Financial Modeling Based on Book Store Management

Dr.N. Baggyalakshmi, S. Monika Sri and Dr.R. Revathi

Abstract--- *The old billing software's used in supermarkets, will have a lot of manual work and they don't have the capacity to produce reports needed. The Billing software designed can generate a lot number of reports needed and there is no need of manual work. This billing software is a web application, it can store a lot of records in the database and the bar code scanner are also available. It's a user-friendly software which can be used for both wholesale and Retail. It has an unlimited storage and application can be used in both online and offline. Reports for billing can be generated by data wise or price wise.*

Keywords--- *Financial Model, Billing, Book Store Management.*

I. INTRODUCTION

The use of a computerised system has made the management of book distributors' transactions much easier, since this is one of the many complicated operations involved. Information grows exponentially as a result of the high demand for books in these cutthroat marketplaces. The bookstore needed current details about the customers who bought books or the vendors who sold them. Data collected from the Book House is essential for the bookshop's recording and storage needs.

The main function of a bookshop management system is to oversee the flow of goods into and out of the store. It also keeps track of money flowing into and going out of the Shop's account. The user's workload and paperwork will be reduced. So that we can cut down on paperwork and get back to customers quickly. Giving clients a smooth and quick transaction is our top priority. Any bookstore can use it to keep track of customer information and inventory levels. The purpose of this project is to address user requirements. Getting to know the customer's needs throughout the system development life cycle should be an outward process.

Financial modeling of a bookstore management would involve creating a Spreadsheet that summarizes the store's expenses and earnings. This would help in calculating the impact of future events or decisions on the store's financial performance.

II. LITERATURE REVIEW

Almeida-Filho et al [6] provides an analysis of the state-of-the-art in using MCDM/A for financial decision-making through the implementation of a systematic literature review (SLR) that aims to address a number of pertinent concerns in this area. It adds to the body of literature by classifying the issues addressed in the reviewed works and by confirming a number of pertinent research questions that make use of statistical techniques. As a result, this study analyzes the primary financial parameters and the MCDM/A techniques applied to financial decisions; it also identifies the issues addressed in the papers and lists the primary writers, journals, and financial domains that these models support. Other reviews are examined and literature before and after the sub-prime crisis is analyzed throughout the paper.

Sharma and Sharma [7] The collected data was cleaned, sorted, coded, and then subjected to additional analysis using SmartPLS software and the PLS-SEM approach. The study highlights the necessity of autonomous digital branding for startups and small enterprises. The study will also assist professionals in digital marketing in comprehending the variables that may influence small and startup companies' adoption patterns on digital platforms. While a lot of research has been done on digital marketing, little has been done on digital branding, which primarily focuses on techniques for brand identification and promotion. This research closes a knowledge vacuum in the field by examining pre-sales factors that influence startups' and small businesses' decisions to use digital branding platforms.

Ahmed et al [8] Excel, Rstudio, and VOSviewer were the three programs used to analyze the data and create a map of the countries, institutions, sources, papers, and authors that represent the most active scientific actors. The publishing trend we analyzed showed an upward trajectory beginning in 2015. We discovered that AI and ML are being used in a variety of fields, including big data analytics, blockchain, behavioral finance, oil price prediction, stock price prediction, bankruptcy prediction, and portfolio management. Furthermore, the literature was mostly contributed to by the United States, China, and the United Kingdom. Our findings give market players—particularly fintech and financial companies—useful advice on how to

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DOI: 10.9756/BIJIEMS/V13I1/BIJ23003

apply AI and ML to their decision-making.

Kaczmarzyk [9] The study focuses on three of the numerous methods that can be used to replicate a risk factor's probability distribution over an extended period of time. The conventional geometric Brownian motion using regularly distributed risk factor changes is contrasted with simulation-based methods in which the changes are randomly selected from an empirical probability distribution or a best-fitting distribution. The article discusses market risk factors that impact entrepreneurial activities of firms, such as currency exchange rates and commodities prices.

