The Validation of the Total Quality Management Construct Using Confirmatory Factor Analysis

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Abstract

The empirical study sought to validate the structure of total quality management construct with an objective of identifying the current TQM practices employed as perceived by the staff of Islamic University in Uganda. A cross sectional survey was employed to solicit for data from 361 respondents. This was done through randomization and a confirmatory factor analysis of structural equation modelling technique which was employed for data analysis. The results are in congruent with the earlier findings whereby focus on clients, focus on satisfaction of the workers' needs, process improvement, administrative and technological need were found as sound sub-dimensions of TQM. However, the research tool merged with only 20 items compared to the earlier tools used. The major implication is that enhancement of a survey tool with 21 items which other universities in future studies at the same level can be used to examine the levels of TQM practices at higher education institutions especially in Uganda. University managers and administrators can employ this tool often to examine how well they can reposition themselves in TQM practices. This kind of approach can lead to creation of a more impressing and interesting environment of teaching and learning and at the same time attract high quality personnel from both students and staff at international levels. The four subcontracts tool of TQM are imperative for universities to employ since the current times are more emphatic on customer demands and value for money.

Keywords: administrative and technological need, focus on client, process improvement, total quality management, university management, workers' needs

The increased competition for customers in higher education institutions (HEIs) and the influence of globalization tendencies that act as the backbone for shaping the world market have caused a paradigm shift from traditional to modern management. For instance, in recent years research has shown that embedding quality practices in university practices has ignited academic staff and senior managers across European universities to study quality models like total quality management (TQM) in order to improve organization's structures and culture (Lomas, 2004). The philosophy of TQM has gained high attention in the recent past due to its significant results towards corporate service and improved organizational performance. It is alluded that organizations that put TQM into consideration have not only gained reputable positions on the world market but

have also given satisfactory results towards their customers (Ali & Shastri, 2010). The objective of TQM is to help organizations towards achievement and provision of continuous rightful services beyond customer expectations and satisfaction. For instance in higher education institutions, there is need for formation of performance indicators, accreditation, quality audit measurement and assessment of programs plus facilities management (Rosa et al., 2012). These efforts cannot be gained if institutions do not incorporate into their culture a practice of staff training and systematic review of both the performance and facilities management. Organizations from business sectors that employ similar approaches towards customer satisfaction are normally able to attract employees of standard performance and high qualification.

Quality is the cornerstone for survival in the era of competition and this is coupled with the cost and performance in terms of services rendered by these institutions (Singh & Kumar, 2014). TQM is viewed as a multidimensional management aspect with interesting macabre situations to managers and researchers. So, if TQM is to be implemented in an academic institution for instance, it poses to resonate that administration would of course need to contemplate on manifold tactics for inspiring its application. Alternatively, if TQM is unidimensional construct, then it should be embedded in a culture with set values with the best choice to apply. In addition many organizations seem to be implementing TQM however due to its complex nature they seem not to be doing it in the best ways hence gaining limited results (Jancikova, 2009). It is upon this basis that this study was designed to examine the literature pertaining to total quality management and at the same time validate its theory and implementation at the Islamic University in Uganda.

Literature

Total quality management can mean translating and understanding customer concerns and needs (Singh & Kumar, 2014). It can also be taken as a management tool used in all processes and functions of an organization for the betterment and improvement of quality products and services with an aim of reducing the cost to customer satisfaction (Prajogo & McDermott, 2005). Also Panuwatwanich and Nguyen, (2017) state that for an organization to achieve TQM, there should be focus on customer care, continuous improvement, process orientation, teamwork and empowerment, visionary leadership and management by fact. It is therefore important for HEIs' management to understand that achievement of quality services and products is not something achievable without customer satisfaction. In this case customers play a significant role in shaping the mode of operation and business management in TQM implementation. Doing more than customer expectation should be the steering drive for all institutional activities towards marketing the institution to the external forces.

For TQM to be implemented smoothly and effectively, institutions should have clear and functioning structures, strategy and culture (Miiro, 2018; Roldán et al., 2012). A study done in India on 600 post graduate (PG) students in a cross sectional survey manner by Singh and Kumar, (2014) found out that staff

behaviour coupled with faculty influence, attitude, tangibles and delivery were the key significant cursors towards quality service delivery in HEIs. In addition, a study done in Vietnam on 104 respondents by Panuwatwanich and Nguyen (2017) established that TQM has a lot of influence on organizational performance if organizations employ clan and hierarchy rather than marketing culture and adhocracy and that they would compete favourably the on world market especially if clan and adhocracy are given superior attention while laying a conducive environment for TQM implementation.

