Quality Status of Higher Education: SEM Approach for Standardization of Tool

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Abstract – Quality education prepares a student for the future competitive market. Hence, periodic assessment in the form of micro-level scrutiny is required in an education system for necessary updates as per market match for better output and outcomes. Based upon previous research approaches; and Formal and Collegial Model of Education Management theory, this study has identified six major dimensions for the assessment of quality status of higher education. These six dimensions are curricular aspect, teaching-learning, evaluation, research and extension; infrastructure and learning resources; and organization and management. Among the bag of stakeholders, faculty and management are considered to be responsible for contributing quality in an education system. Faculty and management are producers while student and society are consumers. In this study, two questionnaires are prepared comprising of factors affecting quality status of higher education with respect to faculty and management separately. The aim of Faculty Assessment Questionnaire and Management Assessment Questionnaire (FAQMAQ) is to assess the present status of various factors affecting the quality in institutes of higher education. The tool so developed was standardized in five steps i.e. item generation, content adequacy assessment, questionnaire administration, factor analysis and internal consistency assessment. The standardization process depends upon expert's advice, Edward 't-test', confirmatory factor analysis, Cronbach alpha and Karl Pearson coefficient for its validity and reliability. The FAQMAQ is considered to be a promising tool obtained after a rigorous standardization process which can give a feedback to the faculty members, management/state and educational planners, who all are interlinked and ultimately responsible for maintaining quality in an educational institution.

Keywords – Educational management, Quality of higher education, Construct validity, Structural equation modelling, Confirmatory factorial analysis

INTRODUCTION

Education is a process of experience which starts informally at home. School is responsible for formal education and tertiary level education for developing an individual into a package of knowledge and skills. Higher education is considered to develop employable manpower. The employability can be considered as the determining factor of the quality of higher education. The school education is the base of higher education. The school education should set up long as well as short-term goals that could have a greater impact on student achievement [1]. The base should be strong enough to support higher education structure for the development of professional capabilities for greater productivity. These production related skills are embodied in those who acquire quality education with 'skills hierarchy' arising from the elementary to tertiary level of education. Higher education develops skills responsible for improved productivity, employment growth and development [2]. A good education system accelerates an economy towards the path of economic growth and development. On the other hand, a good economy provides sound base of education for its citizens.

We can say that education is an unending or lifelong process which starts up at an early childhood and ends with the death of an individual. All the three stages of education: primary, secondary and tertiary are interlinked and cannot be ignored at any level. Literacy rate is the indication of the effectiveness of school education prevailing in the region. Literacy is affected by a variety of factors, socio-economic being dominant of them [3]. Besides these socio-economic, other factors like administrative and geographical features are also responsible for differential literacy rates within a state. The list of factors is exhaustive and endless. The existing quality at a stage (school education) will affect the quality of education in succeeding stages (higher education). Likewise, this study determines various factors influencing the quality status of higher education. This paper describes the development, reliability and validity of a questionnaire. The tool is designed to know the various factors affecting the higher education quality

with respect to output and outcome. Quality is like a puzzle to be solved. It is an abstract quantity and needs to be explained before proceeding further. We can say that it is a process to produce an excellent product/service that satisfies the target population. Hence, a single dimension cannot define quality but it covers multiple dimensions under an umbrella which can fulfil consumer needs. Quality refers to meeting the expected learning and to prepare a standard product that helps to compete in the global market. It is the responsibility of the management and faculty to fill the large gap of demand by the labour market by supplying the employable human resources equipped with operational, functional and personal kills. But question arises; what factors are responsible for producing these kinds of competitive products?

In the Indian context, a policy can be successfully and effectively implemented if it has been formulated with an integrative approach, considering the diversified socio-economic background of its culturally different people. Under Article 42 of the Indian constitution, an amendment was added in 1976 and education became a concurrent list subject. This facilitated the central government to lay down norms and standard for education to be followed and maintained by the states. State has the right to suggest central government in a participative manner to bring improvement in the education system. This tool has integrated the salient features of Formal Model of Educational Management (FEM) and Collegial Model of Educational Management (CEM), which can be successfully and effectively implemented in a democratic educational environment. During the process of standardization, specialist's opinion and the pilot test will ensure that research findings are in accordance with the norms of an Indian society where the educational institute is located.

