

A Report on Business Intelligence The Role of Data Analysis and Data Mining in Contemporary Organizations and The Ethical Implications of Collecting, Storing and Using Data

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Abstract— Diabetic Retinopathy (DR) is an eye disease due to diabetes which causes visual loss. So it is rational to provide treatment for DR at first stages of disease. Hemorrhages are the first symptoms that signify person have diabetic retinopathy. Therefore, their recognition is very essential. In this paper image contrast is improved by pre-processing and then blood vessels are detected as the boundaries of hemorrhages are not differentiate when they are in contact with blood vessels. then classify the image on the basis texture feature such as area, standard deviation etc. finally normal, moderate or Severe DR is detected on the basis of texture feature.

Keywords— Blood vessel, Diabetic retinopathy, Diabetes, Haemorrhages

EXECUTIVE SUMMARY

The purpose of this report was to understand the role of data analysis and data mining, which are subsets of Business Intelligence, in contemporary organizations. It was also required to look at some of the ethical problems associated with data management and suggest possible solutions or recommendations to resolve these issues. For this study, mostly secondary data was used to analyse the concepts of BI, the benefits associated with it and how BI is playing a major role in helping organizations achieve their goals and objectives. It was found that in the current scenario, there is a huge demand for delivering real-time information that can be used to gain a competitive edge in the market. BI can also help in assessing the performance management system in a company and due to the rapid increase in globalization, has spread to all parts of the world, where information can be seamlessly delivered on any device or application that has access to the internet. To overcome the ethical problems, it is suggested that companies provide adequate training to the developers and end users about the implications and risks associated with the collection, usage and storage of data. It is also suggested that companies should strive to make their interfaces simpler as complex interfaces can lead to high training costs, loss of profits and quality issues.

INTRODUCTION

As each year passes by, the amount of data that is processed keeps increasing at a phenomenal rate and obtaining information from this data becomes crucial especially for modern organizations in the face of rapidly

increasing globalization and advancement in technology. This large amount of data, which is gathered from various sources, is stored in data warehouses. To deal with such large amount of data, a company needs tools to extract the most useful information from this data. The analysis of such data can be done using simple query and reporting or statistical analysis etc. In modern organizations, the role of data analysis and data mining is crucial to gain a competitive advantage in the market. However, there are several social issues related to the use of such data. Hence, this report will explore the role of data analysis and data mining in contemporary organizations and will also seek to address the ethical implications associated with gathering, storing and using customer information. Data analysis and data mining are subsets of Business Intelligence, which also includes database management systems, data warehousing, and Online Analytical Processing. These Business Intelligence tools provide the necessary information to enable decision makers to make important decisions. While data analysis deals with existing data by employing statistical methods to test the hypothesis and find exceptions about the data, data mining attempts to find trends within the data, which can

be used for analysis later (Greiner, 2011).

METHODOLOGY

In this report, data was collected through secondary sources such as books, peer reviewed journal articles and other articles from professional bodies. A descriptive analysis would be adopted for this report.

FINDINGS

Business Intelligence: Business Intelligence comprises essentially of two activities: getting data in (data warehousing) and getting data out (consisting of users, tools such as OLAP, queries, reports and data from the data warehouse).

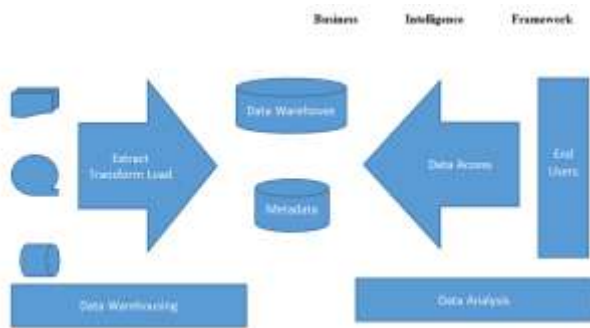


Image 1: Business Intelligence Framework (Watson & Barbara H. Wixom, 2007)

Benefits of Business Intelligence

1. It reduces costs related to infrastructure by eliminating unwanted or redundant data.
2. It saves time to the suppliers and end users by delivering more efficient data.
3. Better information results in better decisions by the key decision makers in a company.
4. Ultimately, it results in the accomplishment of key business objectives.

