

**Volume 10, Issue 2 (IX)**

**April - June 2023**

**ISSN: 2394 – 7780**



**International Journal of  
Advance and Innovative Research**

**Indian Academicians and Researchers Association**  
[www.iaraedu.com](http://www.iaraedu.com)



Scientific Journal Impact Factor

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**International Journal of Advance & Innovative Research**  
**(ISSN: 2394-7780)**

The Journal has been positively evaluated in the SJIF Journals Master List evaluation process  
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**DATA MINING AND KNOWLEDGE MANAGEMENT FOR MARKETING****Mithilesh Chauhan and Raveena Shetty**

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**ABSTRACT**

*This paper aims to highlight the importance of utilizing data management and data mining in making informed marketing decisions. It explores how data mining techniques and tools can uncover hidden purchase patterns, enabling marketers to make better decisions. In particular, data management and data mining are particularly beneficial for organizations with large-scale purchase transactions, as they can help to increase profits through better decision-making. Furthermore, this paper demonstrates how data management and data mining can be used to provide better insights from vast amounts of customer data and purchase transactions.*

*Keywords: Information, Data mining, CRM, Marketing decisions, Hidden insights*

**INTRODUCTION**

As businesses collect vast amounts of data related to customers and purchase transactions, information management and data mining have become increasingly important for making effective marketing decisions. Data mining can uncover hidden purchase patterns and provide valuable insights that can inform marketing strategies. However, marketing decisions are becoming more complex due to the evolving business environment and societal factors. Standardized tools and methods, including data mining, can help marketers make more accurate decisions.

**RESEARCH METHOD**

This paper includes a review of literature on marketing, data mining, knowledge management, and customer relationship management. Its aim is to establish a framework to identify the key factors required to make effective marketing decisions. The review's findings are presented to offer insights to assist marketers in achieving their objectives.

**DATA MINING TOOLS AND TECHNIQUES**

The importance of data mining methods lies in their ability to extract valuable and hidden information from large databases, which would be difficult for an individual to analyze manually. These tools and techniques can be used to improve decision-making processes in various areas, including marketing. For example, data mining can provide useful information from old data, such as the best time to promote a product and the best media to use for advertising.

The data mining process is complex and iterative, often requiring multiple feedback loops and repetition of the entire process. It involves various phases from problem definition to deployment.

Data mining tools and techniques generally deal with data stored in data warehousing. There are different modeling techniques used to design data warehousing, including layered modeling methods that organize data into two types of tables: fact tables and dimension tables.

**KNOWLEDGE, INFORMATION AND DATA**

Understanding the differences between data, information, and knowledge is crucial for understanding information management. Facts are referred to as data, which can be expressed as text or numbers. Information is created when linked and ordered data are combined. To make information easier to understand, it might be displayed graphically.

