

Chapter 10

Data Mining Business Intelligence Applications in Retail Services Using Artificial Neural Networks

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ABSTRACT

In the customer-oriented enterprise environment, data mining business intelligence (BI) performs key functions that enable business organizations to determine investment risks and estimate returns on investment. It aids in evaluating the gathered information and presenting them in an understandable and practical design that promote data mining analytics. In the current study, banking and retail services were viewed among the rapidly developing technological industry that maintains significant amounts of electronic data. On the account that fraudsters constantly come up with new schemes and refine their existing schemes so they may avoid being easily identified, it is challenging to identify fraud and prevent it from happening. In order to monitor activities relating to fraud prevention, fraud detection, customer retention, business risk management, investment performance, and improving customer satisfaction, the chapter analyzed an artificial neural network machine learning algorithm in data mining techniques and its applications in the retail sector towards service reliability.

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1. INTRODUCTION

The Internet of Things (IoT) business infrastructures are becoming more complex as a result of rising demand and expansion of IoT cloud innovations and integrated network information systems requirement for customer driven services (Maniriho et al., 2020). As a matter of fact, business intelligence application gives users historical, real-time and predicted insights of how business operations are performing in multi-user business environment. It frequently makes use of sensor data that has been collected and stored in a relevant data warehouse or enterprise cloud IoT grid ecosystem (Onyebuchi et al., 2022). As people grow acclimated to data-driven infrastructure, research on machine learning-based applications and IoT business models is increasing. IoT devices are more vulnerable to hacking and other vulnerabilities since they broadcast data through a wireless media and several interconnected digital links (Hasan et al., 2022). In the ongoing COVID-19 global pandemic, the world witnessed a set of computational paradigm shifts characterized by IoT, the Internet of Health Things (IoHTs), the Innovative Internet of 5G Medical Robotic Things (IIo-5GMRTs), artificial intelligence (AI), in addition to developments in 5G network technology (Matthew et al., 2021c). The business-related strategies and research interest in IoT for Medical and Healthcare Robotics have seen substantial growth, which is currently driving the digital world towards extreme automation (Matthew et al., 2021a). Those developments had helped the healthcare service sector fulfil key mandates and countries to perform better during the ongoing COVID-19 pandemic. Normal communication attacks on local networks are restricted to nearby nodes or a small local domain, whereas IoT system attacks spread over a much wider range and have catastrophic repercussions on IoT locations and associated investments ecosystem (Hasan, Islam, Zarif, & Hashem, 2019).

The present digital economy has led to the emergence of a completely new data value chain, which is made up of businesses that assist in data gathering, the creation of actionable insights from data, data storage, analysis, and modelling. Once the data have been converted into digital intelligence and have been made profitable through commercial application, value has been created (Stahl, 2022). In today's competitive digital market and corporate environment, information communication technologies (ICTs) and information security (IS) services were regarded as the two most important problems (Attaran, Kheibari, & Bahrepour, 2022). The web platforms provide an outstanding digital infrastructure for smart electronic data interchanges, which have made it possible to conduct IoT transactions, conduct marketing campaigns, retrieve information, and conduct electronic data mining (Ghosh & John, 2022). In essence, the IoT infrastructures have recently enabled significant expansion in electronic banking operations and financial services. The primary security concern with electronic money and the digital cashless society is fraud, which is made necessary by an inefficient data mining strategy involving the usage of credit card, cheque clearance, and point of sale services (Qu, Wei, & Zhang, 2022). Many businesses now have the chance to move into the information that the demand for global computer networks with interactive websites and centralized databases have been made possible by the IoT platforms and infrastructures (Matthew, Kazaure, & Okafor, 2021). As the entire globe moves toward IoT centralized platforms without boundaries, information security has recently become one of the most important digital challenges (Yuvaraj & Eveline, 2018). The inherent characteristics of the Web or IoT platform will determine the future global order's electronic data mining orientation. It will not be shocking if electronic databases are breached, military data warehouses are invaded, electronic voting systems are changed, electronic billing systems are manipulated, and unexpected changes to company stocks and financial records occur

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