ABSTRACT

Owing to the rapid increase of accessing internet, e-learning content delivery has become more reliable. e-learning is a convenient and comfortable mode for the learners to access quality material like text, animation, audio and video etc., at anytime and anywhere around the globe. High end software and hardware are very much necessary for implementing the e-learning system to run the application through remote environment.

Effective e-learning effort estimation is one of the challenging and essential actions that are needed in project development. Nowadays e-learning plays a vital role in both business and academic training. The method of implementing the courseware involves delicate work and is highly time consuming. Designing the e-learning courseware is different from designing the other type of web applications. Effort estimation models are very helpful to predict the quantum of time and effort required to implement e-learning projects. These models have been in use for many years in the existing software development. Almost all estimation models are computed from the project size. Usually, they use Lines of Code (LOC), Function Points (FPs) and other different metrics to estimate the project size. The present software field has numerous sizing approaches, techniques and methods for calculating the software size and estimates the software features. Some of the sizing approaches are Lines of Code, Function points, Object points, Use Case points and Feature points. Some of the methods are linear, parametric, heuristic, analytical, proxy based, empirical, algorithmic, top down, bottom up, and learning oriented estimation methods.

This research aims at obtaining an estimating method for e-learning projects efforts based on Function Point Analysis (FPA) and describing the
method for estimation of the size, effort and project development time for three different categories of e-learning projects. In this study comparison of the efforts between the different categories of the e-learning projects is made, concluding with the category that requires greater attention for successful completion of the project. e-learning project contains text, image graphics, sound video and animation. Nowadays many universities and educational institutions are moving towards either private cloud or public cloud. For deployment of the e-learning courseware in the cloud environment, the contents can be easily shared and viewed by the audience. The demands are increased; and there is a need to introduce new innovative techniques into the educational environment. In order to categorize the e-learning projects, the proposed method categorizes the project into three types. They are: simple e-learning projects, medium e-learning projects and complex e-learning projects. Based on the category of the e-learning projects, the effort will be calculated using the Function Point Analysis (FPA), basic Constructive Cost Model (COCOMO) and intermediate Constructive Cost Model (COCOMO). In the basic Constructive Cost Model there are three types of modes are classified. They are organic, semidetached and embedded.

The simple e-learning projects efforts are calculated using the organic mode of the basic Constructive Cost Model. This is because in the organic mode, the organization can take the smaller development team with good experience. There is no complexity involved in the simple type of the e-learning projects. The development project can be considered as semidetached, if the project team is in medium-size with a mixture of skilled and unskilled staff. The medium type of e-learning projects is used to develop with text based content, animation, video lecture etc., so that the composition of the development team can be used in the semidetached mode of the basic Constructive Cost Model. The embedded type of project development can
take a larger size of the project team with an innovative approach. A larger number of complex animations, action script, simulation and web based interactions and deployment in the web can be used in embedded mode of the basic Constructive Cost Model. The experiments are carried out for the three different categories of e-learning projects. The average of the staff and the duration to complete the three different projects are also estimated. The intermediate Constructive Cost Model is used to estimate the cost driver values with the complete project life cycle. Examining the project cost, effort and duration in the development life cycle is a valuable objective to be achieved for e-learning projects. Hence, the detailed Constructive Cost Model is used to complete the project life cycle analysis for the three categories of e-learning projects. The proposed effort estimation model is the novel approach in the e-learning development world to estimate the effort required to successfully complete the project.