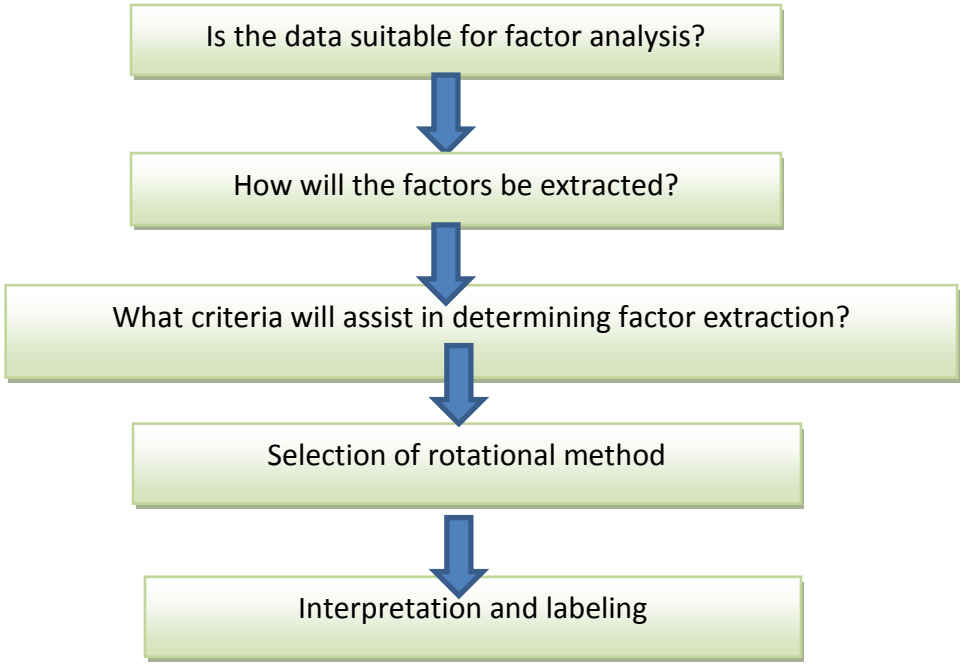

Figure 1. The 5-step Exploratory Factor Analysis Protocol

Bartlett's Test of Sphericity

The factorability of the inter-correlation matrix is determined by Bartlett's Test of Sphericity. It is actually a measure of multivariate normality of a set of distributions. This test also checks the null hypothesis that the original correlation matrix is an identity matrix. The significant value of less than 0.05 indicates that these data do not produce an identity matrix and are thus approximately multivariate normal and acceptable for further analysis (Pallant, 2013). In the table (5) below Bartlett's test of sphericity is 3904.91 ($p < 0.05$), indicating the significance of the adequacy of the sample for factor analysis and sampling adequacy measure by Kaiser-Meyer-Olkin (KMO), the table (KMO) value = 0 tells us that the sample size adequate for factor analysis.

Table (5) Testing the adequacy of the sample size and testing the original correlation matrix

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.91
Bartlett's Test of Sphericity	Approx. Chi-Square	3804.91
	Df	378
	Sig.	.000

Source: The Researcher, from the Output of SPSS Program

Factor extraction

Factor extraction is performed as one of the steps involving a minimum number of factors that one can identify as representing interrelationships among a set of variables. There exist a number of methods for specifying and extracting underlying factor dimensions. The principal component analysis is used here as one of these methods whereby different clusters of factors are tested until a reasonable solution is obtained (Pallant, 2013). In order to determine how many clusters or components are extracted, the Kaiser Criteria and Cartell Scree plot is used. (Field.2013. Pallant, 2013).

Kaiser Criteria extracts factors that have eigenvalues greater than 1as the initial solution. The eigenvalue of a factor denotes the whole of total variance explained by that factor. The extracted factors are then classified according to their squared loadings. In our case, the extracted factors are presented in table (6), representing 6 factors dented from 1 to 6 in descending order.

As an example of the final factorization process, The 1^{st}Factor has an Eigenvalues equals (15.94), it explains more variance than a single variable, in fact (15.94) times as much. The percent of variance explained is thus (15.94/28 unit of variance)*100 = (56.9 %), calculating its squared loading in the rotated component matrix give the variable name that represents that factor, which, in this case, is "**Limitedness of professional development programs for employees**" In the same way the remaining five factors are calculated.

