Business Analytics for MSME E-Commerce Website

Charmy Darji, 2Parth Doshi, 3Somil Shah, 4Mrs. Ankita Kadu
1,2,3 Student, 4 Asst. Professor,
Dept. of Computer Engineering.
Universal College Of Engineering, Vasai, India.

Abstract- People have started shopping online for all their needs and necessities, this opens up endless opportunities for budding businesses to setup e-commerce stores and boost sales. To actually boost sales and beat the growing competition, managers need quality insights on how well the e-commerce store is doing. An efficient delivery of the analytics can prove beneficial to the managers to increase sales and grow the business, but the tools that provide these precious in-depth analytics can be very expensive and out of the budget of most MSME businesses. The proposed system finds a way to deliver meaningful insights to budding businesses in an efficient and easy to grasp format. This can help them monitor their growth, sales, users and the countries they have reached. The proposed system is inexpensive helping the small businesses that can- not afford the premium tools that come with a premium price tag.

Keywords: Analytics, Business Analysis, Statistics, Insights, Charts, Sales, Revenue, Growth.

INTRODUCTION

For any business, no matter how big or small, analytics of the business is highly important to its success. Statistics and insights of the business can bring potential buyers to your marketing funnel, where they can eventually become paying customers. Nowadays more and more users are shopping online for all their needs. This makes it imperative for managers to use advanced analytic solutions to beat their competition and grow their business to new heights. Since, an e-commerce store works online and there is no personal interaction with the customer, much data about their behavior to the products and the store is lost, but by using the proposed system the managers will get access to this lost information by creating analytics using the data collected by the algorithm. The algorithm creates these statistics by judging on the customers behavior towards the products and the website by monitoring certain parameters like the number of clicks and the status of their transaction, the sales of the products, the time spent on the website and the countries the visitors are from. These statistics are collected and transformed into meaningful analytics to present to the manager. With the help of our tool the whole process of analyzing and better targeting the potential buyer has become easier and it is the one stop solution for managers to get simple and meaningful statistics. [1]

The Business Analytics for MSME e-commerce websites is a web-based application which automates the process of analyzing all the products on the website with the help of Business Intelligence and Analytics together by estimating accurately whether a person will turn out to be profitable for the client company. It also provides an interactive interface to monitor the statistics of the potential customers that is estimated revenue, total number of visits on the website, Clicks on the website and Unique visitors. This tool represents the statistics and analysis on the charts, which is Monthly visitors (Bar Chart), Daily visitors (Line Chart), visitors (Log Chart), Visitors Location (Maps), Visitor Duration (Pie Chart), Revenue daily/monthly (Line Chart), Top products on the website, from where the users landed on the website. It also helps by suggesting which user can be a potential buyer and the target audience to improve the sales and the conversion rates. The proposed system will highly benefit upcoming businesses and make marketing an easier task, and will also help the company by lessening the cost spent by them on a huge analytics department. This tool basically gives you the insights of the website. [2]

HOW THE SYSTEM WORKS?

The system works by linking the script files of the algorithm to the e-commerce website that wants to track their progress and get analytics. The process first starts when a potential customer lands on the e-commerce store, the activity done by that particular customer is tracked by calling the linked scripts. The tracked data is then extracted and stored in the database. The manager can then visualize this data by logging into the dashboard. The data stored in the database is transformed into meaningful data visualizations like charts and graphs to make the information easy to grasp. The below figure 1 shows the working of the system:
LITERATURE SURVEY

Some of the following papers were considered for reviewing and proposing the system of Business Analytics For MSME E-Commerce Website. Table 1 shows the literature survey done for the proposed work.

<table>
<thead>
<tr>
<th>Sr No.</th>
<th>Year</th>
<th>Author</th>
<th>Title</th>
<th>Publication</th>
<th>Proposed Work</th>
<th>Research Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2019</td>
<td>Batool AlArmouty and Salam Fraihat</td>
<td>Data Analytics and Business Intelligence Framework for Stock Market Trading.</td>
<td>IEEE</td>
<td>A framework to help investors in making more efficient trading decisions.</td>
<td>There is no proper detail of how the data is going to be presented to the user.</td>
</tr>
<tr>
<td>3</td>
<td>2018</td>
<td>Francis M Manzira, Felix Bankole</td>
<td>Application of Social Media Analytics in the banking sector to drive growth and sustainability: A proposed integrated framework.</td>
<td>IEEE</td>
<td>An integrated framework is proposed to address the gap existing in literature.</td>
<td>No implementation of the integrated framework is done.</td>
</tr>
<tr>
<td>4</td>
<td>2018</td>
<td>Ruchi Sharma and Dr. Pravin Srinath</td>
<td>Business Intelligence using Machine Learning and Data Mining techniques-An analysis.</td>
<td>IEEE</td>
<td>Provides a taxonomy extracted for BI methodologies along with current application sectors.</td>
<td>The work is domain specific and may not be applicable to other application domains or subdomains and more research should be done.</td>
</tr>
</tbody>
</table>
PROPOSED SYSTEM

This part includes a brief description of the proposed system and the different modules and requirements needed for the Business Analytics for MSME e-commerce websites tool. This chapter will contain a detailed look into the working and process of work done including the specific requirements software and hardware. Different modules are used in the proposed system like: login/registration module, data collection module, Behavior analysis module, Verification module, Output module.