Literature Review: Factors Affecting Quality of Education

Higher Education has direct bearing upon socio-economic growth of the country. The factors affecting the quality in higher education are physical aspects (resources), reliability (ability of institution to perform the promised service), competence (faculty's characteristics), personal interaction (faculty, students and university), course structure and policy framework [4]. In an African study, factors affecting the provision of quality education in public and private secondary schools were discussed [5]. The study was guided by the role of teachers, leadership style, school physical environment, facilities and resources, role of parents/guardians and community members/leaders in the provision of quality education in schools. In the study, he involved students, teachers, head teachers, parents/guardians and community members/leaders. Questionnaires and interviews were used to collect quantitative and qualitative data. The findings showed that there was lack of professionally qualified and trained teachers, teaching and learning materials and teachers were not motivated due to low remuneration. The study concluded that the government should employ more professionally qualified and trained teachers to curb the problem of scarcity of teachers and teachers should be motivated by paying them reasonable salaries in order to raise their status in the country. In one of the work it is described that quality teaching includes wide range of quality factors that are grouped under: institution wise and quality assurance policies, programme monitoring and teaching and learning support [6]. The paper identified different quality factors of higher education through quantitative and qualitative studies. There is a need of integration of the extent theories of higher education service covering quality dimensions, determinants and factors as theory building efforts. In one of the research, attempt had been made to examine the factors affecting quality education at tertiary level [7]. Researcher involved teachers as well as students in his study. Respondents were interviewed using semi-structured, pre-formulated questionnaire. According to him, the variable quality education is dependent upon independent variables like physical learning environment, political environment, library facilities, laboratory and research facilities, computer lab facilities, pedagogy and teacher's working conditions. In his study, he found the scenario as frustrating due to teacher and student politics, insufficient library facilities, average pedagogy, poor teacher's working condition and unhealthy environment. One researcher has elaborately described components of quality education. According to him, conformity is the basic necessity of an educational system. A healthy education system of a state/country is generally conformed to a set of guidelines, rules, regulations, values, norms, ethics, etc. When one wants the best output from an educational system, then s/he has to conform or relate that education system with certain standard as well as purposes.

From these reviews, we can conclude that quality is the end product of a long process and onus rest on the shoulders of teachers and the state/management. It is the responsibility of the state to provide necessary support to the college management for providing adequate resources of teaching-learning. On the other hand,

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management is to train teachers to adopt student centred teaching approaches and skilful assessment in well managed classrooms. This will create a healthy, safe, protective and gender sensitive environment responsible for outcomes that encompass knowledge, skills, attitudes and prepares for the national goal. Outcomes can be evaluated as measurement of cognitive, affective and psychomotor development of the learner. Hence, we can conclude that teachers and management are two major stakeholders in imparting and providing quality education respectively. Keeping above reviews in mind we have developed two questionnaires for faculty and management separately.

OBJECTIVES OF THE STUDY

This paper describes the development, reliability and validity of a joint questionnaire for various stakeholders in higher education system. The development of the tool i.e. Faculty Assessment Questionnaire and Management Assessment Questionnaire (FAQMAQ) is an attempt to analyze the factors affecting quality status of higher level of education. This will help us to know the effectiveness of state government's policy in providing opportunities to everyone in availing quality education. This even can be a feedback to faculty members, institution management and educational planners, who all are interlinked and ultimately responsible for maintaining quality in an institution of higher learning.

MATERIALS AND METHODS
Procedure:

The investigator developed the tool and standardized it rigorously by adopting already established steps. These steps are performed in five stages i.e. item generation, content adequacy assessment, questionnaire administration, factor analysis and internal consistency assessment. The procedure followed for the construction of the tool is given in succeeding paragraphs.

Items Generation

In order to have a standardized tool, questions were selected from the area of quality in an education system on the recommendations of experts in the field. Questions were framed, synthesizing the characteristics of educational management models, FEM and CEM. The investigator framed two models for the assessment of faculty and management separately. Faculty Assessment Questionnaire (FAQ) is based upon five criteria framework to assess faculty member's contribution towards imparting quality education. Based upon previous approaches we can say that quality teaching

depends upon the curricular, teaching-learning, evaluation, teacher's training and support given to them by the management. In FAQ, we have five dimensions: curricular, teaching-learning, evaluation, training and management. In table 1 we have discussed major variables under the five dimensions.