A study by Lomas (2004) states that fitting TQM into institutional culture and structures is an expensive practices for that calls for opportunity cost of various options in order to cause necessary transformation. Thus, it calls for steadfast and transformative leadership to create a conducive organizational working environment. In another study done in Spain by Roldán et al. (2012) on 113 Spanish companies, they realized that organizations should come up with innovative cultures in order to exceed performance and expected standards to please their customers. It is important for managers of HEIs to adjudicate to themselves that even though HEIs are expensive to run, the basic needs and facilities must be provided if they are to continue flourishing on the world market. This should be done through regular training sessions and modelling of the staff to show their students the best examples by teaching them accordingly, and at the same time providing guidance for re-sharpening their minds to avoid selfishness and coping with the demands of the time.

Today for example, many institutions instead of providing their customers with quality services, culture and favourable environment for teaching, learning, research and innovation, operate in a protective manner. This is observed in their emphasis on laws governing the institution without caring so much about the environment under which their customers are living. The world gives freedom to customers (students) to think logically and at the same time zoom the solutions that can save humanity from the mega challenges they are facing. For instance; change in values, technological advancement and globalization are some of the determinants that HEIs must study critically and help their citizens understand the dynamics and the ways of getting the best scores out of them for shaping both their lives and their societies (Miiro, 2017; Miiro et al., 2017; Singh & Kumar, 2014).

Managers of higher education should also understand that customers expect their institutions to have highly qualified faculty, talented staff with best facilities and infrastructure so as to attain conducive teaching and learning environment (Miiro et al., 2016). Through these efforts HEIs, will be in position to improve on the level of civility and at the same time change the mind-set of customers and send well-prepared change agents to the community (Zabadi, 2013). Since administrators play a key important role in the provision of TQM, HEIs authorities should consider having institutions calendar for recognising quality days and sessions to remind their staff and other employees on this aspect of management. This strategy will help institutions to create teams with required

skills, knowledge and attitudes towards the change of institutions' corporate image. If this strategy is not incorporated into institutional culture and structures some institutions are likely to remain insular and useless to the development of their countries (Erturgut & Soyşekerci, 2009; Rosa et al., 2012; Singh & Kumar, 2014; Zabadi, 2013). Furthermore, in turbulent times, managers of HEIs should not give any room for poor services in their institutions due to the fact it may negatively affect the institutions' future existence. Therefore, being sensitive and extra conscious of customer needs is an important gesture for an institution's prosperity and transformation. This can be backed by the view that private institutions are still mushrooming in many parts of the country and at the same time foreign institutions are still set to bridge the gap (Miiro et al., 2017; Miiro, 2018; Singh & Kumar, 2014).

Given the spectrum of the stiff competition that HEIs are facing today and that which are yet to face, it is most likely that institutions with competent talented staff coupled with open mind-set, with clear direction defined, ready for criticism, swift and flexible in nature and at the same time offer the best services at an affordable cost will survive. It is important to note that in the era when universities are still trusted as service industries, they must be sensitive with the mechanisms that enhance assessment, measurement methods, revenue streams in order to address students concerns and also remain steady fast towards shucking the new trends of management (Ambrož & Praprotnik, 2008).

Since TQM is a must do in HEIs towards proper functioning of institutions' systems. There is need to define proper mechanisms for the survival of HEIs in the 21st Century. This calls for strategic dynamic responsiveness to secure quality services delivery for building customer trust, satisfaction and loyalty (Hassan & Abiodun, 2022). Therefore, Ugandan HEIs must cope with the needs of the time in order to leverage in these challenging moments. For instance; a study done on 190 countries by World Bank revealed that quality products are a must for higher education since they play a vital role in changing trends in the society (Al-Shobaki et al., 2010). The study examined three sub-constructs of TQM model by using requirements, action, and results; and the findings reflected that evaluating the systems and approaches used in the management of students' affairs is very important and reflects the level of devotion from management towards provision of high quality services. For the contemporary customer satisfaction, it is important for HEIs to employ dimensions that bring on board positive services and experience that can help achieve efficiency and zoom the image of self-development and while constructing a future developmental plan. Such customers do not require workers who are just enjoying offering services rather, they need innovative workforce to show them how to go about certain things in life (Ambrož & Praprotnik, 2008).

