Chapter 6
Data Analysis in Context-Based Statistical Modeling in Predictive Analytics

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ABSTRACT

Data analysis is a process of studying, removing non-required data in the view level, and converting to needed patterns for sub decisions to make an aggregated decision. Statistical modeling is the process of applying statistical techniques in data analysis for taking proactive decisions depend requirements. The statistical modeling identifies relationship between variables, and it encompasses inferential statistics for model validation. The focus of the chapter is to analyze statistical modeling techniques in different contexts to understand the mathematical representation of data. The correlation and regression are used for analyzing association between key factors of companies' activities. Especially in business, correlation describes positive and negative correlation variables for analyzing the factors of business for supporting the decision-making process. The key factors are related with independent variables and dependent variables, which create cause and effect models to predict the future outcomes.

INTRODUCTION

Data Analysis is defined as finding useful information from existing data and it is used for making concrete decision in critical situations in different areas such as business levels, science, engineering, education etc. In business, decision making process is simplified using business intelligence techniques and company's managers can analyze the performance of company during needs (Scholz et al., 2010). The role of business intelligence is ensured by the impact of performance of business process (Davenport, 2010; Foley & Guillemette 2010). The management point of view, inductive research approach

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and design with qualitative methods is used for evaluating the business performance to produce cost effective analysis model. For quality management, practical knowledge with theory influenced with business intelligence process (Xia & Gong, 2015). In different levels of business, to challenge the business competitions, managers inclined with scientific solutions as it is used univariate statistics, bivariate associations and multivariate iterations. The univariate and multivariate associations are applied in medical field for analyzing heart decease symptoms and prediction (Baker et al., 2009). The purpose of business analytics is to make immediate analysis of issues for taking instant decision to ensure the business success in critical situation. The business performance aims to meet optimized solution in time. Wide-ranging usage of values or data is utilized by the statistical models to take decisions for supporting management of an organization is called business analytics (Davenport & Harris, 2007; Soltanpoor & Sellis, 2016). In data analysis, various research areas are involved to strengthen the information evaluation like operation research, information retrieval, data science and machine learning (Mortenson, Doherty, & Robinson, 2015). In these circumstances, different models including descriptive analytics has the way for new insights for supporting critical decisions which leads to improve business performance. Finally, the business analytics performances are analyzed in all the ways to face the challenges of competitors (Mikalef et al., 2018; Vidgen & Grant, 2017).

BACKGROUND

Data Analytics is defined as extracting meaningful information continuously with the assistance of specialized system which facilitates modeling the data, information transformation and organization of functions for finding patterns to get feasible solution. It has become an essential process for many companies to take out solution from huge volume of regular storing data in a system for best solution in business context like Google, twitter, Amazon, yahoo etc(Davenport & Jill, 2013). The industries, collected data from different organization might be used for new business income streams and data analytics process involves functions of data collection, sorting and processing to ensure the effectiveness of the data for providing reliable result (Russom, 2013). The data analysis generates an important interest in business intelligence to assist to detect market scenario for making decision in short span of time and higher profit (Chen, Roger, & Veda, 2012). The growth of data analytics has been facing many issues like programming, non-supporting of whole business services. As the datasets volume is so huge, the tools are not able to manage and evaluate the process of operations in time within the cost limit (Jiang & Chai, 2016). The establishment of business processes using business analytics is widely accepted by most of the business industries (Wang & Zhao, 2016). As data analytics is the essential to the business development, each and every operation of business try to accommodate the system facilities in the maximum level for getting feasible solution. The higher facilities are the opportunities of business evaluation in all the ways. The adaptation of new approaches leads to evaluate the available data for best solution based on context (Sosna et al., 2010).