

# DATA MINING AND KNOWLEDGE DISCOVERY

## RESEARCH PAPER ON AUTOMOBILE

<sup>1</sup>AKASH KUMAR, <sup>2</sup>MANISHA CHAUHAN, <sup>3</sup>SHIVAM PRATAP SINGH, <sup>4</sup>BINDU GARG

Department of Computer Engineering,  
Bharati Vidyapeeth Deemed To Be University, College of Engineering,  
Pune, Maharashtra, India

**Abstract:** Data Mining is a technique which provides people a method to manipulate and analyze large volume of data. Data mining technique is often used to find informative information which can be used later for future prediction or summarizing the details of the data. The data mining techniques are used in various areas such as marketing, medical and automobile industries. In this research paper a proposed data mining application in car manufacturing is explained and experimented clearly. The application demonstrate the capability of data mining techniques in providing important analysis such as launch analysis, slow turning analysis and feedback analysis. Such analysis help in providing car market with more accurate result and also helps in proper analysis of data.

### INTRODUCTION

The main aim of this research paper is to provide a proposed data mining solution that can be used for automotive market and many other areas. The solution can provide managers with important analysis such as launch analysis, slow turning analysis and customer feedback analysis. The use and benefits of these analyses will be identified and then explained clearly. A case study will be presented later in detail in order to demonstrate and check the capability of data mining techniques in the field of car manufacturing sectors. Such techniques will help manufacturers finding answers for different sorts of questions like: which vehicle models sell slowly and which one the faster? Which vehicle has a good built in quality and which has a ow quality? Which price for a certain model sells slower and which one is the faster?

Launch analysis will provide a clear picture for the comparison analysis between “what the customer wants” and “what supply is proved to the customer”.

### THEORETICAL FRAMING

It has been noted that the number of databases keeps on growing rapidly because of the availability of very powerful and affordable database management systems. Billions of databases is often used in business management, government administration, scientific and engineering data management, and many other different applications. This rapidly growing of data and databases has generated an urgent need for new techniques that can automatically transform the processed data into useful information and knowledge, which provide us with a very competitive advantage, working asset that delivers new revenue, and to enable them to better service ,retain their customers and to create a trust on the manufacturer.

Data mining application is basically used when there is boom in business datasets and accelerated changes in market. It provides powerful mechanism in decision making processes. Such tools can be used by different business user to analyze large amount of data and deduce a pattern through it. The best fit pattern is then obtained. Different classification schemes can be used to classify data mining technique in order to provide a suitable database for it.

A data mining process basically involves three tasks which are namely preprocessing, actual data mining and then post processing. During the preprocessing phase all the problems related to data mining and the sources of data is identified. From the accumulated data the subset of data is obtained. To ensure the good quality of data noise is removed, missing data is filled and then data id transformed to useful and meaningful information.

The data mining techniques is the combination of different techniques in order to transform data into a proper and informative dataset. In post-processing phase the knowledge is obtained from the those informative data and analyzed for better growth of the business.

Data Mining techniques which are used in business development is known as Business Intelligence (BI). Business Intelligence is a general term which means all the process and techniques which is used to analyze the data and the purpose supporting the users to make better decision. The measure of Business Intelligence (BI) is the amount of knowledge derived from the data. The main challenge is met with ability to find the pattern and trends.

### A PROPOSED DATA MINING APPLICATION IN AUTOMOTIVE MANUFACTURING

Automotive manufacturing does not interact with the consumers directly yet a fundamental understanding is essential for the consumer to know the motion, trends and mood of the market. The information gathered to produce a automotive data mining solution are listed below:-

- It deals with sales, inventory, orders and complete production plan.

- It deals with manufacturing information packages and descriptions.
- Complete marketing information of dealers and business centers.
- It deals with customer trend information like websites, android application and IOS application.

A data warehouse is built to hold different types of data like web data, car demand data and sales data for better understanding and analyzing car sales managing and planning car production. Sales and Marketing managers are interested in managing the complete process in order to fulfill all the required goals and objectives. Managers create an analytic environment that will improve their ability to support planning, inventory management, incentives management, and ultimately production planning to help them meet a better decision making process which is supported by informative data and the new trends.

Having a data warehouse enables offline as well as online access of data for decision making process or it is a strategic approach to increase the sales demand of the company and to increase the mix planning of the company. It also helps the managers to track which vehicle stays in stock for longer time and which one gets over immediately to ensure that there is no shortage in the industry. We have different analysis methods which are listed below:-

- **Launch Analysis**

The basic idea of launch analysis is to make a web activity in which the customer draws their own car model using the website provided and then the manufacturer looks towards the interest of the customer and compares it with their own production plan. The dealer analyzes the complete request of the customer and ensures that there must be good production so that the requirement of the customer is fulfilled in short duration of time. So this analysis allows the Brand Manager to have an early indication of customer future demand. This analysis requires integration of various data from data warehouse.