Table 1: FAQ Dimensions and Major Variables

Dimensions	Major Variables
Curricular	Academic flexibility, contribution in curriculum development and enrichment.
Teaching-learning	teacher profile, teaching methods and interpersonal relation.
Evaluation	Assessment methods, student and management feedback.
Training	Orientation of faculty; contribution to research, training and publication.
Management	Faculty satisfaction with the management, mentor role, extra role carried out

FAQ meant to assess a teacher's contribution depends upon the curricular aspect which covers pre-defined objectives and aims of teaching. Efforts made by the faculty members to restructure the course as per the market demand comes under this scale. Teacher's competency is most important in teaching-learning and evaluation. The approaches adopted in teaching are an important aspect in imparting quality education. Utilization of modern methods/aids, discussions, field training, projects, internships, supplement classroom teaching etc. should be the part of their teaching. Proper and impartial evaluation is the feedback of the performance of teachers reflected in the form of student's output and outcome. As most organizations are dependent upon research and development cell for innovation at their place. It is of utmost importance, to be in possession of a research cell and the qualified faculty to run the cell. Time to time teachers training is also required to conduct an updated research. Timely and sufficient payment of remuneration and not burdening them with extra duties will motivate the faculty to contribute heedfully. Above all, a teacher, satisfied with the college management will impart efficient and proper methods of teaching-learning. All these elements are discussed under FAQ.

The Management Assessment Questionnaire (MAQ) is framed to assess management's contribution towards providing platform for quality education. It is based upon six criteria framework i.e. teaching-learning management, research-extension management; financial management, resource and healthy practices; academic achievement and general management. All these

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dimensions cover a wide range of variables. Some of the major variables are discussed in table 2.

Table 2: MAQ Dimensions and Major Variables

Dimensions	Major Variables
Teaching-Learning	Course pattern and information, pupil teacher ratio, staff selection and their training.
Research & Extension	Research support services, vocational course support.
Financial	Funds for academic and administrative purpose.
Resource &Healthy Practice	Sufficient and quality resource material availability, student support services
Academic Achievement	Enrolled, pass outs, drop outs, remarkable achievement.
General Management	Coordination at all levels, meeting with stakeholders, visits, stakeholders satisfaction

As discussed earlier, management is responsible for providing platform for resource allocation to students and teachers. Management is responsible for providing them an environment where a faculty member is highly motivated to impart quality education. Besides this management is also responsible for providing healthy services to students. The policies framed by the government are effectively implemented by the management only. It is the responsibility of the management to project necessary budget in advance to meet future requirements. We have framed a questionnaire for the management covering six dimensions. In addition, we tried to get information about the enrolment and retention status, academic achievement, broad area of available resources, financial support, student support services and many more on administration.

Each dimension is evaluated by numerous questions and these questions are further divided into sub questions. Necessary care has been taken to cover every factor of quality in a variable under each dimension. Initially FAQ and MAQ have 36 and 40 items respectively excluding sub questions.

Content Adequacy Assessment

This step requires respondents to categorize or sort out items based on similarity. This was conducted by utilizing expert's opinion about a specific content domain. In the first stage both the questionnaires were given to PhD scholars of Alagappa University, Tamil Nadu and University of Kerala, Thiruvananthapuram,

Kerala, India. In this stage few items were eliminated and few were added to FAQMAQ. Afterwards, the modified tool was given to discipline experts for their valuable suggestions. Finally, FQM scale had 29 items and MAQ had 32 items including sub questions.

Questionnaire Administration

After the preparation of the tool a pilot study was conducted to find out the difficulty value of statements. This step was conducted to testify the strength of statements and the use of proper language in them.

Students from developing/under developed countries generally base their choice of subject to study on how it will contribute to their future employment at the expense of low cost rather on what is interestingly interesting. Therefore, researcher has distributed the instrument among Art, Science, Commerce and Education faculties of two State Universities in Kerala. Head of the Departments, faculty members and non academic staff were being part of the FAQMAQ. 20 Head of the Departments, 130 faculty members (including 70 teacher educators) and 55 non-academic staff were approached. These participants were randomly selected. Out of 205 respondents, eight had not completely filled details and 197 copies of the questionnaire were recovered. All items were scored on a five point Likert scale; 33 questions were scored on a frequency scale, 14 opinion questions on an agreement scale and 14 upon adequacy scale ranging from very rarely to very frequently; strongly disagree to strongly agree and adequate to highly inadequate respectively. The response in each category for negative statements was reversely scored.