Table (6): Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.00	15.94	56.92	56.92	15.94	56.92	56.92	7.04	25.15	25.15
2.00	2.83	10.12	67.04	2.83	10.12	67.04	5.56	19.86	45.00
3.00	1.94	6.93	73.97	1.94	6.93	73.97	3.99	14.24	59.25
4.00	1.64	5.85	79.81	1.64	5.85	79.81	3.65	13.03	72.27
5.00	1.06	3.79	83.61	1.06	3.79	83.61	2.72	9.71	81.98
6.00	1.02	2.91	86.52	1.02	2.91	86.52	1.27	4.54	86.52
7.00	0.75	2.54	89.06						
8.00	0.44	1.49	90.54						
9.00	0.39	1.46	92.01						
10.00	0.30	1.09	93.09						
11.00	0.27	0.95	94.04						
12.00	0.24	0.85	94.89						
13.00	0.20	0.71	95.60						
14.00	0.16	0.62	96.22						
15.00	0.16	0.58	96.79						
16.00	0.15	0.54	97.34						
17.00	0.13	0.44	97.78						
18.00	0.10	0.37	98.15						
19.00	0.06	0.31	98.45						
20.00	0.09	0.30	98.76						
21.00	0.08	0.24	99.00						
22.00	0.06	0.23	99.23						
23.00	0.05	0.19	99.42						
24.00	0.05	0.16	99.58						
25.00	0.04	0.14	99.73						
26.00	0.03	0.11	99.84						
27.00	0.03	0.10	99.93						
28.00	0.02	0.07	100.00						

Extraction Method: Principal Component Analysis.

Source: The Researcher, from the Output of SPSS Program

Table (7) summarizes the factors that have eigenvalues greater than one, so the number of factors is six factors (factor 1to 6), which represent 86.5 % of the total variance explained.

Table (7): Factors extracted in the initial solution

Component	The factor with low loaded component	Average (CL)	Initial Eigenvalues	Communality	%of total variance explained
1	Limitedness of professional development programs for employees	15.94	15.94	0.907	56.92
2	Weakness of financial incentives provided for employees	2.83	2.83	0.917	10.12
3	Lack of concern with suggestions and complaints by administrative leaders	1.94	1.94	0.901	6.93
4	Lack of concern with internal and external changes by administrative leaders	1.64	1.64	0.920	5.85
5	Humanitarian relationship between administrative leaders and employees is poor	1.06	1.06	0.837	3.79
6	Lack of sufficient awareness of TQM principles by employees	1.02	1.02	0.830	2.91
	TOTAL				86.5

Source: The Researcher, from the Output of SPSS Program

Cattell Criterion

Another way to determine the number of factors extracted in the initial solution is to use cartell scree plot. It is a plot of the eigenvalues of the extracted factors. Figure 1 shows that the points begin to level off after the sixth factor, changing the direction to a horizontal path indicating the same six factors shown by Kaiser Criteria.

Figure (2) Scree plot

Source: The Researcher, from the Output of SPSS Program

Association between the Levels of agreement with set obstacles ingredients and respondents characteristics

The association test is performed, taking the average score for all 6 set obstacles ingredients with each characteristic. The result is summarized in table (8).

Fischer's exact tests revealed that education is the only identified factor significantly associated with set obstacles ingredients ($\chi^2 = 28.9, df = 12, p\ value < 0.004$).. For experience, Fisher exact test revealed no significant association with obstacles ingredients($\chi^2 = 7.1, df = 8, p\ value < 0.52$). However, the Linear by linear test showed very high significance between experience and set obstacles ingredients which may be attributed to the auto-correlation of bank employees' experience with other attributes such as education and job($\chi^2 = 6.3, df = 1, p\ value < 0.009$).

Table (8): Factors associated with set obstacles ingredients: Respondents characteristics

Characteristic (N = 800)	Dependent variable: Diarrhea in children under five		
	Chi-square	DF	p value
Age	6.266	12	0.513
Gender	1.648	4	0.150
Education	28.940	12	0.004
Experience	7.133	8	.0523*
Job	5.6658	12	0.326
* Linear by linear association was significant, P value= 0.009			

Source: The Researcher, from the Output of SPSS Program

Conclusion and recommendation

Through collection and analysis of data, the following results were obtained:

- There are organizational obstacles that prevent the application of TQM principles. They ranked first, as they explain 25.15% of the total variance of total quality obstacles.
- There are obstacles relating to administrative leaders that face the application of TQM principles. They are ranked second, as they explain 19.86% of the total variance of total quality obstacles.
- There are obstacles relating to the dissemination of total quality culture that prevents the application of TQM principles. They came in the third rank, as they explain 14.24% of the total variance of total quality obstacles.
- There are obstacles relating to employees that face the application of TQM principles. They came in the fourth rank, as they explain 13.03% of the total variance of total quality obstacles.
- There are obstacles relating to financial capabilities that prevent the application of TQM principles. They came in the last rank, as they explain 9.71% of the total variance of total quality obstacles.
- There are no statistically significant differences in the level of the application of TQM principles in the banking sector attributed to the variables: job rank, academic qualifications, and years of experience at a significance level of4.54%.