Also, Singh and Kumar (2014) used faculty, facilities, delivery, reliability, responsiveness, assurance and empathy as dimensions for quality services and found that four dimensions were the key impetus for quality performance in HEIs in India. You open the paragraph by emphasizing the

importance of TQM in Uganda, yet the examples of studies that you give are not on Uganda.

In Uganda, HEIs and National Council for Higher Education (NCHE) emphasize more of quality assurance implementation especially in academic spheres than TQM practices. However there is scanty information about this particular concept of TQM in HEIs while at the same time things seem not to be working as required (Kayongo, 2010; NCHE, 2010, 2011). Some universities in Uganda seem to be working towards this aspect, for instance; staff development programs, technology advancement, staff talent development, infrastructural development and ideal means of admission and graduation, meeting with students and their leadership (Basheka, 2008; Bunoti, 2011; Kasozi et al, 2003; Kasozi, 2014; Miiro, 2018; Mpaata, 2010; Zeelen, 2012). However, the true meaning of TQM practices in HEIs management seem to be lacking due to many challenges for instance; rigidity, traditional management of students affairs, poor facilities management, staff moonlighting, brain drain, unpleasant teaching and learning environment (Beuren & Teixeira, 2014;Escrigas, & Polak, 2011; Miiro, et al., 2016; Miiro, 2018; NCHE, 2010).

Equally, Zabadi (2013) in his write up on the impact of quality on improvement of business performance and customer satisfaction employed constructs like fitness for the purpose, value for money, transformation, place and accountability, delivery mechanism, tangible elements and physical appearance, and raising awareness of TQM practices. And recommended that for credibility purposes, HEIs must reshape themselves and maintain their strength to have weaknesses addressed so as to fit in the new social world order with an intention of addressing the national needs and at the same time respond to the demands of the new realities and opportunities in order to remain relevant.

Nevertheless, Al-Bourini et al. (2013) in their study organizational culture and total quality management (TQM) subcontracts used focus on client, focus on satisfaction of the workers' needs, process improvement and administrative and technological need for competitive advantage and the results revealed that TQM is achievable as long as the culture and direction of the organization are of standard. Gharakhani et al. (2013) revealed that TQM enhances institutional improvement and stability, which can be done through strategic roadmap and customer satisfaction. Since TQM is a contentious management aspect whose real scale is of different perceptions among scholars, the current study is designed to establish the current practice of TQM as perceived by staff at the Islamic University in Uganda.

From the literature, it can be deduced that TQM is an aspect of management that puts a lot of emphasis on administrative and technological issues, focus on client needs and satisfaction, satisfaction of the workers' needs, process improvement with sound structures, systems and strategies to enable an organization, its clients and workers feel at home while executing and providing of services. It is therefore important for the management of HEIs to ensure that their systems, structures, facilities and employees are good enough to please the

available customers and at the same time work as a basis to attract more from both national and international levels.

Problem Statement

In general, research has adequately shown that TQM has a significant impact on institutional corporate image, practices and behaviour. From its history to date, TQM has attracted researchers and managers of different organizations both in business and education sectors, thus causing different studies with no distinction in investigating its impact on organization development and transformation (Cvjetković et al., 2021; Hassan & Abiodun, 2022; Hatim & Almashhadani, 2004; Martínez-Lorente et al., 1998).

Yet, there is no agreed position and clarity on what should be embedded in the concept's definition and dimensions. Even though numerous studies have been done on TQM with the objective of establishing the level of its implementation especially in HEIs for instance; Al-Bourini et al., 2013; Al-Shobaki et al., 2010; Ambrož & Praprotnik, 2008; Gharakhani et al., 2013), nonetheless, these studies pose mixed results that raise more concern on what TQM is and whether institutions are committed to its relevance. Thus, on this basis the current study was designed to establish whether measurement models by Black and Porter (1995), Mosadeghrad (2015), and Musenze and Thomas (2020) focus on client, focus on satisfaction of the workers' needs, process improvement and administrative and technological need for competitive advantage are implemented as the four sub dimensions of TQM at Islamic University in Uganda in reference to staff perception.