Item Analysis: (t-test and CFA)

Item analysis was conducted mainly in two steps. Firstly, we adopted Edward t-test for exclusion of non-critical questions. Later, Structural Equation Modelling (SEM) was used for construct validity which includes a set of mathematical model i.e. Confirmatory Factor Analysis (CFA) to confirm model fit for the study.

't'-Test

Edward. A.L. method was adopted to obtain t-ratio (critical ratio) for sorting out of the valid questions. On the basis of 197 responses given by the subjects on 61 questions, responses on positive statements were scored as 4, 3, 2, 1 and 0 whereas negative statements as 0, 1, 2, 3 and 4 respectively. Likewise, scores obtained on 61(29 and 32) statements were obtained. The total scores were sorted out and arranged in the descending order. The 25 percent of 197 sentences were selected i.e.50 high scored

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and 50 low scored sentences. Rest, 97 responses were not taken into consideration. Further, from the scores of each statement mean of the high score group and the mean of the low score group was calculated. Now, we have four score tables, two for FAQ and MAQ each. Then the formula given by Edward was used to find out 't' ratio of each statement. The statement having significant difference in mean scores between upper and lower group (t>1.75) can be considered for the final tool [8]. The t-values of eleven items from both the FAQ (5) and MAQ (6) were below 1.75 and were rejected. Total 50 items qualify the criteria to be accepted according to the procedure as specified by Edward.

Confirmatory Factorial Analysis

Further, to arrive at a model with an acceptable fit, a CFA was conducted. The analysis property includes minimization history, standardized estimates, residual moments and modification indices. Elements above 0.40 loadings on a factor were only selected. Further, elements above 0.40 creating bunch of constraints in the model were selected from standardized residual covariance table. The values between 0.40 to 1.0 were riddled and constraints were removed to obtain a model fit. So, construct validity was performed by CFA. A variety of indices were used in order to check the fit of model. Indices like CMIN/DF, p-value, GFI, CFI and RMSEA were checked to reach to the conclusion of model fit. A χ2/df ratio of approximately five or less is considered to be reasonable [9]. The degree of freedom ratios in the range of 2 to 1 or 3 to 1 are indicative of an acceptable fit between the hypothetical model and the sample data. Different researchers have recommended using ratios as low as 2 or as high as 5 to indicate a reasonable fit [10]. It seems as if χ2/df value >2 represent an inadequate fit [11]. χ2 to degree of freedom was selected in the range 1-4 and p value greater than .05. Other indices like GFI (goodness of fit index), CFI (comparative fit index) and RMSEA (root mean square error of approximation) were also used to determine the fit. In a model fit the GFI and CFI exceeds 0.90 and 0.93 respectively [11]. According to some researchers, RMS should be less than .08 and ideally less than 0.05 [12]. Alternatively, the upper confidence interval of the RMS should not exceed .08 [13].
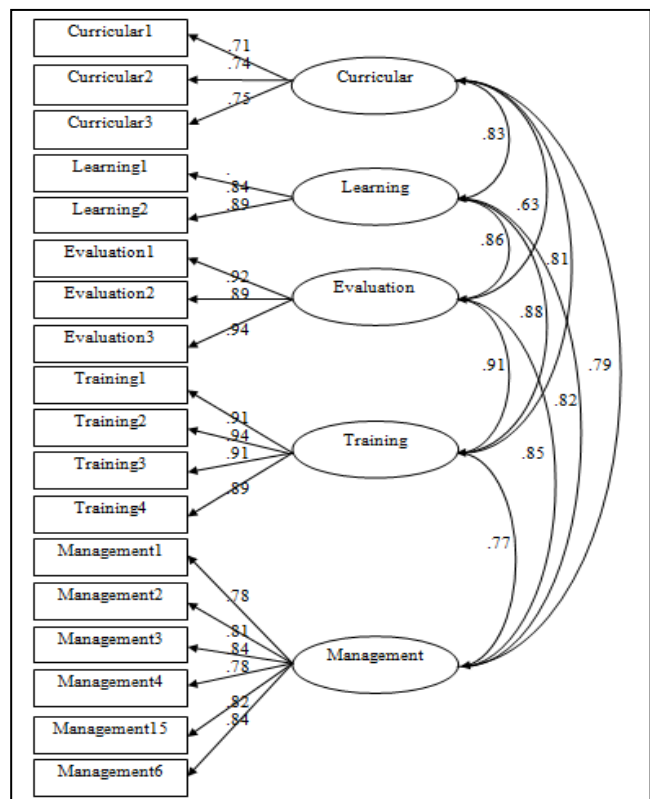
Results for FAQ in CFA:

FAQ with 24 elements was tested for model fit. During analysis, a model fit was obtained in terms of CMIN/DF, p value; PFI, AGFI, CFI, TLI and RMSEA (table 3). The confirmatory factor analysis rejected six

loadings below .40 over a factor (reduced from 24 to 18). The final questionnaire has 18 sub items excluding sub-sub questions under the same five criteria framework (figure 1). This figure is acceptable in respect of a fit model.