Yousefi et al [10] One of the most popular kinds of household batteries is the alkaline battery. The majority of nations do not recycle the billions of alkaline batteries that are used each year. This study defined an economic model based on cost-benefit analysis to assess the waste management status of alkaline batteries. Using this financial model, scenarios for enhancing the current state of affairs by combining battery waste reduction techniques and creating battery waste recycling facilities were compared. The findings indicated that every year, 24 tons of solid waste from three different sizes of alkaline batteries were landfilled, resulting in the environmental leakage of 4.52 tons of zinc. The economic benefits of recovering zinc from alkaline batteries.

III. Proposed Methodology

The goal of system design is to specify the components of a system so that it can meet specific needs. System data, modules, components, interfaces, and architecture are all part of this process. Systems engineering is the method by which a company or organization's unique demands and requirements are defined, developed, and designed to meet those demands.

Building requirements into a physical system design that meets client expectations is the next step after your organisation or company figures out what it requires. Whether you're interested in commercial solutions, custom creation, or a mix of the two will dictate how you approach system design. A methodical strategy for developing and constructing systems is essential in system design. Consideration of the entire infrastructure, including hardware, software, data, and storage methods, is essential for good system design.

For a system to function smoothly and coherently, a systemic approach is necessary. In order to consider all relevant system factors, either a Bottom-Up or Top-Down strategy is needed. For the purpose of expressing information and knowledge in a system structure specified by a consistent set of rules and definitions, designers utilise modelling languages. Graphical or textual modelling languages can be used to define the designs.

System design for Book store management system. ER diagram for book storemanagement system.

Entity Books

Name

The name is given here to uniquely identify the item. Easy to search whereverneeded.

Publisher

The publisher is important as it determines the quality of the product and peoplepreference for the brand.

Author

Who writes the book is fed here as to uniquely identify the book of choice.

Price

Price is mentioned here for a unit. which used to calculate the large no. of item.

Edition

Edition of the book is also mentioned as to know the latest version of the book.

Data Flow Diagram

A data flow diagram is a graphical representation of the process or system's information flow. Information flows through a number of sub-processes, including data stores, inputs, and outputs. Standardised symbols and terminology are used to build data flow diagrams, which explain multiple entities and their interactions.

DFD Level 0

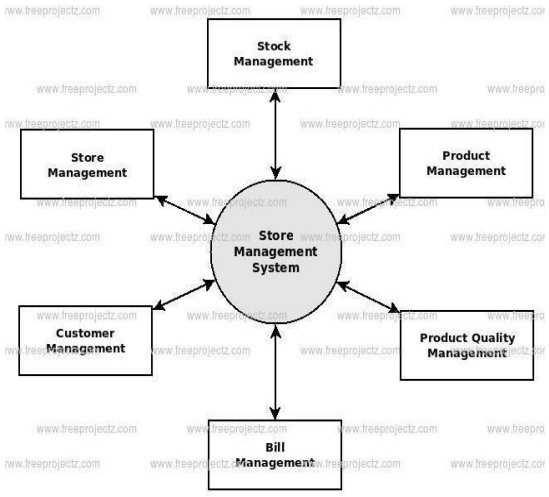

Figure 1: Data Flow Diagram Level-0

The Fig 1. describes the data flow diagram for the book store management module.

DFD Level -1

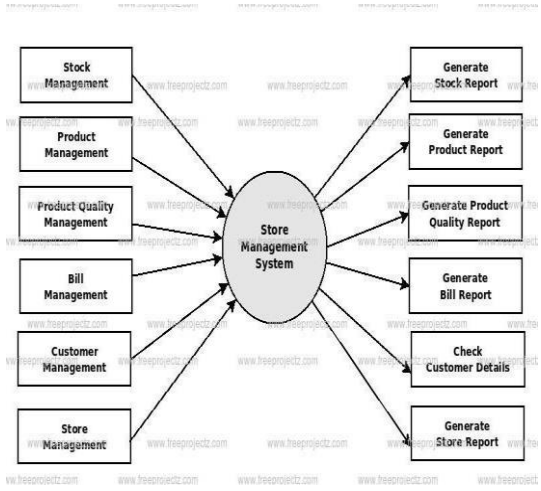

Figure 2: Data Flow Diagram level-1

The Fig 2 describes the data flow diagram for the various department of book storemanagement system