The study of TQM is has attracted academics and practitioners in different parts of the world, but in Uganda, studies drawn to understand whether TQM is a multidimensional construct in nature vis-à-vis HEIs management practices have not been done. Given the increasing demand for TQM adaptation and adoption towards organizational excellence, a multidimensional nature ought to be adequately tested and conceptualized particularly among HEIs academicians, staff and managers. At present, little information is available to inform HEIs managers about the state and nature TQM and its impact of institutional corporate image, practices and behavior.

Purpose of the Study

With increased internationalization and globalization of higher education, total quality management has become one of the imperatives and cornerstones that any university that is to survive in the era of unprecedented occurrences must give due attention and urgency towards its implementation. Universities have no room to continue operating the way they have been doing in the past due to increased forces of demand and customer needs. Thus the purpose of this study was twofold:

1. To explore the underlying structure of total quality management by the staff of Islamic University in Uganda.

2. To validate whether the psychometric properties of staff's total quality management are valid and reliable in terms of convergent and discriminant validity of the measure.

Theoretical Framework

The theoretical framework of the study is derived from Al-Bourini et al. (2013); Alsaqer et al. (2024), Cvjetković et al. (2021), Hatim and Almashhadani (2004), Lomas (2004), and Martínez-Lorente et al. (1998) for the foundation for this study. Most of these studies trace the history of what has been used to conceptualise and measure the meaning of TQM. The studies contend that TQM is a multidimensional construct and all of them agree on the four common practices as captured in this study. The hypothesized model is composed of focus on; client needs, satisfaction of the workers' needs, process improvement, and on administrative and technological needs. In relation to this view TQM should thus show elements of multidimensionality. In the context of this study, TQM was conceptualized to constitute what university staff perceive as the four significant dimensions. Based on the studies above, it can be argued that there are high chances of TQM being a multidimensional construct, and that there are four sub-constructs of this construct.

Research Questions

The following research questions were developed based on theoretical underpinning:

1. Is the self-reported questionnaire of TQM a sub dimensional construct with interrelated factors which focus on the client, focus on satisfying the needs of the workers, process improving, administrative and technological needs of competitiveness?
2. Is the four sub-construct factor of TQM survey tool psychometrically plausible in terms of reliability, and valid for both convergent and discriminant validity?

Method

Population

The population of the study was composed of staff from both part time and full time staff across the four campuses of the University. Only three campuses were in reach of the study due to the logistical issues. The population of staff at the University was composed of both administrative and academic units.

Sample

The study sample comprised of 361 staff from both academic and administrative units of the University. From the sample 56.9% were male, 43.1% females, academicians were 55.3% administrators were 36.6% those who occupied both positions were 6.8% and office assistants were 1.8%. In terms of work experience, those of less than one year were 10%, 1-2 years were 10%, 17% for staff who have been in the University for 3-5 years, and 62% was a percentage

for those who have served for 6 years and above. On age, 12.5% was for staff between 20-25 years, 26-30 were 26.3%, 31-35 scored 20.3%, 36-40 were 20.6%, and 20.3 were for staff with an age 41 and above. Since the study envisaged to use a robust mechanism of data analysis that is structural equation modelling with an emphasis on confirmatory factor analysis, the attained sample was reasonable enough to offer fit good indices (Albright & Park, 2009; Albright, 2008; Hooper et al., 2008; Prudon, 2015; Wang et al., 2015).

Instrument

To attain reasonable data, the study employed a self-reported questionnaire with 36 items to measure total quality management construct. The items were chosen from the previous studies of Al-Bourini et al. (2013), Alsaqer et al. (2024), Cvjetković et al. (2021), Hatim and Almashhadani (2004), Lomas (2004), and Martínez-Lorente et al. (1998) and were adapted before data collection to fit the interest of the study. The items were segmented into sub-constructs of the hypothesized measurement model (focus on client with 8 items, focus on satisfying workers' needs with 8 items, focus on improving processes with 5 items, and focus on administrative and technological needs for competitiveness with 15 items), which were employed to address the objective of the study. Table I below provides the details of the measurement of each of the construct and items used. A 5 Likert scale employed ranged between strongly disagree, to strongly agree.