Table 3: FAQ Model Fit

| Index	Original Model	Final Model
CMIN/DF	2.06	1.93
P<.001	P<.001	P<.001
GFI	.725	.846
AGFI	.701	.832
CFI	.856	.943
TLI	.828	.936
RMSEA	.075	.062

Figure1: FAQ Configuration

Results for MAQ in CFA:

MAQ with 26 elements was tested for model fit. From the table 4 we can analyze the result of the model fit. Same rejection procedure was adopted here as we did in FAQ. Here also, total six loadings were found to be below 0.40 (reduced from 26 to 20). The data on model fit is shown in table 4.

Table 4: MAQ Model Fit

Index	Original Model	Final Model
CMIN/DF	2.09	1.91
P<.001	P<.001	P<.001
GFI	.716	.851
AGFI	.681	.821
CFI	.846	.934
TLI	.831	.926
RMSEA	.073	.065

The final model has 20 sub items under broad six criteria framework with many sub-sub questions under 20 questions (figure 2). This figure is acceptable in respect of a fit model.
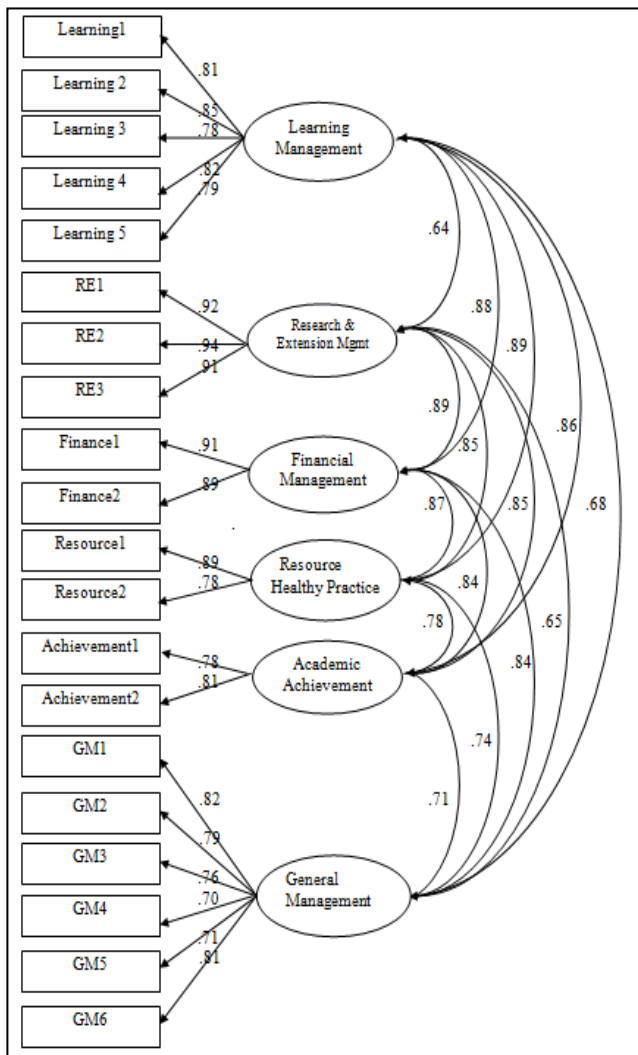
Figure 2: MAQ Configuration

Internal Consistency Assessment:

The internal reliability was tested using Cronbach Alpha test. Other structural measure which was used for correlation between the scales was Karl Pearson

Correlation Coefficient. Further, content validity was also examined by the experts of the field. Content validity is the extent to which the elements within a measurement procedure are relevant and representative of the construct that elements will be used to measure.

The internal reliability was tested using Cronbach Alpha (table 5) for FAQ. In the table, we have represented some descriptive analyses also. During the analysis it was found that all CA were >0.70. In table 5, we have the descriptive details as well as internal consistency results in the form of Cronbach Alpha. We can very well observe that all alphas are above 0.80 except for the curricular aspect.

