LITERATURE SURVEY ON DATA ANALYTICS

Retail Store Stock Inventory Analysis

Author: MD Imtiaz Uddin, Tanvir Ahmed, RedoyanRaz, AHM SaifulIslam

Global Journal of Computer Science and Technology, 2020

Data mining is one of the most essential tools for gathering information from different datasets in almost all recent industries. In this 21st-century, data mining gained attention because of its significance in decision making, and it has become a key component in various industries such as retail. Inventory management requires pre-planned goals and attention to detail, and prioritizing items that require less attention can be a waste of time and resources. Learning indications about customers' shopping patterns by showing associations among various provides significant value in managing retail inventory. In the present research paper, popular data mining techniques have been applied and analyzed for multi-item inventory management in retail sales stores to show how data mining techniques can optimize and organize the retail inventory.

Author:Puppala Sridhar, CR Vishnu, R Sridharan

Inventory management has become a key factor in today's world of uncertainty, particularly in the retail sector. Accordingly, there is a high requirement of managing and controlling the inventory with appropriate policies to elevate the organization's performance. In fact, a proper system has to be implemented for monitoring customer demand. This system will, in turn, assist in maintaining the right level of inventory. In this direction, the present research focuses on a retail store and explores a solution for an inventory-related problem experienced by the firm. A simulation model is developed and run for particular merchandise using Arena simulation software. Rigorous experimentation is conducted with the model by altering the inputs/model characteristics, and a more effective system is proposed. Compared with the existing traditional inventory management system, the proposed system will reduce the inventory level by 40% and lost sales by 87%. Furthermore, the proposed system is optimized using the OptQuest module in Arena simulation software. As a result, the inventory level is further reduced by 73% compared to the existing system. Store managers in various organizations may utilize the proposed methodology for improving their inventory management system.

Author:GarimaMakkar

Data Management, Analytics and Innovation, 529-542, 2020

Be it a retailer, producer, or supplier, the weather has a substantial effect on each one of them. Climate variability and weather patterns have become critical success factors in retail these days. As a matter of fact, weather forecasting has become a $3 billion business now. One of the main reason behind this surge is the capability of the forecasters to sell weather-related information to businesses who then strategize their various decisions regarding inventory, marketing, advertising, etc. accordingly. Hence only those retailers who stay "ahead of the game" will be able to enjoy huge sales while others who do not would face the consequences. Various studies regarding change in consumer behavior occurring due to the change in weather conditions have shown that even a degree change in temperature affects the store's traffic and reflect the growing importance of predictive analytics in this domain. However, these studies incorporate only the historical weather statistics into account. In this paper, we will propose our methodology for footfall analytics to see how the changes in weather conditions will impact the retail store's traffic and thereby retailing value chain, using real-time weather forecasts and footfall data. This analysis provides a platform for retailers to make evidence-driven decisions and strategize their business plan which would help them to deepen the customer involvement and to get efficiency in the planning process.

Author: NehaVerma, Dheeraj Malhotra, Jatinder Singh

Journal of Management Analytics 7 (3), 424-442, 2020

Presently, retailing has changed its face from unordered stacked traditional stores to beautifully decorated and appropriately managed merchandise stores or shopping malls with excellent ambiance and comfort. Therefore, these stores try to accommodate all needed items for daily use or rarely required items under the same roof. However, the primary challenge for today's retailer is that the modern customer is quality and brands conscious as well as compare for services provided to them by different outlets at the comfort of home with a single click. Therefore, customers prefer to purchase from E-Commerce websites instead of physically visiting a retail store, which leads to the downfall in the sales of retailers which become a serious threat to them. Therefore, retailers are required to work sincerely towards their customer expectations by providing all their needed goods under the same roof. Therefore, the objective of this paper is to assist retail business owners to recognize the purchasing needs of their customers and hence to entice customers to physical retail stores away from competitor E-Commerce websites. This paper employs a systematic