Data Analysis Process

The Study conducted Principal Component Analysis (PCA) to explore the underlying dimensionality of TQM. To validate the measurement model of TQM construct, a Confirmatory Factor Analysis (CFA) of the Structural Equation Modelling was done using Amos (version 22). This was done to verify whether the hypothesized model of the study was adequate, valid, reliable and fits the theory, thus leading to estimates of the defensible index properties. This was achieved through the use of covariance Matrix derived from the data.

Results

Underlying Structure of Total Quality Management

Table 1 indicates the descriptive statistics of the dimensionality reduction of the items. The study maximum score for each item was 5, thus the mean score connected with dimension items was less than .55. This implied that there were very low levels of reported response from the study volunteers. Also there was internal consistency index from Cronbach’s Alpha because the reliability index was .703 which is above the cut-off score of .70 (Fan & Lê, 2011; Ghasemi & Zahediasl, 2012; Marnburg, 2014; Nunnally et al, 1967; Pallant, 2007).

Table 1

Total Quality Management Measurements and Item Statistics.

Code	Dimension/sub-construct	Alpha	Mean	SD	Factor loading
	Focus on Clients' Needs	**.836**			
FC1	The university works towards qualifying, training and motivating its workers.		3.40	1.31	.585
FC2	Opportunity is given to workers to show their views and constructive critiques		3.42	1.25	.615
FC3	Workers are delegated powers to change in their work performance styles		3.51	1.22	.754
FC4	Sufficient powers are vested in the workers to work for satisfying the clients' needs and desires		3.38	1.21	.706
FC5	Training in the university helps in applying the administrative concepts efficiently and effectively		3.31	1.31	.633
	Focus on Improving the Processes	**.856**			
FIP4	The university has a plan of reducing on the time of completing the transactions of customers' needs		3.27	1.08	.517
FIP5	University leadership is sensitive towards staff needs and attitudes towards work		2.89	1.35	.680
FIP6	The university has a system designated for studying the market and economical changes		2.81	1.35	.680
FAT2	The university sets a strategic plan and improves and amends it, if necessary		3.68	1.02	.527
FAT3	The university pays attention to the study of the competitors in order to improve its services		3.09	1.28	.731
FAT4	The university management has clear and accurate measurements for performance evaluation.		3.35	1.29	.553
FAT6	The communication means in the university are effective among the employees and clients		3.30	1.17	.555

Table 1 (continued)

Code	Dimension/sub-construct	Alpha	Mean	SD	Factor loading
	Focus on Administrative and Technological Needs for Competitiveness	**.884**			
FAT7	The university uses financial plans and indicators in quality control		3.32	1.22	.756
FAT8	The university continuously reviews and updates the control methods on quality standards		3.39	1.10	.738
FAT9	The statistical methods in the university contribute to quality control mechanisms		3.14	1.11	.784
FAT10	The university has specified times to complete the clients' transactions and needs		3.38	1.20	.690
FAT12	The university works with quality as a strategic goal seeking to achieve		3.48	3.48	.470
	Focus on Satisfying the Workers' Needs	**.703**			
FSW2	Opportunity is given to the workers to show their views and constructive critique		3.38	1.20	.744
FSW3	Workers are delegated powers to change in their work performance styles.		3.71	1.13	.621
FSW4	Sufficient powers are vested in the workers to work for satisfying the clients' needs and desires		3.19	1.21	.471

* Extracted from Principal component analysis
Rotation matrix: Promax with Kaiser Normalization

From Table, 1 the findings reflect that there was a significant correlation among the items for each factor loading obtained from PCA analysis. The results also showed that a practical importance due to large factor loadings even the weakest of the loadings .470 (*The university works with quality as a strategic goal seeking to achieve*"; $\lambda = .470$) was significant statistically at $p = .000$. There was consistent direction within each dimension according to produced item loading from the analysis. This resulted into a solution free for variable-specific factor. AN empirical clustering among the variables was experienced due to perfect matched logical loading of items. The significant loadings of the four-factor suggested a common component of TQM construct.