Table 5: Cronbach Alpha FAQ

Scale	Sample Item	Mean	SD	Alpha
Curricular	3	2.75	1.07	0.72
Teaching-Learning	2	2.94	0.87	0.86
Evaluation	3	2.98	1.04	0.91
Training	4	3.03	0.90	0.92
Management	6	2.99	0.84	0.81

Table 6*: Pearson Correlation Coefficients FAQ

	C1	C2	C3	L1	L2	E1	E2	E3	T1	T2	T3	T4	M1	M2	M3	M4	M5	M6
C1	1.00																	
C2	.72	1.00																
C3	.79	.72	1.00															
L1	.82	.82	.89	1.00														
L2	.86	.85	.85	.81	1.00													
E1	.66	.69	.69	.69	.73	1.00												
E2	.67	.61	.68	.66	.61	.87	1.00											
E3	.63	.56	.69	.68	.65	.81	.82	1.00										
T1	.78	.78	.75	.78	.81	.88	.72	.79	1.00									
T2	.87	.89	.83	.77	.78	.83	.91	.81	.88	1.00								
T3	.76	.80	.77	.82	.77	.85	.82	.78	.82	.96	1.00							
T4	.81	.78	.88	.81	.81	.79	.81	.82	.81	.87	.94	1.00						
M1	.71	.73	.79	.77	.88	.66	.71	.68	.78	.85	.79	.80	1.00					
M2	.76	.78	.76	.72	.89	.71	.72	.67	.89	.84	.87	.82	.91	1.00				
M3	.72	.73	.77	.84	.72	.76	.71	.72	.78	.91	.88	.85	.89	.89	1.00			
M4	.72	.77	.78	.81	.84	.66	.67	.76	.82	.79	.91	.90	.86	.91	.82	1.00		
M5	.70	.74	.77	.72	.71	.70	.71	.78	.83	.84	.92	.87	.91	.90	.83	.82	1.00	
M6	.71	.78	.78	.85	.82	.68	.74	.79	.91	.89	.78	.89	.90	.89	.84	.81	.82	1.00

*all correlations are significant at .01 level

Correlation among all the elements of five dimensions found to be statistically significant at.01 level. All variables are positively correlated either high or low.

In the similar fashion internal reliability of MAQ was also tested as we did for FAQ (table 7).

Table 7: Cronbach Alpha MAQ

Scale	Sample Item	Mean	SD	Alpha
Teaching-Learning Mgmt	5	2.78	1.05	0.71
Res. & Extn	3	2.91	0.85	0.84
Finance Mgmt	2	2.96	1.01	0.89
Resource Mgmt	2	3.01	0.92	0.95
Academic Ach	2	2.96	0.87	0.84
General Mgmt	6	2.99	0.88	0.86

Table 8*: Pearson Correlation Coefficients MAQ

	L1	L2	L3	L4	L5	RE1	RE2	RE3	F1	F2	R1	R2	.1A	A2	G1	G2	G3	G4	G5	G6
L1	1.0																			
L2	.87	1.0																		
L3	.79	.84	1.0																	
L4	.87	.79	.82	1.0																
L5	.88	.81	.78	.88	1.0															
RE1	.62	.71	.69	.63	.56	1.0														
RE2	.67	.70	.68	.69	.75	.87	1.0													
RE3	.63	.68	.63	.66	.71	.91	.88	1.0												
F1	.81	.88	.85	.82	.91	.89	.91	.94	1.0											
F2	.87	.74	.77	.83	.84	.90	.87	.92	.91	1.0										
R1	.85	.90	.77	.87	.87	.81	.85	.89	.88	.91	1.0									
R2	.79	.88	.83	.82	.84	.84	.88	.82	.86	.94	.89	1.0								
A1	.81	.83	.89	.90	.82	.66	.64	.79	.84	.90	.77	.88	1.0							
A2	.86	.88	.79	.83	.83	.71	.61	.78	.91	.89	.82	.75	.81	1.0						
G1	.62	.61	.60	.73	.69	.76	.74	.79	.87	79	.72	.70	.70	.73	1.0					
G2	.71	.77	.76	.76	.73	.66	.67	.76	.68	.78	.62	.78	.76	.70	.87	1.0				
G3	.60	.67	.67	.68	.69	.79	.65	.72	.82	.86	.72	.76	.75	.66	.83	.88	1.0			
G4	.72	.68	.57	.61	.75	.81	.64	.74	.78	.70	.78	.88	.63	.74	.87	.81	.87	1.0		
G5	.60	.64	.67	.68	.69	.80	.65	.67	.72	.84	.82	.65	.65	.66	.83	.78	.87	.81	1.0	
G6	.70	.68	.77	.61	.72	.79	.64	.74	.79	.70	.77	.75	.63	.74	.71	.81	.79	.78	.72	1.0