DFD Level - 2

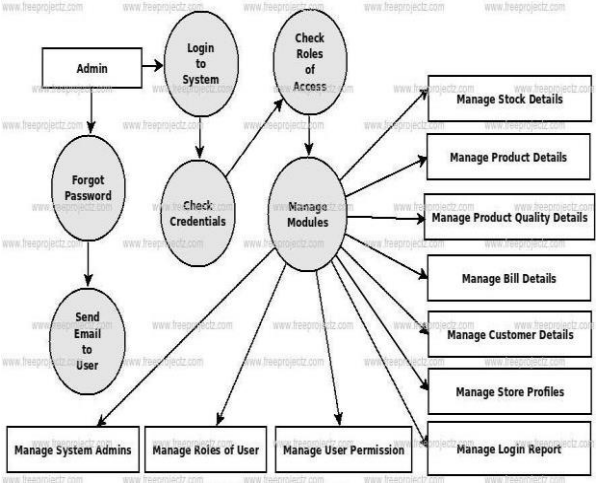

Figure 3: Data Flow Diagram

The Fig 3. describes the data flow diagram for the admin module of book storemanagement system.

Entity Relationship Diagram

An entity relationship diagram (ERD) is a type of diagram that shows how entities, such as people, objects, or concepts, relate to each other within a system or a database. ERD ‘s is most often used to design or debug relational databases in the field of software engineering, business information systems, education and research. ERD ‘s is important for creating and understanding database structure. They help database users findinformation and organize data by providing a map of connections and relationships.

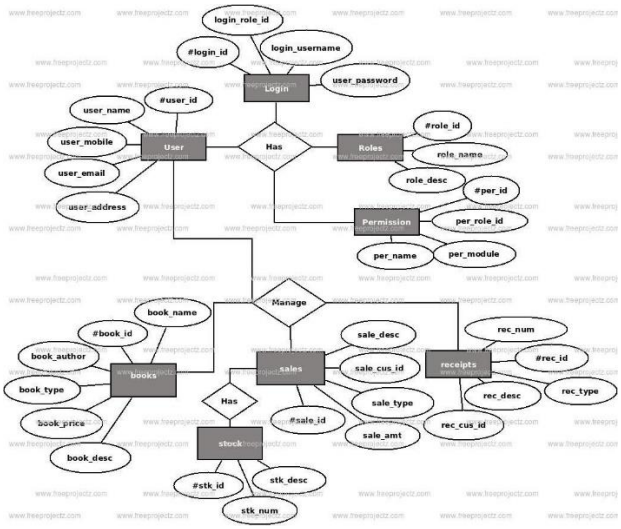

Figure 4: Entity Relationship Diagram of Book Store Management System

Activity Diagram

Like a flowchart or data flow diagram, an activity diagram graphically depicts a sequence of operations or the movement of control inside a system. In business process modelling, activity diagrams are commonly employed. Use case diagrams are another tool at their disposal. It is possible to model both sequential and concurrent activities.

