

## **Estimating, Budgeting for Quality Control in Higher Education**

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### **ABSTRACT**

*The current study aims to determine the attitudes of estimate and budget of quality control for higher education for the universities and affiliated its institutions. Who is presently undergoing quality assessment according to the National Commission for Academic Accreditation and Assessment (NCAAA), it is the organization responsible for verifying quality documents which are prepared by the respective universities and its affiliated colleges and institutions to meet its goals. So in this article suggest the most suitable techniques to estimate and budget for the quality control. To determine most suitable estimate method, this paper analyzes various methods and selects a suitable method of the cost estimate. According to results, the attitudes of the cost estimate depends on the quality work break structure and its various levels of work done to achieve intended goals. The case research examined in this paper was carried out by the authors of the research project 'Factors Affecting the Quality control in higher education: an Empirical Investigation around Saudi Arabian Universities.*

**Keywords:** Teaching Profession, Pedagogical Formation, Attitude.

### **INTRODUCTION**

The quality Education for any university that adopts it and for its affiliated institutions, to have academic quality and standards (Carpenter, 2017), and to preserve its endurance (Davis, 2014). In most of the universities, Quality assessment unit is installed by the deanship of Quality Education to meet the demands of a growing job market. The emergence of The National Commission for Academic Accreditation and Assessment (NCAAA) units across the kingdom of Saudi Arabia (KSA) has been an instrumental in the changing kingdom's context of higher education over recent years. Furthermore, each higher education institutions of KSA provide their related features for the Quality assessment process. For such big number of institutions or organizations under NCAAA, obviously, major factors such as size, structure, resources, mission, goals, and leadership are the major differences between them. Therefore, cost Estimate and budgeting of quality control will always remain a challenge to the governing bodies.

So in this paper, the first section introduces the basic element in estimation and budgeting, then points out the significance of estimation and budgeting for Quality control for higher education. Finally, the paper outlines cost estimating activity method for estimating cost for the Quality control in higher education which may influence the implementation of the quality evaluation process and so as the cost.

**Basic elements of quality assessment in higher education institutions**

Poor estimation leads to a bigger problem for the system for which estimation is prepared. The estimate of Quality assurance costs is consequently acquired from a quantified assessments of Quality of the education of the universities essential to complete part, or all, of the Quality process of accreditation by the respective colleges, institutions or universities (Delamonica, 2001). This estimation process will be responsible for the calculation of the cost of the Quality process based on previous process carried out and recorded (Deiningner, 2003). The previous process should be a set of reasons or a logical basis for a course of action or belief taken to declare any project process uncertainty. Furthermore, estimation of additional cost where the process might deviate from college to college or institution or university (for example of the award of research excellence for promoting ranking). Obviously, the main item for the cost estimation is the Quality document’s scope of achievement, and as such, every element of the Quality Work Breakdown Structure (WBS) should be recorded in the estimation (Garrison, 2010). If WBS is not created (Haugan. 2002), the process of cost estimation will not produce accurate price estimate. The quality scope should include information such as:

- a detailed description of the Quality assessment work;
- any quality control item is excluded in the scope but key to completion
- the WBS items;
- a description of any procedures for accreditation and quality assurance and postsecondary accrediting institutions;
- details of quality assessment deliverables,
- Special conditions on the assessment process. A suitable example would be the time constraints for quality assessment team visit for its targeted institutions;
- Quality assessment considerations such as site access, it will have cost and time implications.

**Situation of the Problem**

A rough estimation of quality assessment of higher education of the costs is essential and beneficial, however, to get an estimation of the quality process consumes time, useful resources and costs money for the execution of the project. It should be noted there are some problems encountered during estimation and are listed in Table 1.