all correlations are significant at .01 level

In table 7, we have the descriptive details as well as internal consistency results for MAQ. It is evident from table 7 that all CA are >0.80 except for teaching-learning management (0.71). Overall, we can conclude that the tool is highly reliable. The final model has 20 sub items under six scale headings. Correlation among all dimensions is found to be statistically significant at .01 level (table 8). After, the final draft FAQMAQ was again presented to a group of experts for content validation. Experts were fully satisfied with the content of the questionnaire.

RESULTS AND DISCUSSION

The development of the tool i.e. Faculty Assessment Questionnaire and Management Assessment Questionnaire (FAQMAQ) is an attempt to determine and analyze the factors affecting quality status of higher education. The tool so developed has content related to a democratic educational institute environment. There is an effort to integrate the characteristics of two educational management models FEM and CEM in tool preparation. The two models allow the stakeholders to work under supervision with pre-defined objectives and run an institution with participative, transformational and interpersonal approach. The tool was standardized in five steps i.e. item generation, content adequacy assessment, questionnaire administration, factor analysis and internal consistency assessment. The standardization process depends upon expert's advice, Edward's t-test, confirmatory factor analysis, Cronbach alpha and Karl Pearson coefficient for its validity and reliability. Initially 36 questions were included in FAQ and 40 in MAQ. Upon expert's advice it was reduced to 29 and 32 in respective models. Repetitive questions were advised to be removed and many to be put under sub questions in each dimension as sub-sub questions. Though, the questions under each criterion were reduced but inclusion of sub-sub questions maintained the total number of questions (61). Edward 't-test' was administered to reduce the number of non-critical questions. Finally, 50 questions were included in FAQMAQ model i.e. 24 in FAQ and 26 in MAQ. A confirmatory factor analysis was conducted to arrive at a model with an acceptable fit. FAQ with 24 elements was tested for model fit. After the confirmatory factor analysis in FAQ, items were reduced from 24 to 18. Finally, in MAQ we have 26 elements in model fit. Total six loadings were found to be below 0.40. The final model has 20 sub items under broad six criteria framework with many sub-sub questions. The internal reliability was tested using Cronbach alpha test. We can very well observe that all alphas are above 0.70 except for the curricular aspect in FAQ. Here, most deviation from the mean is in curricular aspect. Correlations among all the elements of five dimensions are found to be statistically significant at .01 level. All variables are positively correlated either high or low. There is high correlation between curriculum, training and teaching-learning factor. Similarly, evaluation and training have high correlation in one direction in FAQ. All CA in MAQ were found to be >0.80 except teaching-learning management (0.71). Overall, we can conclude that the tool is highly reliable. Finally, Karl Pearson correlation coefficient is calculated for MAQ and it was also found to be statistically significant at .01 level. All variables are positively correlated. Hence, we can conclude that all factors affecting quality of education with respect to management at tertiary level proceed in the same direction. It is interesting to note that the financial management variables are greatly affecting all other aspects. Teaching-learning factor has high correlation

with the academic achievement. There is high correlation among teaching-learning, academic achievement and financial management of the college. Similarly, resources and healthy practices management have high correlation with the teaching-learning, research and extension; and financial management.

So, we have seen that both the models FAQ and MAQ are dependent upon broadly six dimensions and all factors under these criteria have positive correlation with the other factors affecting the quality of education. Teachers and the management are considered to be the quality education providers. In this study, we can conclude that faculty is responsible for imparting quality education to students provided they are competent enough to impart quality education and with the provision of best available resources for teaching-learning and their living standard. The curricular aspect is highly correlated with the management/state which can be held responsible for affecting the quality of higher education. Curriculum as per market demand, commonality of content and assessment procedure among all universities; contribution from the faculty for teaching-learning enrichment, child-centred teaching-learning process, non-overlapping of the content in succeeding semesters etc. are some important issues to be noticed at an early stage for improving the quality of education. On the other hand, management can effectively contribute in improving the quality status of higher education if it is not at all interfering in the teaching-learning tasks of the faculty. Financial management dimension is highly correlated with the academic achievement of the learner. Timely availability of reference material, equity in distribution of scholarships, student support services before and after the admission, healthy practices in the institution, protection of student rights etc. are some important issues need to be discussed under this dimension. The resources and general management have deep impact upon quality output and outcome as expected from a student after the college/university. The major responsibility of the management is to provide necessary support for the development of functional and personal skills. Multi-tasking and hands-on-training under student support services will prevent the migration of students in search of good institutions. This dimension even includes support services to students belonging to marginalized community and female students. Issues related to them needs to be identified at an initial stage and necessary support to be provided to them for continuation of studies. This aspect will fulfil the issue of inclusiveness in education system.

