Chapter 12
Analytics in Public Policy Related to Service Sector

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ABSTRACT

Big Data is transforming industries such as healthcare, financial services and banking, insurance, pharmacy, and telecommunication. Big Data concerns datasets that are not only big, but also high in variety and velocity, which makes them difficult to manage applying traditional tools and techniques. Big Data causes multitude benefits and advantages for industries such as marketing and selling, fraud detection, competitive advantage, risk reduction, and finally decision making and policy making. Due to the rapid growth of such data, methodologies and conceptual architectures need to be studied and provided in order to handle and extract value and knowledge from these data. The purpose of this chapter is studying Big Data benefits, characteristics, methodologies, and conceptual architectures in five different industries. Finally, according to the studies, a comprehensive methodology and architecture are proposed which might be applicable in service sector and one of the useful outcomes can be public policies.

INTRODUCTION

In recent years, data is considered as a potential affecting factor that can boost growth in economic status and improve life quality in different fields through helping individuals and organizations make better decisions. Currently, both public and private sectors are using a large amount of data and getting benefit from it for diverse purposes. For instance, these data provides numerous opportunities for problem solving and decision making to make more efficient and effective systems in healthcare, financial services, insurance, pharmacy, telecommunication, transportation, and energy industries. It helps companies and industries predict their future and become more proactive.

The creation of value by use of Big Data can be possible via five ways:

1. It releases important value because data in greater quantities are more vivid and more practical;
2. Collecting, compiling, and storing data from corporate's transactions and operations make it possible for firms to have more precise and thorough information which leads to a more obvious image

DOI: 10.4018/978-1-5225-7501-6.ch012

of organizational performance to contribute decision makers to decide more accurately to improve the performance of their companies;

3. With better access to the customers' data, it can be easier to understand the customers and therefore it will be better to define strategies related to market and especially marketing strategies and market segmentation which result to meet the customers' needs and preferences through providing required products and services;
4. Big Data analysis can be performed by various methods and techniques which are complicated and basically it conducts to a higher quality decisions and results;
5. By supporting the prediction of the future, it helps companies develop new required products and services which cause the survival and growth of the companies in the future competitive market.

Using Big Data enables companies for better regulation and arrangement of main processes according to changing external conditions in favor of the creation of new services, and plausible innovative models and methods in the healthcare system. As a result, companies involving in healthcare sector can be more efficient and promote the quality of their services. Big Data analysis provides the possibility of clarification of hidden knowledge and exploring the trends enclosed by a wide range of data. For the sake of this understanding, companies are capable of improving treatment, decrease the death rate of patients, and reduce the cost. In this case, there are Big Data analytics applications which give an advantage of an outburst of data to discover concealed insight to make more enlightened decisions.

As a result of efforts to identify and perceive customers' preferences to provide essential and distinguished services, the quantity of data with high variety is increased. Thus, companies in financial services and banking sector adopt data storages and data warehouses to store data and computer-based tools to analyze the current conditions and predict the future regarding the customer behavior and their needs. This causes these companies to optimize their transactions and operations. The implementation of Big Data management systems including data gives greater advantages because it leads companies in this sector be able to more predictive and proactive. Additionally, it provides companies more insight which is useful to make decisions effectively.

Big Data management is also a big challenge for insurance companies. This issue in addition to having data in low quality makes difficulties higher. Insurers try to investigate illegal claims early in the wheel of life and prevent the related payment to control a huge amount of claims costs. Using data analysis leverages valuable data assets that were far being underutilized, and therefore it significantly improves enterprise-wide information flow. The aggregation of data is a formal recognition of the importance of different and new sources of information. Analytics can be used to effectively leverage partner data, for instance, and allow an enterprise to share processed data with them to improve operational intelligence.

Big Data provides the pharmaceutical industry an unbeatable circumstance to make the best or most effective use of research and clinical testing, forecast the universal patterns, control fraudulent behaviors, improve the consequences of treatment. To gain the ability to mix historical data for having more insight and competitive insight as well, companies in this area should invest more in data collection as well as data management. In the process of discovering drugs and their development, a mix of different computational approaches such as statistics and computer science can be used in medicine and biology. Using some methods such as data mining and artificial intelligence are common to analyze a high volume of data. These data in the area of biology and medicine are structured and unstructured which are gathered through diverse sources including hospitals, pharmacies, laboratories, and etc. These data