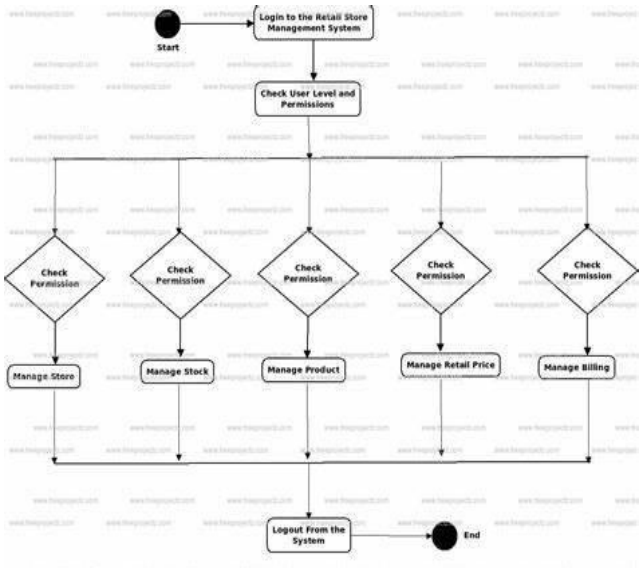

Figure 5: Activity Diagram for Book Store Management System

Use Case Diagram

One way to visually represent the many ways a user might engage with a system is through a use case diagram. Along with other kinds of diagrams, a use case diagram displays the system's many use cases and the numerous kinds of users it has. Circles or ellipses stand in for the use cases.

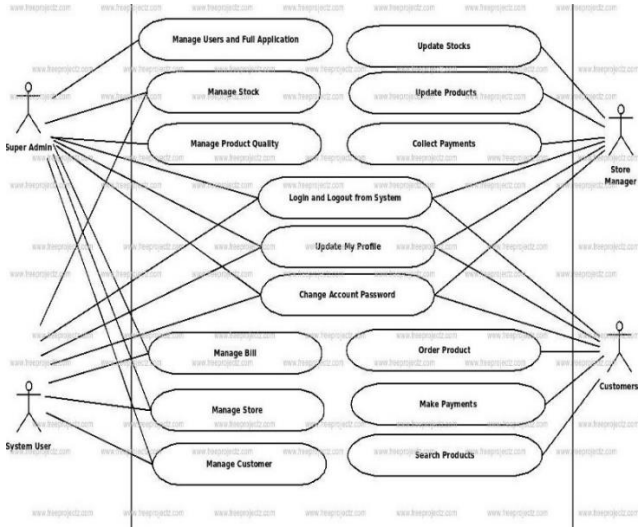

Figure 6: Use Case Diagram of Stationery Shop Management System

Module Description

The system is made of a combination of modules that work in collaboration witheach other and make it beneficial to accomplish the main aim of the system.

Book Module

This module allows book store staff to manage the book inventory by adding, editing, deleting, searching, sorting, filtering, and viewing book details such as title, author, publisher, genre, price, stock quantity, etc. It also allows staff to upload book images and view book ratings and reviews from customers.

Customer Module

This module allows book store staff to manage the customer information by adding, editing, deleting, searching, sorting, filtering, and viewing customer details such as name, email, phone number, address, etc. It also allows staff to view customer orders, payments, deliveries, feed backs, etc.

Order Module

This module allows book store customers to place orders online by selecting books from the catalog, adding them to the shopping cart, providing shipping details, and confirming the order. It also allows customers to view their order history, status, and invoice. It also allows book store staff to process orders by updating order status, generating invoices, and printing labels.

Payment Module

This module allows book store customers to pay for their orders online using various payment methods such as credit card, debit card, net banking, UPI, etc. It also allows book store staff to verify payments by checking payment status, receipts, and transactions. It also allows staff to issue refunds or cancel payments if needed.

Delivery Module

This module allows book store staff to manage the delivery of orders by assigning delivery agents, tracking delivery status, and updating delivery details. It also allows customers to track their delivery status online using tracking IDs or QR codes. It also allows staff to handle delivery issues such as delays, damages, returns, etc.

Report Module

This module allows book store owners to generate various reports and statisticsfor their business analysis and decision making. Some of the reports include sales report, inventory report, customer report, order report, payment report, delivery report, etc. The reports can be filtered by date range, category, status, etc. The reports can also be exported in various formats such as PDF, Excel, CSV, etc.

IV. System Analysis

Systems analysis entails researching a system in order to model it, examine it, and ultimately choose the best possible alternative, in this case an information system. There are three main drivers for starting a systems analysis project: issues, opportunities, and instructions.

methods analysis is looking at a process or company to figure out what it does and why, and then designing methods and processes to do it better. One alternative interpretation of system analysis is that it is a method for addressing problems by dissecting systems into its constituent elements and evaluating the degree to which those parts cooperate to achieve a common goal.

