

# Product Marketing Improvement Using Big Data Analysis

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**Abstract**—This paper present a big data technologies to helps marketing executives to more clearly define ideal customers, improve customer retention and loyalty, improved content marketing and competitor analysis to yield maximum profit. Achieve marketing data from Sales campaigns, Advertising response, Demand and price realization, Research & Product Lifecycle Management (PLM) data. Financial business forecast data and Web site browsing pattern data also play an important role in achieving data. To a large extent, big data refers to the ever-increasing data deluge in terms of volume, variety, velocity and complexity that is being generated in today's digital eco-system. Big data sets are generated around customers based on their online purchases, web clicks, social media activities, smart connected devices, geo-location, etc. Using big data technologies and analytics methods, marketers can mine, combine and analyze both types of data in near real time.

**Index Terms**— Big data, Data mining, Knowledge management; Marketing decision support

## I. INTRODUCTION

In recent years, the advent of information technology has transformed the way marketing is done and how companies manage information about their customers. The availability of large volume of data on customers, made possible by new information technology tools, has created opportunities as well as challenges for businesses to leverage the data and gain competitive advantage. Using big data technologies and analytics methods, marketers can mine, combine and analyze both types of data in near real time. This can help them discover hidden patterns such as the way different groups of customers interact and how this leads to purchase decisions. Equipped with these insights, companies can then develop targeted marketing campaigns that cater to the customer's individual preference Monetizing big data for targeted dynamic advertisement: Data monetization creates opportunities for organizations with significant data volumes to leverage untapped or under-tapped information and create new sources of revenue. A number of forces are converging to create conditions ripe for data monetization. The volume and richness of the data now uniquely accessible to mobile providers whether in the form of transactions, inquiries, text messages or tweets. And even as mobile phones have become the primary device through which consumers get their information; those very same devices have begun to facilitate new types of information, including extremely precise, real-time, geo-location information. Due to the proliferation of information systems and technology, businesses increasingly have the capability to accumulate huge amounts of customer data in large databases. However, much of the useful marketing insights into customer characteristics and their purchase patterns are largely hidden and untapped. Current emphasis on customer relationship management makes the marketing function an ideal application area to greatly benefit from the use of data mining tools for decision support. A systematic methodology that uses data mining and knowledge management techniques is proposed to manage the marketing knowledge and support marketing decisions.

## II CURRENT OPPORTUNITIES FOR DATA MINING

### Marketing / Retail:

Data mining helps marketing companies build models based on historical data to predict who will respond to the new marketing campaigns such as direct mail, online marketing campaign...etc. Through the results, marketers will have appropriate approach to sell profitable products to targeted customers. Data mining brings a lot of benefits to retail companies in the same way as marketing. Through market basket analysis, a store can have an appropriate production arrangement in a way that customers can buy frequent buying products together with pleasant. In addition, it also helps the retail companies offer certain discounts for particular products that will attract more customers.

### Finance / Banking:

Data mining gives financial institutions information about loan information and credit reporting. By building a model from historical customer's data, the bank and financial institution can determine good and bad loans. In addition, data mining helps banks detect fraudulent credit card transactions to protect credit card's owner.

### Manufacturing:

By applying data mining in operational engineering data, manufacturers can detect faulty equipments and determine optimal control parameters. For example semi-conductor manufacturers has a challenge that even the conditions of manufacturing

environments at different wafer production plants are similar, the quality of wafer are lot the same and some for unknown reasons even has defects. Data mining has been applying to determine the ranges of control parameters that lead to the production of golden wafer. Then those optimal control parameters are used to manufacture wafers with desired quality.

#### Governments:

Data mining helps government agency by digging and analyzing records of financial transaction to build patterns that can detect money laundering or criminal activities.