These obstacles have been found to hinder the application of TQM principles in several developing countries and in other studies in Sudan. For instance, Vora, K. (2013) found that to successfully apply TQM principles, strict organizational management change is crucial. Mahmoud, M (2018) found that leadership is central in initiating a successful road map for the application of TQM in Gezira Sudan- Jordanian Bank in Khartoum.

Recommendations

Sudanese banks should act to find solutions to organizational and administrative obstacles represented by limitedness of professional development programs for employees; Weakness of financial incentives provided for employees: Lack of concern with suggestions and complaints by administrative leaders; Humanitarian relationship between administrative leaders and employees; Lack of sufficient awareness of TQM principles by employees; weakness of financial incentives offered to employees.

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ANNEX

Validity and Reliability

Alpha Cronbach reliability coefficient was used to measures the reliability of the study tool. This reliability coefficient takes the value ranging between zero and one. If there is no reliability in data, the coefficient value equals zero. In contrast, if there is complete reliability, the coefficient value equals one. An increase in the Alpha Cronbach coefficient means an increase of data validity and thus reflecting the sample results on the study population (Cronbach, 1970).

Frequencies and Percentages

Descriptive statistics was initially undertaken to analyze the composition of the sample. Data were coded and entered into a computer using two of the latest versions of prepared packages of statistical analysis, namely Statistical Package for Social Sciences (SPSS) version 24.0/25.0 .

Factor Analysis

Factor analysis is a mathematical operation concerned with the classification of the scientific phenomenon in various educational, psychological, marketing, and mathematical researches that have multiple variables (Sami, 2009). It is a statistical method that aims to explain correlation coefficients that are statistically significant among variables, simplification of correlations among different variables that are included in the analysis to arrive at common factors that describe the relationship among variables and explain it (Bahi et al., 2002).

It is used in this study to identify the most important obstacles faced by the application of TQM in the banking sector. Factor analysis is based on several steps. These are:

Determine the adequacy of the sample size for factor analysis.

In order to achieve appropriate factor analysis results, it is recommended to calculate the Kaiser-Meyer-Olkin (KMO) test to measure sampling adequacy and Bartlett's Test of Sphericity (Norusis, 1992). The value of KMO greater than 0.6 suggests that the relationship between items is statistically significant and is suitable for EFA to provide a parsimonious set of factors (Tabachnick & Fidell, 2007). Whereas the significance of Bartlett's test of Sphericity indicates that the correlation matrix is not identity (Hair et al., 2006).

Determining the Main Components:

Principle Component Analysis PCA was selected to generate the initial solutions for the EFA. The PCA helps to extract the maximum variance from the data set in a way that the first component extracts the highest variance and the last component extracts the least variance (Tabachnick & Fidell, 2007).

Kaiser Criterion

This criterion is based on selecting a number of factors equal to the number of eigenvalues that their value exceeds one. The interpretation of this is attributed to the selection of factors that have variance more than the variance of the variables under study that equals one (Sami, 2009).

Scree plot (Cattell Criterion)

A Scree plot is a plot of the variance that is associated with each factor. This plot is used to determine how many factors should be kept. Typically, the plot shows a distinct break between the steep slope of the large factors and the gradual trailing of the rest (the scree). At the point that the plot begins to level off, the additional factors explain less variance than a single variable (Cattell, 1966**).**

Rotating Axes (Factors)

The orthogonal varimax rotational method for the extraction was selected. The reason behind selecting the orthogonal varimax method was that it is the most commonly variance maximizing procedure and has higher generalizability and replicability power compared to the oblique rotational method (Tabachnick & Fidell, 2007). According to (Rennie, 1997) results generated by the orthogonal rotations are best fitted with the past and future data, while within the oblique rotation, obtained results are best fitted with the data collected from the current survey research. In addition, due to uncorrelated factors, the interpretations of the results obtained using orthogonal rotation are much easier compared to the oblique method (Tabachnick & Fidell, 2007).