**Table .1** Factors contribute which yield good cost estimate.

Factors which contribute a good cost estimation	Problems encountered in cost estimate
Accurate estimation of the process	Unable to determine the schedule of the resources
Resources needed to complete the process	Too confident and forget that everything works for the first time
Estimation of WBS items of the process	
Complete estimation showing all quantities unit costs and pricing for the IT	The estimate does not reflect the software development and security according to the geographical locations

Duration of the project and isolation of costs.                      Continuous evaluation process of quality of education

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To meet the requirements for the teaching profession, one has to have positive attitudes towards the profession. Carrying out the teaching profession with sympathy is an important factor for being successful in the profession (Henkel, 2000). Therefore, in order to provide opportunities to develop positive attitudes towards teaching profession, and in order to contribute to the efforts for developing and enhancing the pedagogic training, it is important to learn about the attitudes towards teaching profession among the students/graduates who did not prefer teacher education programs, but later took pedagogic training in order to be assigned as teachers.

Costs incurred for the software development can be measured and specifically tied to institutions requirement of the software for their quality assessments. Most of the software costs are variable because the amount of which they are charged will vary on the requirement and proficiency of the software usage by the resource involved in the process. Typically these include the salary of the server administrator, cost of hardware or equipment rentals and developer's salary.

There are some indirect costs which are common to all institutions and are continuously incurred during the visit of the quality officials to the respective institutions. Following are the indirect costs.

- The salaries of the Quality officials (playing multiple roles) ;
- the costs of rent for car, accommodations, and food ;
- cleaning and maintenance quality documents;
- stationery, printing, communications;
- Employee salaries of non-direct department's staff such as human resources, teaching staff, and security.

Hence, the estimate should, therefore, include direct and indirect costs associated with a Quality assessment.

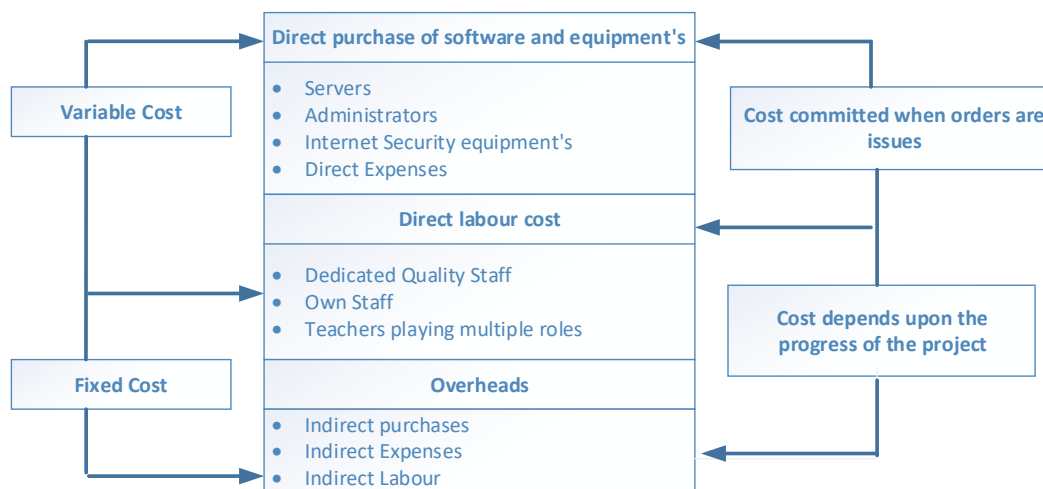
### **Aim of the Study**

The aim of the present study is to determine attitudes towards estimate and budgeting of Quality Control in higher education particularly, institutions, where quality assessment work is undertaken to meet mission and objectives of the program and that of the university. This study gives an analysis of the various methods of Cost estimation and finally suggest a suitable method to evaluate quality control process concerning cost estimate.

### **METHOD OF ESTIMATING**

Methods of cost estimate give us how much you spend on the project and enable us costs accurately can help us plan for the future (Margavio, 1994; Owlia, 1996). There are many methods to estimate costs, and each method is a different blend of difficulty and accuracy, however, knowing. Some of these methods will help us to choose the right one for our universities (Winn, 1998). These methods should be well versed

with the quality team managers because these methods give an accuracy of the estimate and will reflect their efforts on project planning. There are some methods of cost estimating are listed below:



**Figure 1.** Variable and fixed costs. The model took from ‘Project Management’ 9th edition by Dennis Lock. © Gower Publications, 2007 and altered according to the Quality assessment of institution.

- Analogy and parametric;
- expert opinion;
- wideband Delphi;
- range estimating;
- Activity-based (bottom-up).