Login/Registration module

This is the first action when accessing the application, to make sure the user is authorized to use the application he/she must first login to the application using the unique id and the passkey. If the business hasn’t registered with the company then they must first buy a package of their choice and then register themselves to access the features of the application.

Data Collection module

As soon as a new lead lands on the website, the lead is given a unique id and stored in the database. It’s I.P address, country, city, time spent, link clicked and other parameters are stored as well.

Analytics Module

All the data collected by the e-commerce website is compiled, then it is transformed into charts and graphs like bar charts, line charts and pie charts, to better visualize the data at hand. Different charts are created for different parameter tracked like the time spent, weekly/daily/monthly visitors, locations of the visitors etc.

Result module

All the demography and the statistics that are compiled by the tool are outputted in the form of graphs, tables, and charts. Displaying all the details through a user interface in an intelligible way helps the marketing managers/client to improve the reach of the campaign and invest the money in the right direction of marketing which helps them increase their share in profit.
SYSTEM ARCHITECTURE

Proposed system comprises of different components they are shown in the below figure 2:

![System Architecture Diagram]

Figure 2: System Architecture

**Client Connection**
The details of the leads are forwarded to the web servers for further actions. The web servers call the database to store the attributes of the leads to the database for further interaction. The web servers also work on the data to provide the success rates of the campaigns according to the leads.

**Web servers and databases**
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**Data and Statistical Analysis**
The marketing manager of the client-server is given a web interface to interact with the statistics for the leads. This includes many other features That track the I.P. addresses, the locations, the countries, the websites they have been directed from, the activities and actions on the website, the product status like (wish list, add to cart, buy now) and the time spent on the website. This helps the manager infer the progress and growth of the business buy statistical analysis.

**Graphical model**
All the characteristics of the data which is gained from the leads are processed from raw noisy data to valuable information fitted into graphical models. Variety of graphs and charts are used to make it easier to display the insights to the managers.

RESULT AND DISCUSSION

This section provides the snapshots of the proposed system and the outputs that are displayed to the user. The snapshots below showcases the implementation of the proposed system of a working and functional e-commerce website to store and display insights.

**Sample Client E-commerce Website Page:** The below figure 3 is the client website page where the users will land from different platforms and our tracking algorithm will track user details for the client. This is an e-commerce website where an user can buy products.
Figure 3: Sample Client E-commerce Website Page

**Dashboard of our system:** In the below figures, it shows different graphs and charts of the analysis i.e. User from different countries, site visit stats, earnings overview, revenue sources, returning visitors, time spent on the website and raw status.

Figure 4: Dashboard 1
Figure 6: Dashboard 3
Comparison with the existing system:

The current system displays the demographics well but there are other issues with the existing system. The issues related to the inaccuracy of the data, that is the current system uses data sampling where there are large number of values involved which is not the case in our system we do precise calculations so that there is no inaccuracy and it benefits the client. The other issue is related to data ownership, the existing system uses the data further for their advertising module and does not gives the ownership of the data to the client whereas in our case the client is the sole owner of the data. It also displays the analytics of the client’s website and gives the output in the form of graphs and tables. Here are some of the snapshots of our proposed system with detail explanation.
CONCLUSION

The “Business Analytics For MSME E-Commerce Websites” system throughout conception, development has aimed at improving the efficiency and ease of the marketing process for the client company while being effective and innovative. The drawbacks of conventional systems have been reduced to minimum. Innovation on the existing system and technology has been achieved with functions that can be useful for different purposes. The leads that show interest in the business by the means of reverting time taken, time spent browsing the website, stage in the process of purchasing reached, purchases made, User countries, URL, reference, IP Address etc. The proposed system provides the client business analytics of his/her websites with total number of sales , revenues ,user details , etc in the form of charts and graphs to the marketing manager which makes the work easier and faster. We hope to help many small businesses grow to large proportions by marketing their products and services to the right audience and improve the sales. The main result of the proposed system is to eliminate the need to hire menial workers to track the progress of the marketing campaigns and find which sets of groups are doing good and which are doing not well. The proposed system reduces the work time and eliminates hours upon hours of tracking the leads. The proposed system is the most efficient form of automating the process.

REFERENCE