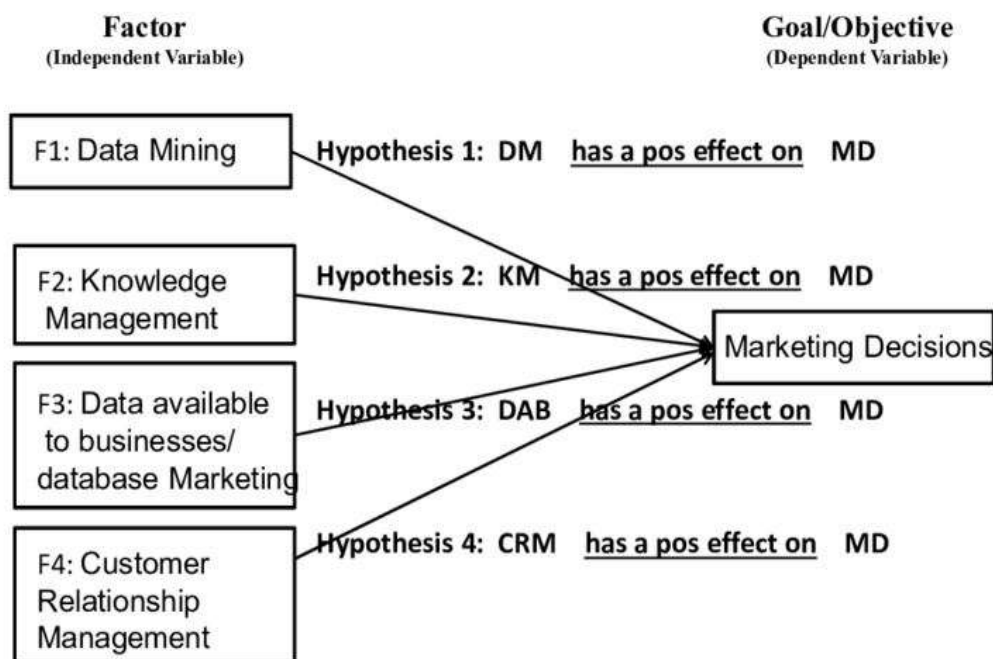
Using accessible data to support a company in achieving its goals and objectives is the practice of information management. Marketers should use knowledge management to help them make better decisions now that businesses are aware of its value.

**DATA MINING AND KNOWLEDGE MANAGEMENT TECHNIQUES AND TOOLS**

Data Mining (DM) is a combination of databases and (AI) artificial intelligent used to provide useful information to the users which will help them to make better decisions. It is usually used as a decision support system which could be used in different areas including marketing.

**IMPORTANT FACTORS EFFECTING MARKETING DECISIONS**

Model Name: Important Factors effecting Marketing Decisions



**Fig.** Important Factors effecting Marketing Decisions

**Model Name: Important Factors effecting Marketing Decision**

**EXPLANATION AND DISCUSSION**

The model shows the goal which is marketing decision and the main factors that make up the decision. It also shows that all the factors have positive effect on making marketing decision.

**GOAL (MARKETING DECISIONS)**

Marketing choices are essential for any firm to enhance profitability, according to Greene (1960). In our perspective, businesses can increase their profitability by making smart marketing choices. Data mining techniques can help marketers make wise selections in difficult situations due to the increasing complexity of daily transactions and reliance on demographic data. We also concur that standardizing marketing decisions might make them easier to make.

**FACTOR 1 (DATA MINING)**

According to Shaw et al. (2011), information mining plays a crucial role in various fields, including predicting and supporting management decisions. Bora (2011) also highlighted the importance of data mining tools for decision-making. Guozheng et al. (2008) stated that data mining can be applied to various areas, including marketing, while Ding (2010) emphasized the significant role of data mining in improving marketing.

In our opinion, the vast amount of customer data available today highlights the need for technologies such as data mining techniques to extract valuable information.

**FACTOR 2 (KNOWLEDGE MANAGEMENT)**

Shaw et al. (2011) assert that information mining is essential in several areas, including decision-making support and prediction. The significance of data mining techniques for decision-making was further stressed by Bora (2011). Data mining may be used in many fields, including marketing, according to Guozheng et al. (2008), and Ding (2010) highlighted the crucial part data mining plays in enhancing marketing.

According to us, the enormous volume of customer data currently available emphasises the need for technology like data mining methods to extract useful information.

**FACTOR 3 (DATA AVAILABLE TO BUSINESSES/DATABASE MARKETING)**

Marketing decisions heavily rely on the information available to advertisers, which is used to identify targets and create customer profiles. According to Davis (1997), data also helps improve customer relationships, which in turn can enhance marketing decisions. In our opinion, data is the foundation of marketing decisions, and the



use of available data can help identify patterns and make appropriate decisions based on past data and statistics. Moreover, maintaining customer relationships through the use of available data can help retain customers and create a loyal customer base.