research methodology based on association rule mining deployed over Map-Reduce based Apriori association mining and Hadoop based intelligent cloud architecture to determine useful buying patterns from purchase history of previous customers, in order to assist retail business owners. The finding acknowledges that the traditional mining algorithms have not progressed to support big data analysis as required by current retail businesses owners. The job of finding unknown association rules from big data requires a lot of resources such as memory and processing engines. Moreover, traditional mining systems are inadequate to provide support for partial failure support, extensibility, scalability etc. Therefore, this study aims to implement and develop MapReduce based Apriori (MR-Apriori) algorithm in the form of Intelligent Retail Mining Tool i.e. IRM Tool to recognize all these concerns in an efficient manner. The proposed system adequately satisfy all significant requisites anticipated from modern Big Data processing systems such as scalability, fault tolerance, partial failure support etc. Finally, this study experimentally verifies the effectiveness of the proposed algorithm.

Author: Geert-Jan van Houtum, Jan A Van Mieghem

Manufacturing & Service Operations Management 22 (1), 36-46, 2020

We present a reproducible, objective review of research trends using text mining and citations of papers published in Manufacturing & Service Operations Management during its first 20 years whose abstracts or keywords contain capacity or inventory. The review is followed by our subjective projections on future research opportunities.

Author:Larissa Janssen, Jürgen Sauer, Thorsten Claus, Uwe Nehls

Computers & Industrial Engineering 118, 9-22, 2018

The food waste in grocery retail is a worldwide problem. Many mathematical inventory models for perishable items do not have a closing day's constraint, although the age of perishable items also increases on closing days in grocery stores. We develop a new age-based inventory model with a closing day's constraint. This stochastic multi-item inventory model includes total stock capacity constraints, a positive lead time, a periodic inventory control, a target customer service level and mixed FIFO and LIFO issuing policies for perishable items with a fixed lifetime under a non-stationary random demand. We show in a comparative simulation study under a rolling planning that the closing day's constraint improves order decisions and reduces waste quantities and costs in grocery stores.

Author: Roberta Sirovich, Giuseppe Craparotta, Elena Marocco

Artificial Intelligence for Fashion Industry in the Big Data Era, 173-195, 2018

Retail stock allocation is crucial but challenging. The authors developed an innovative solution, successfully tested in the context of high-end fashion: collaboration between artificial intelligence and human intuition. Each week, stores are assigned a budget based on current stock levels versus potential sales, and offered to "spend" this budget with an initial data-driven recommendation on which SKU/sizes order and release. Each store manager is then given a time window, so she can modify the proposal while respecting budget constraints; and finally, the artificial intelligence optimally allocates available stock to requests based on the expected likelihood of sale minus cost of logistics, subject to management-defined constraints. Our test showed how this system outperformed the control group of stores, relying on a traditional head office-driven allocation without direct human input. The retailer boosted sales, demand cover, and stock rotation performance: an estimated 1M EUR margin/month positive impact. Moreover, the new system improved store managers morale through non-monetary incentive-driven empowerment.

Author:Mansoor Hussain, VijaydeepSiddharth, Sanjay Arya

Indian journal of public health 63 (3), 194, 2019

Background:

An efficient inventory control system would help optimize the use of resources and eventually help improve patient care.

Objectives:

The study aimed to find out the surgical consumables using always, better, and control (ABC) and vital, essential, and desirable (VED) technique as well as calculating the lead time of specific category A and vital surgical consumables.

Methods:

This was a descriptive, record-based study conducted from January to March 2016 in the surgical stores of the All India Institute of Medical Sciences, New Delhi.

Author: Jasmine Kaur, Vernika Arora, ShivaniBali

International journal of system assurance engineering and management 11 (5), 953-961, 2020

A nexus of technological advances and an increasingly competitive environment of the retail industry has taken the phrase, “Customer is the King” to a new tangent altogether. It has been observed how combination of technologies along with analytical concepts of video analytics, social media analytics, wireless analytics and smart vision systems on marketing concepts like market basket model, value-based customer segmentation, campaign planning, etc. can impact the customer satisfaction and reduce the customer churn rate. An effective amalgamative implementation of these concepts will help enhance customer satisfaction and help the retailers gain an edge in the competitive market environment. The aim of this paper is to understand the technological advancements along with the impact of data analytics in the retail sector and to capture and retain maximum customers by conceptualizing effective merchandising and marketing strategies.