**Analogy and parametric**

This method of estimate uses statistical analysis methods to find correction between costs and performance of the previous project on quality assessment. It also needs a thorough understanding of difference and similarity of the previous project carried by institute or university. This can be modified for the current project based on the followings:

- the previous project compared in the complexity of conducting assessments and design;
- Listed differences in documents (as some of the institutes achieved the intended goals);
- Location and availability of data in the form software or physical.

**Expert opinion**

Sometimes expert opinion does play an important role in cost estimate however the experts must be aware of the current trend in the evaluation of quality assessment projects. This should be from some consultants referred and estimated however relying on them for the sake of such project will also question to be answered Quality managers.

### **Wideband Delphi**

Wideband Delphi uses the estimation of projects of a group of experts to define cost estimate of the particular project. This method brings the expert opinions secretly to avoid bandwagon effect. Furthermore, this method also reduces the likelihood of people influencing others with their idea. It is not mandatory to submit their cost estimate by themselves however it can be carried by using Internet technology such email or any profession Wideband Delphi software. Some expert will play the role of coordinator who breaks down the project into WBS sections. Hence, the group members produce the cost estimate with the help of several meetings held between them. Moreover, the team is also responsible for formulating problems specification, identification of cost involved in direct and indirect with their assumptions.

### **Range Estimating**

Range Estimating is very useful when there is very little information on technical data; the technical scope is very poorly defined or nonexistence of historical data. So hence with this very fewer information, experts write about uncertainty data of each critical items are calculated. Furthermore, three variables are produced name as most optimistic, most pessimistic and most likely estimates for items.

### **Activity Based**

This method is also named as Activity-based Costing (ABC), and it follows a bottom-up approach and widely used in large-scale projects. It requires to list the activities to undertake a project of Quality assessment and each activity, and its material cost will be summed up through the various levels of WBS. For university-based costing of Quality control activates are very well suited for estimation.

## **CASE STUDY OF THE COLLEGE OF ARTS AND SCIENCES, WADI AD DAWASER, KSA**

The case research examined in this paper was carried out by the authors of the research project ‘Factors Affecting the Quality control in higher education: an Empirical Investigation around Saudi Arabian Universities.

The case for the current study was from Quality unit of College of Arts and Science, Wadi Ad Dawaser, KSA. Case study gathered information from various procedures over a continuous period. In this research, Author gathered research data through face to face interviews, and additionally quality documents provided by the college administrators where the study was carried out. Especially, interviews were held and audio-taped, then tapes were manually converted into word documents, every quality documents were studied. The additional module of this case studies is the module of analysis, defined as the contribution of this study. For this study, this unit of analysis was the college quality team participating in the study.

### **Process of Quality assessment within the college**

College assessment process starts on the first day of the college ends on the day on last day of the college for that particular year. There is a hierarchy of this process as shown in figure 2. Between Quality

Deanship, head of the department and faculty members the process of quality assessment is carried for the program, each faculty members will submit their course based quality assessment to head of the department and he will convey this to his immediate quality manager. During this process there are many documents related to the course will be prepared and submitted to the deanship via the head of the department.