Integration with requirements analysis and operations research is a strong suit of system analysis. Furthermore, it is "an explicit formal inquiry carried out to help a decision maker identify a better course of action and make a better decision than they might otherwise have made."

Meaning "to put together" and "to take apart" in Greek, respectively, are the roots of the words analysis and synthesis. Math, logic, economics, and psychology are only a few of the numerous scientific fields that utilise these words to describe the same kinds of investigations. The process of analysis is "the procedure by which we break down an intellectual or substantial whole into parts," but synthesis is "the procedure by which we combine separate elements or components to form a coherent whole." Researchers in system analysis use methodology to the systems at play, culminating in a unified picture.

Any area that involves the creation of something new makes use of system analysis. As in system engineering, analysis can also refer to a set of interconnected parts that carry out biological processes. An multidisciplinary branch of engineering, system engineering examines the best practices for planning and executing large-scale engineering projects.

System Features

Hardware Requirement

The required system configuration for software development and software implementation is as follows. Hardware specification of the system that is used in this project is,

Table 1: Hardware Specification

Processor	Intel core.
Processor speed:	minimum.
16 HT z Ram	512MB
Hard disk	40 GB.
Monitor type	15’ inch color monitor.
Keyboard type	internet keyboard

Software Requirement

Table 2: Software Specification

Rating system	Windows 10
Front end	ASP.NET
Back end	Python Programming
Software	POS billing software

System Requirement of Book Store Management

- Now, this method is intended in such the way that it takes fewer resources to figureoutwork properly.
- The system wants a minimum of two GB of ram to run all the options sleek and Unforeseen.
- It wants a minimum 1.3 gigahertz processor to run sleek as else which will produceIssues.
- The system must be operated by some approved person as wrong hand will build ithappy-go-lucky.
- Rest is all up to the user’s usage can take care of hardware for security opposing anti-virus is suggested.
- The system is made properly and all the testing is done as per the requirements. So, the rest of the things depend on the user and no one can harm the data or the software if the proper care is done.
- All the attributes are working perfectly and if any error is found then it can be removed easily.

V. Results and Discussion

Data Design

CSV files are great for storing tabular data in plain text, which includes both numbers and text. Data records are contained on each line of the file. Multiple fields, separated by commas, make up each record. The name of this file format comes from the fact that it uses commas as field separators. Python includes a built-in module named CSV for handling CSV files.

The CSV module provides functionality to read from and write to CSV files. It also provides functionality to work with other delimited file formats such as TSV (tab- separated values) and pipe-separated values (PSV).

You can use the panda’s library to read CSV files into a Data Frame object. The Data Frame object is a two-dimensional table that can store data of different types (including strings, integers, and floating-point numbers). You can perform various operations on the Data Frame object such as filtering rows based on certain conditions, selecting specific columns, and merging multiple Data Frames.

When dealing with CSV files, programmatic manipulation is a breeze. You may open and operate with CSV files directly in any language that allows text files and string manipulation, such as Python. Utilising the Built-in CSV Library in Python for CSV File Parsing. Reading and writing to CSV files are both made possible by the CSV library.

CSV files are simple to modify by hand and can be read by humans. Both implementing and parsing CSV is a breeze. Almost every programme out there can read and write CSV files. A simple data structure is provided by CSV. Processing CSV files is quicker. In terms of size, CSV is less. Commonly used as a standard format is CSV.

Administrator

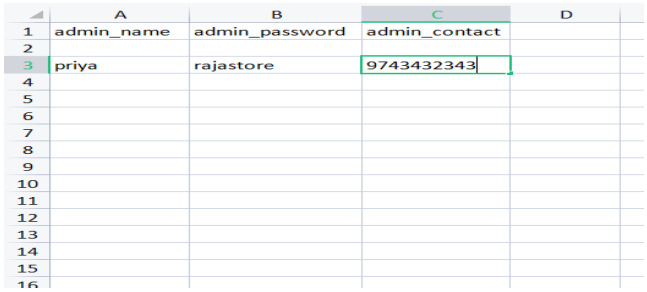

Figure 7: Administrator

Fig 7: The table consist of the following attributes: username, password, contact.