**FACTOR 4**

By offering individual product profiles, advertisers may target the correct consumers. Additionally, CRM encourages the usage of client data that can be distributed around various organisational departments. In order to target the proper demographic and make more accurate selections, advertising might benefit from maintaining long-term customer connections. We concur that IT should embrace CRM for greater accuracy, which could result in the development of more solutions to support customer relationship management. By measuring and analysing client satisfaction, these tools help enhance the process.

**IMPORTANCE OF MODEL/RESEARCH OUTCOME**

The model that was developed highlights the crucial factors that positively influence marketing decisions, particularly data mining and data management. We have chosen credit cards as the product that is usually heavily marketed by credit card vendors to attract more customers. They use various means such as phone calls and advertisements across different media to increase sales. By utilizing the star schema design concept. We assume that the credit card sales have a fact table which is the credit card sales table and four-dimension tables which are time, location, sales representative, and card type.

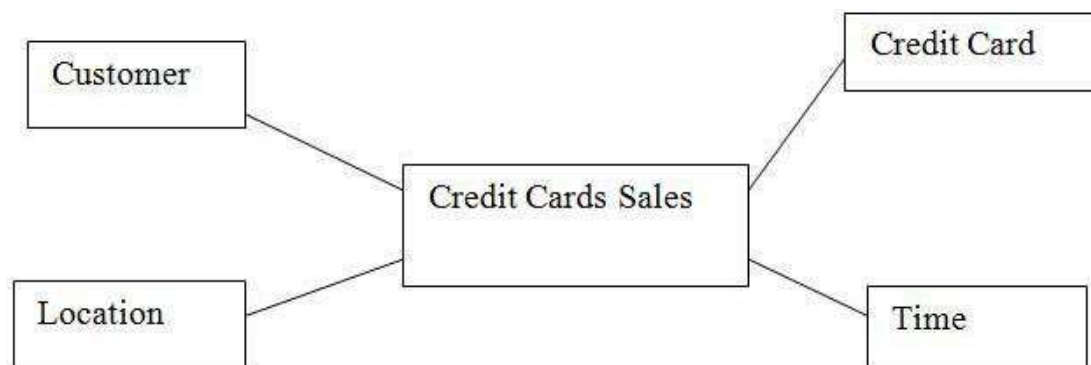
**CREDIT CARD SALES COMPETITION**

In the market, there are numerous charge cards with varying loan fees offered by different guarantors and merchants. This has created intense competition among the sellers, and they are offering various types of charge cards with unique benefits to attract customers. However, the wide range of cards and vendors has made it challenging for the sellers to reach their target customers, and marketing this product has become even more difficult.

**DATA MINING AND WAREHOUSING**

A data warehouse must be built to enable merchants to employ data mining techniques in order to use them to boost credit card sales. The merchant should gather and maintain all customer and credit card information from its databases and other sources in the data warehouse repository. We suggest a layout for a data warehouse that any credit card merchant can utilise to implement data mining strategies. The data warehouse keeps records of both past and present information on customers and credit cards, including details about customers, credit cards, times, locations, and previous employees who have sold and promoted credit cards.

**PROPOSED DESIGN**



**PROPOSED RESULTS**

This proposed design will help the credit cards marketers to take better decisions and target the right customers. Applying the data mining techniques using that design will help to give better answers for better decisions made by marketers.

**For Example:**

What was the most accepted credit card offer by high income customers last year?

What credit cards are the most preferred by low-income customers?

What credit cards are the most preferred by customers in general?

What was the most requested credit card last month?

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**CONCLUSION**

As the number of daily purchase transactions made by a large number of customers increases, the use of data management and data mining techniques and tools has become crucial for supporting marketing decisions. The proposed model suggests that the use of data mining techniques and tools can increase profitability. Credit card merchants typically engage in a lot of marketing to increase their customer base. They target specific individuals through various forms of media and communication channels to increase sales. The suggested results indicate that marketers can gain better insights into important questions, which can help them to target the right customers and improve their marketing efforts.

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