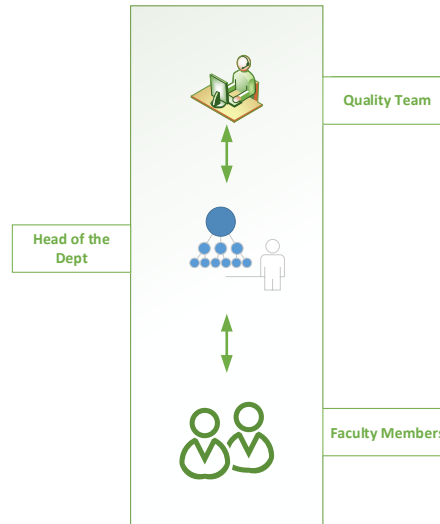
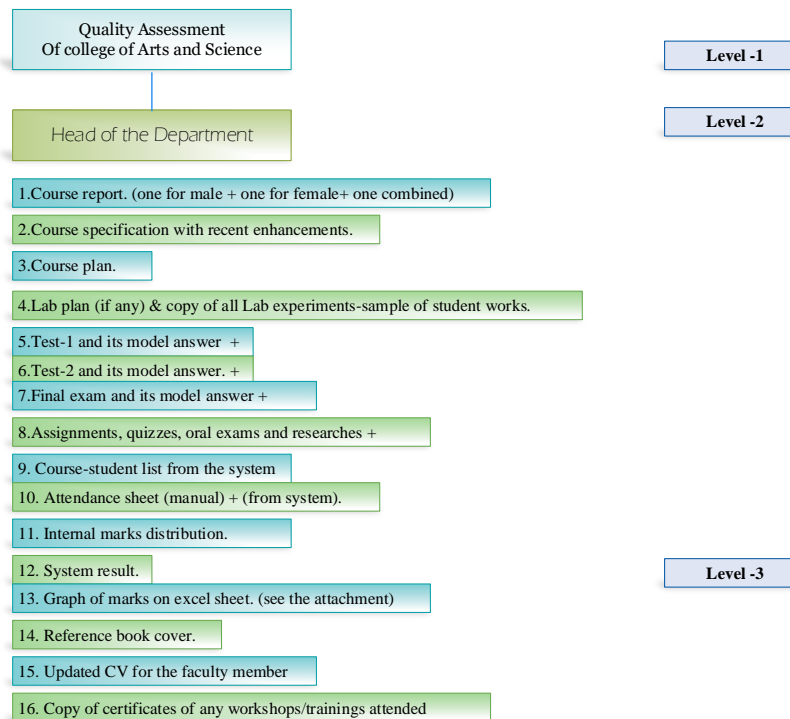


Figure 2. Movement of Quality Documents between Deanship, Head of the department and Faculty members.

### Creation of WBS items

For this process, only the time and valuable resource are consumed, so hence WBS is preparing to estimate. Figure 3 shows the WBS structure of the quality assessment process. WBS for the quality assessment is a hierarchical and incremental breakdown of the quality assessment into phases, deliverables, and work packages. This is very much similar to a tree structure, which has different modules of work required to quality assessment for the particular department; for example. In our project, the WBS is produced by starting with the end mission and goal of the program and consecutively partitioning intended mission and goals into manageable modules in terms of documents, duration, and responsibility (e.g., course file, course report, tests and quizzes,) which include all steps essential to attain the objective. The WBS is also named as 100% rule. According to the 100% rule, WBS defines 100% of the quality assessment work according to the mission and goals of the program set by the university by this scope it gathers all deliverables – internal, external, to achieve mission and goal of the program, including work done.



**Figure 3.** Faculty WBS of the quality assessment process.

Furthermore, on 100% rule, it is essential to note that there should not be any overlapping of modules between different sections of WBS. This could result in repeated work and also confuse project cost accounting. One important thing is observed that WBS structure should capture modules and list their proper actions and scope and should not cross and fall short of 100% of mission and goal of the program. Figure 3, shows faculty based WBS, faculties always liaise with their head of the department for their course based quality documents and Head of the department (HoD) is liaised with the assistant dean for the program based quality assessment process. This communication between HoD and assistant quality dean is also through WBS; it is consist of program report and program specification.

**Participants**

Purposeful sampling methods were used for collecting data. Selecting quality administrative team and stakeholders to be interviewed for this research was purposeful, because they are stakeholders of their respective departments, and they understand the process of execution of the quality assessment work about a college and its mission and object.

**Cost Estimate**

As we have utilized the Activity Cost Estimates technique for the quality control project for identifying the estimate for our college. Table 2, shows the template used for the ABC techniques, in which each ID is assigned to the WBS task, resource for that particular WBS is listed such as human resource and technical equipment to be purchased. Indirect costs can be attributed to the services hired resources such as quality personal or machinery for the verification of the Quality assessment service and whereas the direct costs are associated with the completion to the specific task of the WBS items. Reserve items or cost can be unplanned changes to the process of quality assessments.

