Objective and Scope

It is very time consuming and requires lot of human efforts to answer the queries (as raised in above section) as the data is scattered in different databases for every examination for the session (most of the examinations are conducted twice in a year). Further, the answers given manually may not be accurate. Some of the above queries can be solved by adopting new technologies but some queries the additional data is required. Solving these queries and acquiring new knowledge from examination data will help university, state government, UGC, ministry of human resource and development etc. take correct decisions regards educational policies that will benefit the society.

The number of examinations and number of subjects being examined are increasing over period of time. According to Jagdish Sadhave [1], in 1991, University of Mumbai was conducting 240 examinations while in 2002 it conducted 1092 examinations. Also there is 63.38% increase in total number of student enrolled in all faculties in 2002 as compared to 1991. Over a period of time, the educational environment has also changed. Fundamental changes are influencing the way the university visualizes and plans future activities.

The thesis discusses the proportional efforts required at each step of KDD process in our setup. The cost-benefit analysis is essential in the first step while the second step helps in choosing the databases that are relevant to satisfy the user requirements. The third step i.e. Data preparation/transformation in EDW requires up to about 50% of the effort of the entire project. This step is the most resource consuming step in the KDD process that comprises the following three phases: Data Selection, Data pre-processing and Data Transformation. The forth step of
Data Mining requires the efficient software and the last step of Analysis of Results and Knowledge Assimilation tries to find out any interesting, valid and actionable findings.

As knowledge is not measured by volume, but its content and experience, the timely human interaction is very much essential and in our experience has proved to be useful in KDD process. Though KDD process requires human interaction, it is very difficult to define the degree of level of human interaction. The efforts of skilled to senior system analyst working with a controller of Examinations, Deputy Registrars etc. are essentially required for the KDD process.

In the thesis we are proposing data mining software called Examination Management System (EMS) keeping in view the academic evaluation structure prevalent in the Central Education Department. Application of KDD and Data Mining software has been used mostly for business purposes only. Here we have used it for Academic Analysis. New algorithm for finding deviation in the Data has been developed. Some sample applications of algorithms are:

- Find deviation in percentage marks of the subject.
- Find deviation in marks of the girls belonging to a region or state in India.
- Find count of students and average percentage of passing marks in a subject in a particular year.
- Find deviation in percentage marks for a subject among the various Universities.

The structure of Examination Management System (EMS) consists of the following processes:-

1. Source Systems, that supplies data to EMS
2. Extraction, Transformation and Loading data from source systems to Staging Layer of EDW.

3. Applying Aggregation algorithm & creating summary fact tables in EDW.

4. Using Front Engine of Examination Management System (EMS) – essentially the menu for the End Users to analyse the results from EDW.

The Examination Management System (EMS) can be used and deployed in Central Computing Facility of Central Education Department. Thus, Examination Management System (EMS) is useful to find deviation in marks; also it generates various summarized & detailed reports. These reports and analysis are useful to do better Student Management, College Management and University Management. To sum up, with the help of Examination Management System (EMS), it will be much easier to take correct and effective decisions based on the actual data available from University. To the best of our knowledge, this is the first effort of designing a System for comprehensive Analysis of Examination Data from various Universities in India.