This tool is considered to be a promising one by the experts. It is expected that the application of FAQMAQ during the assessment of quality status in higher education will prove to be a worthy tool in a democratic education environment. The approach of integrating the characteristics of two educational management models i.e. FEM and CEM is going to be useful for educational planners, faculty and management to find out the lapses in the policy concerned with the higher education. This will help in finding necessary solution to enhance quality in an educational institution of higher learning in a developing/underdeveloped country for better output and outcome.

APPENDIX

Table 9*: Elements of FAQ:

Name:……………………......................................
College Name: …………Designation: …………

Elements (Items)	Criteria
….forwarding suggestions to revise or restructure syllabus….	**C1**
….nominated as Member of Board of Studies….	**C2**
…….communication with the university department regarding 'give and take' of course information….	**C3**
…qualification and experience linked with the quality of education (qualification, doctorate degree possession, any PhD registration, and experience, any separate training undergone)…	**L1**
..use of teaching-learning approaches while teaching, adaptability and comfortability with the modern teaching aids etc.........	**L2**
…. involvement and satisfaction with question paper set up criteria….	**E1**
…. involvement and satisfaction with examination procedure, internal assessment criteria….	**E2**
…. adoption of feedback mechanism …	**E3**
…. involvement in any research project, internship (detail of project, fund allotted, duration etc….)	**T1**
….experience of guidance/supervision of any research/ dissertation etc….	**T2**
….frequency of attending seminar/workshop/FDP….	**T3**
….contribution to journal/book or any other publication….	**T4**
…. part of any vocational/part time short course...	**M1**
….frequency of any briefing by the management ….	**M2**
….involvement of faculty in administrative work of the college….	**M3**
…. satisfaction with the appraisal report…	**M4**
….payment of monthly salary, educational tour expenses and other allowances in time….	**M5**
…. satisfaction with the residential and medical facilities provided to the faculty by the management and any other management related issues….	**M6**

*Many questions have sub questions

Table 10*: Elements of MAQ:
College Name: …………Mgmt.Type:………....

Elements (Items)	Criteria
….following the annual system or semester system or both….	**L1**
…….adequate faculty in every department of the college….	**L2**
….composition of the committee selecting temporary faculty….	**L3**
….PTR of your college at graduate level…….	**L4**
….lagging behind faculty member is undergoing orientation programmes/Faculty Development Programme (FDP)……	**L5**
…..….approved research section, competent faculty for guidance, research approach, full time research scholars…….	**RE1**
….any fellowship provided by institution and publishing any research journal…….	**RE2**
….unaided evening programmes…	**RE3**
….sufficient funds to procure sufficient number of reference book…….	**F1**
….budget allocated to the college fulfils other college expenses….	**F2**
…. sufficient rooms, furniture, basic teaching aids, IT lab and other teaching-learning resources………..	**R1**
…….adequate land for playground, sports coaching facility, biometric system….	**R2**
......enrolments, pass outs, drop outs..............	**A1**
.......achievements, student participation....	**A2**
….agreement with NGOs/ research institutions/ others for internship/ knowledge sharing, faculties awarded for contributions, extra classes are conducted for competitive exams/value education.....	**GM1**
..managed by corporate management/trust/minority association, assigned any local management committee to solve academic, administrative and financial constraints, committee members have good academic background and experience......	**GM2**
…….providing community services, Parent Teacher Association, Alumnus Association….	**GM3**
…seminar/workshop/FDP/newsletter........	**GM4**
…. monthly salary, educational tour and other allowances are adequately paid ……	**GM5**
…. special provisions to backward class and women students….	**GM6**

*Many questions have sub- sub questions; their scores were merged with main question under the same criteria

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