Quality assessment teams should possess the ability to produce an idea of a Rough Order of Magnitude (ROM) at the initial stage of quality assessment project. The ROM permits the finance team to sense project's cost. The margin of error for a ROM estimate will have error point, and it can adjust according to the finance team. Level of confidence is cost estimate of an item is identified and its dependency on another variable of the project cost estimate, while all other items are kept constant in order, classify which items are most disturb cost estimate.

**Table 2.** Activity cost estimates.

Project Name				Date:				
Project Number				Document Number				
Project Manager				Project Owner/Client				
WBS ID #	Resource	Assumptions and Constraints	Direct Costs	Indirect Costs	Reserve	Range of Estimate	Level of Confidence	Misc.

**BUDGETING**

By planning quality process finances, universities can regularly seek to add human resource or machines before the financial crunch. A budget plan will help universities to live within affordable resources. Below mentioned tips that feasibly ease the quality process:

- have a plan or goals
- know quality process practices
- know what available institution resources are
- keep a record of all Quality process expenditures
- Hire quality process expertise
- Share cost

In the education sector, the budgeting process in educational institutional is lengthy and difficult, since the objectives of the institutions and colleges are more difficult to describe measurably that the objectives of companies. For example, a university's objectives may be to produce graduate students who are competent enough to secure job in the competitive market. Hence, to meet this kind of objective, the university will set aside a budget for a high-quality education and spend money on research and development by aiming for an increase in admission and possibly the cutting the cost on various other sectors of education. However, on the other hand, if you are budgeting for a company such as a cloth manufacturing plant, then the aims for budgeting may be mainly fashion oriented, such as confirming that all garments are meeting the standards of the population for whom the product it produces. Hence, this process of budgeting for clothes is difficult to compute, and how it is accomplished is even difficult to



describe. However, there are two types of budgeting are used in the educational sectors, which are named are incremental budgeting and zero budgeting.

Incremental budgeting is a very old budgeting technique whereby the financial plan is based on the current time's budget as a foundation, with incremental amounts then being further added to the new budget. These incremental amounts (salary hikes and other expenditures) and so as the prices to provide services such perks on research publications and to fund a project, or planned funding on research magazines.

### **Benefits of incremental budgeting**

- It is very easy to prepare.
- Very less time-consuming.
- Avoids conflicts as similar style is applied throughout the organization.

### **Zero Budgeting**

In zero-based budgeting, it starts from zero, with no reference being used to the current plan and spending. All of the budgets, hence, start with a zero. Every course is then reviewed carefully, with all spending requiring endorsement, moderately similar with the incremental expenditure needing endorsement. Following are the questioning sessions are carried before approval of any budget :

- *Is the activity really necessary at all?( <http://www.accaglobal.com>)*
- *What happens if the activity ceases?( <http://www.accaglobal.com>)*
- *Is the current level of provision adequate?( <http://www.accaglobal.com>)*
- *What other ways are there of carrying out the activity?( <http://www.accaglobal.com>)*
- *How much should the activity cost?( <http://www.accaglobal.com>)*
- *Do the benefits to be gained from the activity at least match the costs?( <http://www.accaglobal.com>)*

## **RESULT, DISCUSSION, AND SUGGESTIONS**

We have chosen ABC method for the cost estimate for the quality control for college under the affiliation of the Prince Sattam Bin Abdulaziz University; we found this method of the estimate is useful and very easy to maintain to calculate the cost for the future projects of estimating and budgeting of quality control in higher education. ABC is a very simple and best way to calculate and predicate cost which influences our decisions made on the particular WBS items. There are some items such as the hiring of external human resources and computer server for remote sharing of quality documents information can come under indirect cost. However, these items can also be listed in the direct cost because hiring eternal quality evaluator is not a swift decision. As our college is not automated the quality assessment process. It is automated then the quality assessment process will cost much less as compared with the present manual system. Because each step as described in Fig 3 is consists of printing and submitting of hard copies to the HoD, which costs very huge for the college and subsequently increases the budget. Hence, making all these processes automated then the cost of everything will be different, and it will be less as compared with a manual. However the cost of server maintains and providing software, and hardware security will be extra.

Most of the server administrators' work on hourly basis and software security service is charged by license. Hence cost estimate for the quality project will different for the automated quality control assessment.

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