This analysis provides with important knowledge about the following things:-

- What the customer wants in the newly launched vehicles.
- Comparison analysis on what the customer actually wants and what he gets.

- **Slow Turn Analysis**

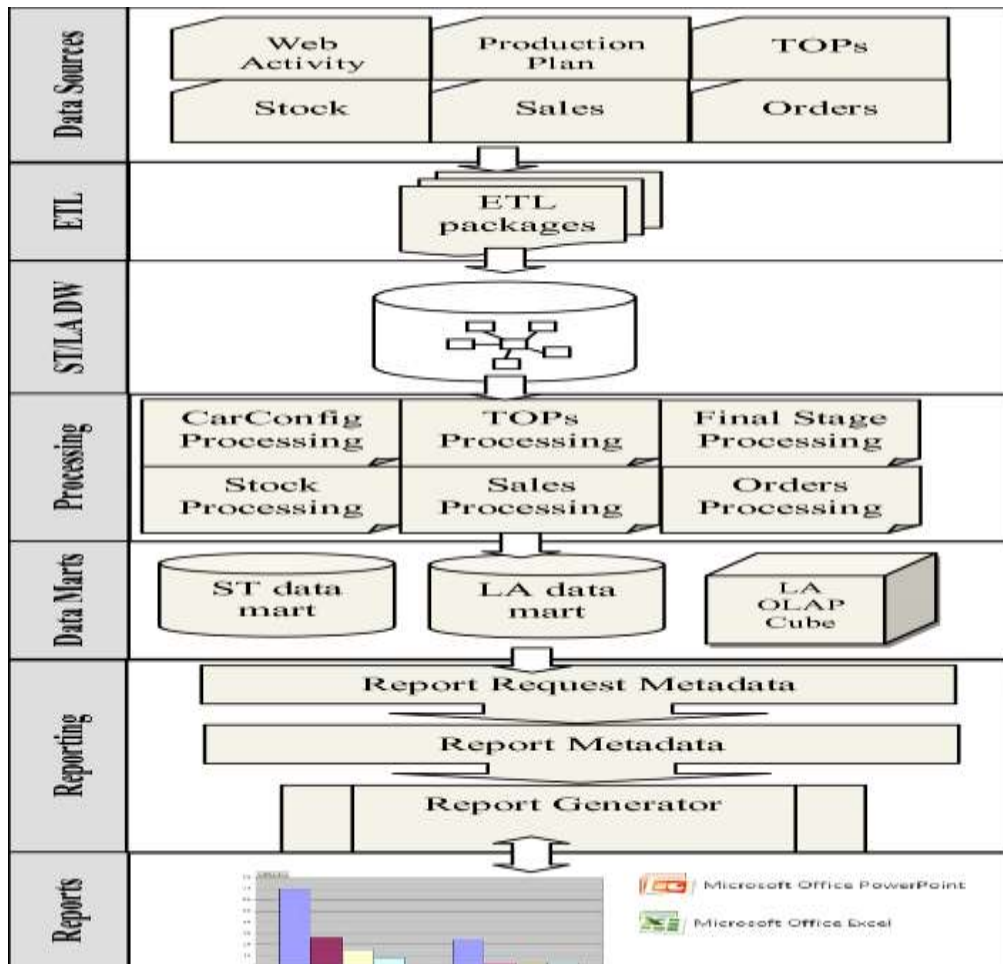
This analysis aims on the vehicles which do not sell in the fast way in order to check what the demerit is in the respective vehicle which leads to slow turn. Slow Turn analysis basically checks which vehicles sell slower? Which body type and which model sell slower?

- **Solution Overview**

The data mining solution starts by processing sales data, order data, order data and web data and these data are stored in a warehouse known as "Vehicle Demand Data Warehouse". These data are used for better analyzing and predicting car sales and planning car production.

The following steps are providing the slow turn and launch analysis:-

- Proper validation of data source.
- Extract, Transform and Load sources to data warehouse.
- Processing the Warehouse.
- Building the required OLAP cubes.
- Generating the informative reports.
- Finally delivering the analysis.



**CONCLUSIONS AND FUTURE WORKS**

A proper survey on data mining technique is developed in car market area. Classification of different data mining techniques was also provided. Based on the kind of database to be mined the knowledge was discovered and different techniques was adopted in gaining those knowledge. Demonstration of different analysis like Launch analysis and slow turning analysis is also done properly.

Future works that can be done are:-

- Market demand forecasting.
- Incentive effectiveness analysis.
- Market Segmentation.
- Optimizing on line interaction culture.

**References**

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