To examine the underlying structure of responses to the 20 items of TQM construct, Principal component analysis(PCA) was done on a sample of 100 respondents randomly chosen using SPSS. The findings from Table 2 below reflected that there was intercorrelation among items measuring the self-reported questionnaire., the findings revealed that Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .871, Bartlett's Test of Sphericity was significant with (χ^2=936.591, df=153, p=.000). The generated results suggested that further factor analysis was adequate and the sample used deemed reasonable for factorability. The findings further extracted a four-factor dimension of TQM obtained from oblimin method of axis rotation as shown in Table 2 below. The correlation matrix appeared reasonable among the indictors thus contributing to 65.4% of the total variance. The variance for individual dimensions also varied as showed in table 2 whereby, the factor 1 (**Focus on client needs**) had the largest eigenvalue of 42.1, whereas the eigenvalues of the three dimensions were 6.59 (**Focus on improving the processes**), 6.96 (**Focus on administrative and technological needs for competitiveness**), 6.71(**Focus on satisfying the workers' needs**). Similarly, other studies that were conducted by Black and Porter (1995) and Mosadeghrad (2015) reflected similar findings however study findings by Musenze and Thomas (2020) reflected that TQM is a three-factor dimension.

Table 2

Eigenvalues and Proportion of Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.580	42.112	42.112	7.580	42.112	42.112	4.729
2	1.727	9.596	51.708	1.727	9.596	51.708	4.837
3	1.254	6.969	58.677	1.254	6.969	58.677	4.929
4	1.209	6.715	65.392	1.209	6.715	65.392	3.198
5	.949	5.273	70.665				
6	.736	4.087	74.752				
7	.660	3.665	78.417				
8	.605	3.360	81.777				
9	.512	2.846	84.624				
10	.492	2.732	87.356				
11	.423	2.351	89.707				
12	.385	2.141	91.848				
13	.353	1.960	93.808				
14	.292	1.623	95.430				
15	.273	1.519	96.949				
16	.205	1.137	98.086				
17	.186	1.036	99.122				
18	.158	.878	100.000				

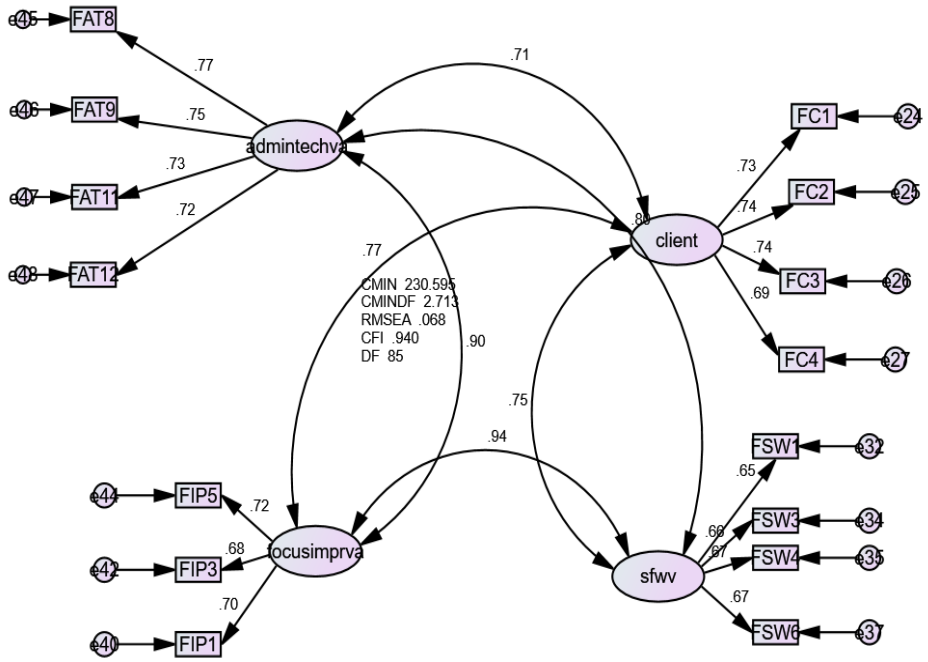
Extraction Method: Principal Component Analysis

Measurement Validity of the Hypothesized TQM Model

To test the validity of the sub-constructs of TQM, a confirmatory factor analysis (CFA) was administered on a sample (n=361) respondents from both administrative and teaching staff of the Islamic University in Uganda. The results of the hypothesized measurement model truly showed that the four-factor construct of TQM was reliable and adequate due to the good fit indices generated from the data of the study as shown in figure 1 below. The model estimates were within the minimum standards and satisfactory goodness-of- fit in nature. From the figure 1, the results showed that CMIN 230.595, CFI =.940, RMSEA =.068, Chi-square=2.713, df=85. Hence the model of TQM was concordant with the required estimates(Byrne, 2009; Hershberger, 2003; Siddiqui, Mirani, & Fahim, 2015; Zabkar, 2000).