Supplier

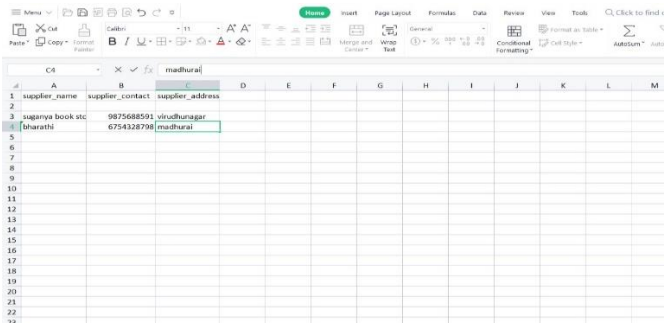

Figure 8: Supplier

Fig 8: The table consist of the following attributes: supplier name, Supplier contact, supplier address**.**

Customer

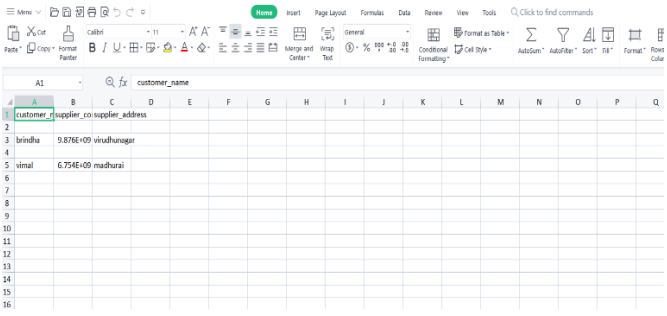

Figure 9: Customer

Fig 9: The table consist of the following attributes: customer name, customer contact, customeraddress.

Book Details

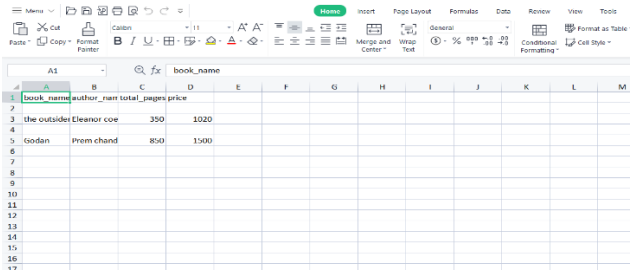

Figure 10. Book Details

Fig 10. The table consist of the following attributes: book name, author name, total pages, price.

Stock Table

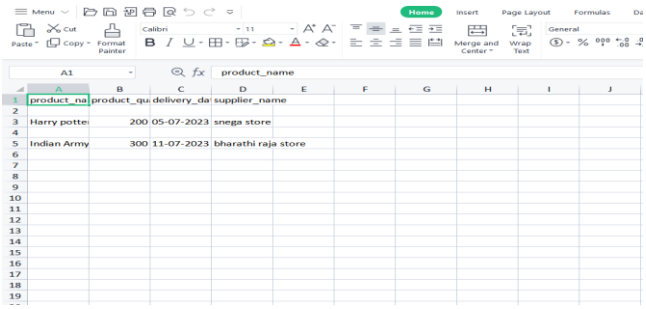

Figure 11: Product Details

Fig 11. The table consist of the following attributes: product name, product quantity, Deliverydate, supplier name.

