Chapter 118
Application of Big Data in Economic Policy

Brojo Kishore Mishra
C.V. Raman College of Engineering, India

Abhaya Kumar Sahoo
C.V. Raman College of Engineering, India

ABSTRACT

Now-a-days main factor of any information in different fields is data. Different database like relational, object-oriented database is very different from traditional database in case of data retrieval, data management and data updation. So, Data mining is a process of extracting hidden knowledge or useful pattern from huge amount of data in case of efficient databases. As amount of data increases day by day, so it is very difficult to manage related data to different fields. Big data analysis takes a major role for accessing, managing and manipulating of both structured and unstructured data. It is possible to transform business, government and other aspects of the economy by big data. In this chapter, we discuss how big data analytics can be applied in economic policy of government and private sector for making better decision. Here we can use map-reduce programming model provided by Hadoop for analysis of big data in economic policy management.

1.1 INTRODUCTION

In every moment data is generated from different sources like social networking sites, search and retrieval engines, media sharing sites, stock trading sites and news sources etc. Now-a-days all people use face book in every time. So large amount of data is generated from this type of social networking site[3]. Like Face book, Twitter, Google, YouTube are producing large amount of data in every day. If we consider different sources of collection of data related to human like hospital monitoring system, climate system and insurance policy system etc, then management of data is very necessary for these different systems. In old days, traditional database system was used for data storage, data manipulation and data retrieval. To solve problems of traditional database, different databases like relational, object-oriented, network, object-relational came to the market.

The traditional method of managing structured data includes a relational database and schema to manage the storage and retrieval of the dataset. For managing large datasets in a structured fashion, the primary approaches are data warehouses and data marts[7].

A data warehouse is a relational database system used for storing, analyzing, and reporting functions. The data mart is the layer used to access the data warehouse. A data warehouse focuses on data storage. The main source of the data is cleaned, transformed, catalogued, and made available for data mining and online analytical functions[7]. The data warehouse and marts are Relational databases systems. The two main approaches to storing data in a data warehouse are dimensional and normalization of data.

There are several challenges that the enterprises are faced today owing to the limitations posed by relational databases. Some of these are: a) unstructured data that could provide a real-time business decision support remains unused as they cannot be stored, processed or analyzed. b) Several data islands are created and it becomes difficult to generate meaningful information from those. c) Data models are non-scalable and data becomes unmanageable. D) The cost of managing the data increases exponentially with the growth of data [1].

Data mining consists of five major elements [9]:

- Extract, transform, and load transaction data onto the data warehouse system.
- Store and manage the data in a multidimensional database system.
- Provide data access to business analysts and information technology professionals.
- Analyze the data by application software.
- Present the data in a useful format, such as a graph or table.

As now-a-days amount of data is increased, so it is very difficult to manage data in large data producing sources. Big data analytics takes a major role in handling huge amount of data. Now India is currently one of the world's most attractive investment destinations. With the opening up of foreign direct investment (FDI) in several sectors, the country is an eye-catching destination for overseas investors[10]. The relaxation of norms by the government has also created a vast opportunity for foreign players, who are competing for a greater role in the Indian market. Sectors projected to do well in the coming years include automotive, technology, life sciences and consumer products. So we can use big data concepts in economic policy related to government and private sector for making strong decisions. This chapter includes different sections. Section 2 explains details about big data and its working principle. Section 3 provides idea about economic policy. Section 4 explains how big data technique can be applied in economic policy.

1.2 BACKGROUND

A. Evolution of Big Data

A.1 Traditional Data Management System

Traditional data management system contains structured and unstructured data depending on various data models.

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