Figure 1

Results for the Four Sub-constructs of TQM



The Psychometric Properties of the Four-Factor Construct of TQM

From the findings of the study the psychometric properties of TQM confirm that convergent and discriminant validity exist as shown in Table 3. Along the diagonal, the statistics show the average amount of variation (AVE) that TQM explains through its indicators. Thus, it clearly indicated that there is convergent validity measurement. Also, the AVE values of each of the sub-dimension was higher than 0.5 hence reflecting the convergent validity. In addition, discriminant validity was evident due to the fact that most of the AVE

values that correspond with shared values were above the figures in the diagonal as showed in Table 3. Furthermore, the inter-correlation among the sub-construct of the construct is reflected that TQM is multidimensional with individual inter-related constructs. Finally, the results exhibited that the composite reliability of the constructs was plausible and ranged between 0.8 (Focus on Improving Process) and 0.92 (Focus on Administrative and Technological Needs for Competitiveness).

Table 3
Convergent and Discriminant Validity

Dimension	1	2	3	4
1. AD	0.71	0.50	0.86	0.69
2. CL	0.71	0.70	0.59	0.88
3. SFW	0.83	0.75	0.73	0.56
4. FOC	**0.93**	**0.77**	**0.94**	**0.70**
Composite Reliability	0.92	0.74	0.82	0.80

Note. Shown lengthways in the diagonals are average variance extracted (AVEs) of every sub-dimension; underneath the diagonal is the correlation matrix; and overhead the diagonal is the shared variance matrix.

Discussion

From the results above, it can be observed that TQM construct is unidimensional in nature in that it packages different practices for managers of HEIs to use in the daily organisational business. For this reason, the study confirms and at the same time extends the previous findings to the level of university management in Uganda. This is evidenced with 65.4% total variance explained by the four inter-related factors of the TQM in reference to the self - reported questionnaire that examined the staff perceptions at the Islamic University in Uganda. The findings are in agreement with those of Al-Otaibi, (2014) who used regression and found that training and education in customers focus, information analysis, continuous improvement management of process and top management commitment are key parameters for total quality achievement in education institutions. Furthermore, the study found out that the reliability of the four constructs of the TQM construct were above the threshold of 0.5 and this is because the highest valued Cronbach alpha scored was .884 and the lowest was .703. The results from data analysis showed support for both convergent and discriminant validity of the TQM survey tool employed. This is attributed to the fact that the AVEs of all the four sub-dimensions were above the minimum requirement yet the inter-correlation among the unidimensional practices of TQM was satisfactory. Therefore, the survey tool employed was plausible and adequate enough for future use since 20 items emerged useful for measuring the four TQM practices at university level.

Conclusions and Recommendation

The study contributed practically to the body of knowledge by enhancing a survey tool with 20 items that other universities and future studies can apply to examine the levels of TQM practices at higher education institutions especially in Uganda. University managers and administrators can employ this tool often to examine how well they can reposition themselves in TQM practices to create a more impressing and interesting environment of teaching and learning and at the same time attract high quality personnel from both students and staff at both national and international levels. The four subcontract tool of TQM is imperative for universities to employ since the current times are more emphatic on customer demands and value for money.

Despite the significant results of the study, there were limitations, first of all the sample was homogenous in nature and it was inclined on one university. This means that if other studies are conducted in other sister universities results may differ depending on the level and locality of the institution. Furthermore, the study did not go deeper to examine the causal relationship of demographic factors due to time and technicalities involved in the whole process of the analysis.

In conclusion the study extends the readers understanding in relation to total quality management at university level. The findings therefore are imperative in reshaping the current practice of TQM at university level in order to help universities cope with the demand of the time.

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