Current Developments in Business Intelligence

Real Time BI: There has always been a demand for real-time data and so today, concepts like Enterprise

Information Integration (EII), Enterprise Application Integration (EAI) and real-time data warehousing technologies enable data that is only minutes old. This is changing the face of decision-support by enabling end users to make current-time decisions which are crucial in operational business processes and other client-facing roles. For example, Continental Airlines uses real-time BI to provide real time flight data from the flight, the current arrival and departure times and the terminal etc.,. The airlines can now identify high value customers and provide alternative arrangements in case there is a risk of them missing a connection (Anderson & Lehman, 2004)

Business Performance Management: Most of the companies these days are implementing scorecards and dashboards. These tools provide a visually appealing summary of large amounts of data relating to the performance of the organization. End users can quickly see how actual performance compares to the goals and benchmarks of the company. For example, the world's largest supplier of contact lenses, 1-800 contacts has implemented performance dashboards in its call centre facility to monitor the performance and provide incentives to its agents. These dashboards measure the performance of agents by analysing metrics such as closing ratio, average order size and overall quality of service. This information is updated every 15 minutes and not only shows the agent's current performance with respect to the goals and objectives but also compare their performance with the average of the call centre. This has significantly improved the performance of the agents of the company (Watson & Barbara H. Wixom, 2007).

Widespread Business Intelligence: BI is now becoming more and more widespread across the globe by attracting a larger user base due to the rapid increase in globalization and advancement in information technology. For example, web based systems like Microsoft's BI provides access to data from anyplace that has an internet connection and also on any device or application (Microsoft BI, 2017).

Ethical Issues with Data Management

The most important issues relating to the collection, storage and use of information is not a business or technological one, but rather a social one. In his article, (Mason, 1986) identifies four major ethical issues with data management. They are:

1. **Privacy:** What information about oneself should

be divulged to others? What information should be kept to oneself? These are some of the questions that privacy raises. The very nature of data mining techniques conflict with the guidelines laid out by the Organization for Economic Cooperation and Development (Tavani, 1999). Data mining enables the analysis of common business transactions and get information about the buying habits and preferences of users. Consumers are therefore, not only concerned about what will the company do with the data that it collects, but also how it will be protected from third parties.

2. **Accuracy:** If the information is not accurate, it can result in affecting the lives of people in a worse way. Therefore, big institutions have to take extreme care to ensure that the information is accurate so as to make the right decisions

3. **Property:** Another important issue that we face in the society is that of intellectual property rights. Any piece of information takes much time and efforts to be produced. However, once this information is produced, its nature is such that it can be easily reproduced and also shared with others. This makes it very hard to guard information as unlike other property, it is intangible and can be easily transmitted from one person to another.

4. **Access:** It is crucial to ensure that information is secure and the wrong people do not get unauthorized access to vital information.

5. **Data Integrity:** Another issue is related to data integrity. Data analysis is just as good as the kind of data that is being analysed. Companies should ensure that irrelevant or redundant data should not be included for analysis.

CONCLUSION

While there is no doubt that Business Intelligence is crucial for organizations in many different ways. Some of which we have seen above like its role in providing real-time information, assisting in performance management and being pervasive. However, there are social and ethical issues associated with data management such as respecting the privacy of individuals, ensuring the integrity of data and making sure that vital information cannot be accessed by unauthorized individuals.

RECOMMENDATIONS

- As data analysis is an important method of getting knowledge from the huge amount of data that is collected stored and used every day, appropriate care has to be taken while selecting the tools so that they match the goals of the business.
- Organizations must be aware of how these tools would be used and the impact they would have on the intended audience. Appropriate training and awareness programs must be conducted for the users of these tools so that maximum productivity can be extracted from these tools.
- Organizations should also consider simplifying the interface that is presented to the users as cluttered or complex result may result in higher training costs, frustration and an increase in the number of errors.
- On an individual level, individuals can use privacy enhancing technologies (PET's), by being cautious while providing personal information and checking the privacy policies on websites

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