Bar Chart Using Tableau

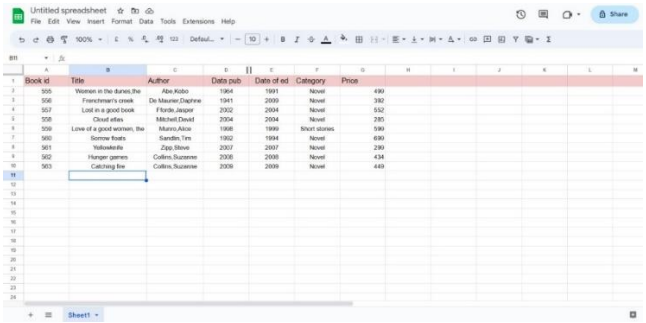

Figure 12: Book details

Fig 12. The table consist of the following attributes: book id, title, Author, date pub, date of ed,category, price.

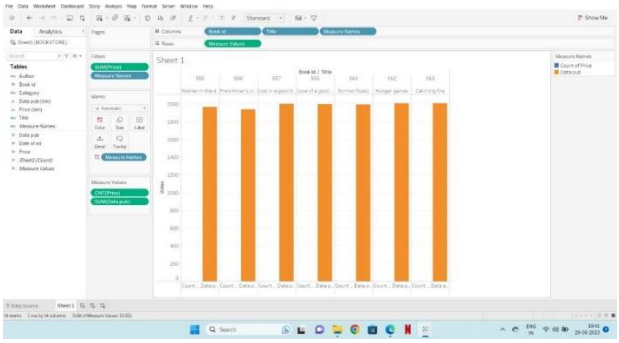

Figure 13: Book Store

Fig 13. The bar chart consists about the book store.

Line Chart Using Tableau

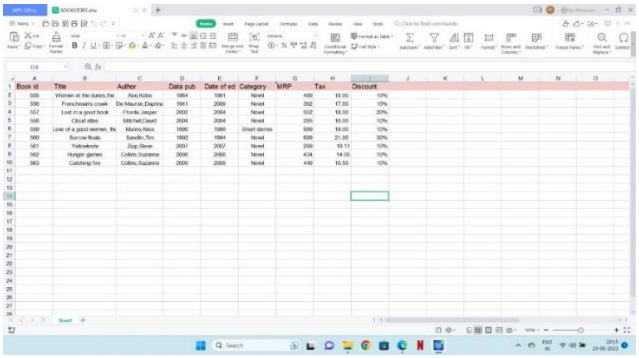

Figure 14: Book Attributes

Fig 14. The table consist of the following attributes: book id, title, Author, date pub, date of ed,category, MRP, tax, discount.

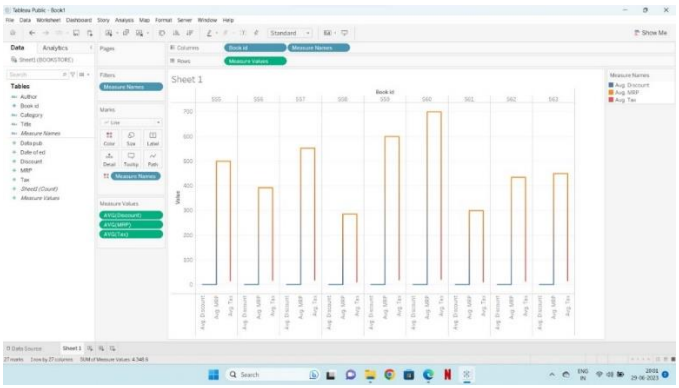

Figure 15: Line Chart for Book Store

Fig 15. The line chart consists about the book store

VI. Conclusion

In conclusion, financial modeling plays a crucial role in the effective management of a bookstore. By utilizing financial modeling techniques, bookstore owners and managers can make informed decisions, optimize their operations, and maximize profitability. Financial modeling helps in projecting and analyzing financial data, such as sales revenue, expenses, inventory turnover, and cash flow. By creating financial models, bookstore managers can forecast future performance, set realistic goals, and develop strategies to achieve them. Thus, I undergone the training and learn about the stationery shop managementsystem and about billing software and its usage. I learn how the web application works &its design in both back end and front end. I learn about both the existing system and its disadvantages. And I also learn about the present system and how the present system has brought a lot of changes and reduced man work.

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