

CHALLENGES OF TEACHING BUSINESS INTELLIGENCE

Anil Aggarwal, University of Baltimore, 1420 N. Charles Street,
Baltimore, MD 21201

ABSTRACT

As volume of data increases there is a need to manage and make “sense” out of this voluminous data. In many cases an organization’s survival may depend on how a company can differentiate their product and gain competitive advantage. This requires competent people who can manage data and explore it for useful purpose. Universities are offering many courses that can address these issues. Business intelligence (BI) is one such course. BI is a hybrid course which takes contexts from many disciplines, notably information systems, management science and statistics. However teaching BI course to business students is a challenge due to the somewhat technical/analytical nature of the course. Based on our experience we provide some insights that maybe useful for professors planning to teach a BI course to business students.

INTRODUCTION

As competition intensifies it is becoming mandatory for business students to have in-depth knowledge of managing data and extracting information which can be used for decision making. Universities are meeting these demands by including courses like database management, system analysis, business intelligence and information assurance. Database helps with data organization by reducing redundancy and making it more efficient for transactional processing. System analysis explains the techniques of designing systems efficiently by tracking data flow through the processes. Business intelligence course looks for “hidden” treasures in data by exploring data using various management/analytical techniques. Information assurance looks at quality of data. In this paper we focus on BI as part of the MIS curriculum. The paper presents resources and pedagogy used to develop and teach a BI course. In addition it discusses resulting challenges. We provide insights for instructors who are or maybe interested in teaching this course. The next section describes the course and the following section discusses the challenges of developing and teaching this course.

BUSINEE INTELLIGENCE

BI was defines as early as 1996 by Gartner group. Their report said: “By 2000, Information Democracy will emerge in forward-thinking enterprises, with Business Intelligence information and applications available broadly to employees, consultants, customers, suppliers, and the public. The key to thriving in a competitive marketplace is staying ahead of the competition. Making sound business decisions based on accurate and current information takes more than intuition. Data analysis, reporting, and query tools can help business users wade through a sea of data to synthesize valuable information from it - today these tools collectively fall into a category called “Business Intelligence.”

Since then many authors, organizations and researchers have provided definitions of BI. According to, searchdatamanagement.techtarget.com, BI is defined as: “Business intelligence (BI) is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions” According to Ryan, BI is “... an umbrella term that refers to a variety of software applications used to analyze an organization’s raw data. BI as a discipline is made up of several related activities, including data mining, online analytical processing, querying and reporting...” Irrespective of various definitions used they all have following in common:

- BI looks for intelligence in corporate data

- BI, typically uses data mining techniques
- BI, is used for performance enhancement

Data mining techniques are used to extract intelligence from data. BI is outcome of data mining. Data mining and BI are sometimes used synonymously. Before going any further, we will also provide definition of data mining. Many authors have provided definitions of data mining. According to Kurt Thearling, data mining is the “*..the extraction of hidden predictive information from large databases*, is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. The automated, prospective analyses offered by data mining move beyond the analyses of past events provided by retrospective tools typical of decision support systems. Data mining tools can answer business questions that traditionally were too time consuming to resolve. They scour databases for hidden patterns, finding predictive information that experts may miss because it lies outside their expectations”. According to SAS institute, data mining is, “...an iterative process of selecting, exploring and modeling large amounts of data to identify meaningful, logical patterns and relationships among key variables. Data mining is used to uncover trends, predict future events and assess the merits of various courses of action...”. Once again, we can summarize different definitions as:

- Looking for meaningful reporting and relation
- Typically in data warehouses
- Using management techniques like regression, TREES, Neural networks etc.

BI Course Definition

Based on above resources and discussions with our advisory board, a workable definition of BI course was developed as, “.. the use of information technology to analyze complex information about an organization and its competitors for use in business planning and decision-making. This course details the components of BI systems, important techniques and the critical variables needed to implement an effective BI program. The course takes a managerial approach to Business intelligence, emphasizing BI applications and implementations. The course will involve use of industry standard software packages...”.

As evidenced by the above course definition, BI includes database systems with data mining techniques. In addition to knowledge of statistics and information technology (IT), the BI course requires competency in several software. At a minimum it would require following software competencies:

- Database
- Statistical packages
- BI packages

Next section describes the BI course development and experiment at the university and discusses desirable competencies that will prepare students for a successful BI course.

The BI Course Development

Since BI course goes beyond the norms of traditional MIS courses, it creates a challenge in terms of level of analytical rigor in the course. Many business students are not competent in analytical skills making this a challenging course to teach. In addition, there are numerous challenges in designing a BI course. We summarize some of them as:

- Selection of text book
- Selection of software
- Business student's background

ANALYSIS AND RESULTS

We experienced numerous challenges in teaching BI course. We summarize our findings as: First, students were not fully prepared for a combination of trio software usage. This would imply better prerequisite requirements.

Second, Students were learning concepts but could not see their real life applications using a proper BI tool.

As is evident from Student performance table 1, students, on the average, performed better on the data warehouse (77%) part compared to data mining part (70%).

Table 1: Student Performance

Topic	Average Out of 100
Data warehouse	77%
Data Mining	70%

Bi is a challenging course to teach to business students and we intend to continue improvements based on student's inputs.

CONCLUSION

Advance in information technology is generating voluminous data which can be tapped for strategic advantage. In the next century only corporations that have the hindsight and intelligence will survive. Everybody will have to be a visionary like Steve job to compete in the next century. One way of getting intelligence is to look at what is already available, the corporate data. Data is generated from many sources, internal or external and must be mined for useful information. Universities are meeting this challenge by offering many courses to business majors that can help in this endeavor. This paper present challenges of developing and teaching such a course to business students.

REFERENCES

Provided on request