


Adoption of Big Data Analytics: Determinants and Performances Among Food Industries

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ABSTRACT

The study presents the results of the work undertaken to analyse constructs that make the companies adopt big data in the food industry towards the financial and market performance. Data was collected from 300 food industry employees who work in vital roles in the company. Primary data was collected through a survey method and a theoretical model was tested. Technological—Organizational—Environmental (TOE) framework was adopted, and the factors were analysed using Smart PLS software. It reveals that trialability, observability, complexity, and top management support are having a greater influence on big data analytics (BDA) adoption. Furthermore, external support, uncertainty and insecurity, and organizational readiness are also identified to affect BDA adoption. The findings ascertain the impact of BDA on the financial performance and marketing performance of the organisations. Understanding the variables that affect BDA acceptability enables managers to take the appropriate steps for a successful deployment. The research aids BDA service providers in luring and spreading BDA in the food sector.

KEYWORDS

Adoption, Big Data Analytics, Food industries, Organizational performance, Technological—Organizational—Environmental Model

1. INTRODUCTION

Data has been growing in size and complexity over the past few decades to a point where it has become difficult for businesses to convert data into useful information. In 2005, Roger Magoulas from O'Reilly media came up with the term “big data” to describe data sets that are so large, they become nearly impossible to analyze using traditional management systems (Agrawal et al., 2008; Ghaleb et al., 2021). Big data is a term for data sets that are so large and complex that traditional

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data processing applications are inadequate. Big data challenges include capturing data, data storage, data analysis, search, sharing, transfer, visualization, querying, updating and information privacy (McAfee et al., 2012; Ur Rehman et al., 2016). Data has infiltrated nearly every aspect of our lives. “Big data” refers to information sets that are too large and complex to be managed by traditional means. More and more data are being generated across practically all areas of society on a global scale. When leveraged correctly, big data has the potential to generate new insights, streamline decision-making, and improve the quality of products and services (Kim et al., 2014; Gunasekaran et al., 2017). According to a classic Chinese saying, “the people see food as their first want.” This means that we are innately programmed to seek out tasty, wholesome, and fresh meals to survive. And since food is such a high demand necessity, it’s no surprise that the food industry is the most major and significant industry in the world. The food industry includes farming, food producers, food manufacturers, packers, cooks, food and beverage enterprises, shipping businesses, supermarkets, and dining establishments (Madaan et al., 2021).

Big data and analytics have been helping a wide range of organisations, including the food sector, to develop and evolve in today’s business environment. Feleen & David (2021) note that although big data has been around for a while, the food industry has only recently begun to effectively utilise it. The food business is facing a unique issue where, due to its potential in understanding the market, customer behaviour, and buying patterns, big data adoption and analysis has become extremely important. It is vital for food businesses to keep up with changing customer tastes over time in order to stay current in the market (Panpatte & Ganeshkumar, 2021; Garwal et al., 2020).

When businesses can analyse information quickly and efficiently, they are able to make better and faster decisions. In-memory analytics and the ability to analyse new data sources gives businesses the potential to provide customers with what they want. Using analytics to measure client requirements and satisfy them with new products and services is key to success (David 2020_b). Big data analytics is a powerful tool that can help companies make better decisions. The food industry has begun to adopt this technology in order to stay competitive, but there are many factors involved in this adoption. By understanding these factors, we can better understand the industry and its future. This study used the technology-organizational-environmental model to analyze the factors involved in the adoption of big data analytics by the food industry (Maroufkhani et al., 2022_a).

The research questions of the present research work are to study what are the technological, organisational, and environmental elements impact on the adoption of BDA in the food industry? and Does BDA adoption influence the financial performance and market performance of food industries?. The study’s objectives are to analyze the factors that influence the extent to which Big Data analytics (BDA) is adopted in food industries using the TOE framework, and to evaluate the market and financial performance of companies that have adopted BDA. What technological, organizational, and environmental elements impact a company’s adoption of BDA in the food industry? The main focus of this study is to see how important technological, organizational, and environmental aspects are for a company to effectively adopt big data analytics (David et al., 2022; Ganeshkumar et al., 2020). Furthermore, the aim of this study was to construct a valid and accurate model to assess how TOE, market, and financial aspects of the adoption would affect organizational performance. Top management, chief executives, and manufacturing executives would all be able to use this research to make strategic and operational choices for their companies. Therefore, this research would be extremely useful to food manufacturing enterprises, policy makers, practitioners, researchers and academicians alike.

There have been many research studies conducted on the adoption of big data Analytics in food related industries. This research specifically focuses on the adoption of big data analytics in the food industries. The study evaluates the critical components of big data adoption and its influence on the organization’s performance and thereby on the overall growth of the food industries. Thus, this research is big data adoption centric, focusing in depth on the critical components of the adoption

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