### III. PROPOSED SYSTEM

Big Data, as more businesses are accepting that data is critical for decision-making, we continue to see the systems that support non-relational or unstructured forms of data, as well as massive data volumes, are maturing to operate well inside of Enterprise IT systems. We are introducing a different version of big data analysis on product marketing improvement by collecting the data from the online shopping sites and browser cache. By analyzing the data using data extraction, transformation and loading into data storage, then processes the data using visualization and graphical representation tools like Tableau, Qlikview, Tibco-spotfire. The main goal of the project is achieved using the data discovery methods such as correlation, causation and 'what if'. These methods are used to implement the product marketing improvement using big data analysis to improve the profit and make the business runs efficiently.

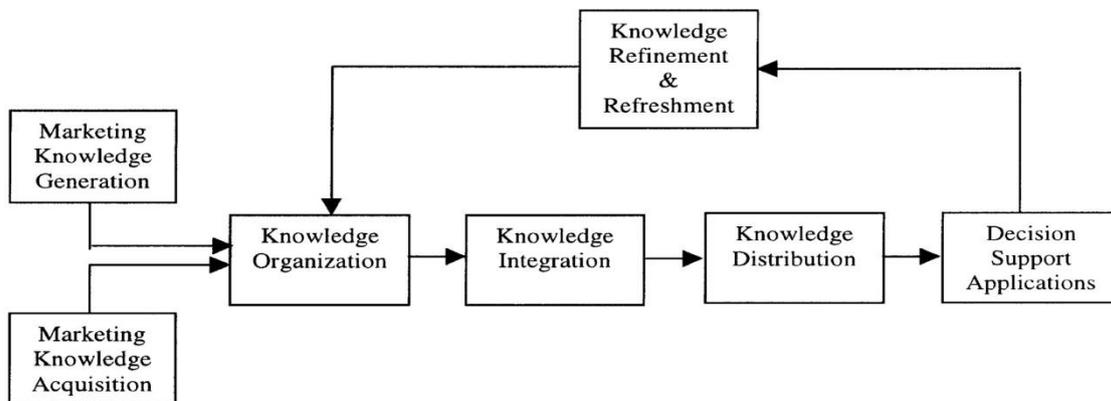


Fig 3.1 Basic Block Diagram of Proposed System

#### Tableau:

Make powerful data visualizations using any data. It is very Fast and easy. Interactive data visualizations and dashboards. Works with hundreds of data sources

#### QLIK VIEW :

Guide controlled explorations of dynamic data sets toward deeper discovery. Lets you build a custom app in a QlikView scripting environment. Available on your desktop or server.

#### Tibco -Spotfire :

Spotfire brings the power of visualization-based data discovery to everyone in your organization - department managers, individual contributors, top execs - everyone. With Spotfire, you can instantly visualize, interact with, and share data so you can spot opportunities and risks buried in the data before anyone else. All without having to ask IT for help.

#### Advantages of proposed system

The proposed system is intended to avoid all the drawbacks of existing system. It will add some more features than the existing system. The proposed system is a cost effective way of doing the manual processes done in the existing system.

- Improving profit processes: The inconsistency in capacity and quality could attract regulatory attention.
- Custom product design: Able to analyze the behavior of repeat customers. The outcome is critical to understanding how to deliver goods in a timely and profitable manner.
- Better quality assurance: For predictive analytics Intel was able to significantly reduce the number of tests required for quality assurance.
- Managing supply chain risk: To reduce risk in delivery of materials, no matter what happens in the supply chain, Predictive analytics allow the company to calculate the probabilities of delays

- Understanding and targeting customer: This is one of the biggest and most publicized areas of big data use today .It helps used to better understand customer and their behavior and preference

#### IV. FEATURES

- **Automated prediction of trends and behaviors:**

Data mining automates the process of finding predictive information in large databases. Questions that traditionally required extensive hands-on analysis can now be answered directly from the data quickly. A typical example of a predictive problem is targeted marketing. Data mining uses data on past promotional mailings to identify the targets most likely to maximize return on investment in future mailings. Other predictive problems include forecasting bankruptcy and other forms of default, and identifying segments of a population likely to respond similarly to given events.

- **Automated discovery of previously unknown patterns:**

Data mining tools sweep through databases and identify previously hidden patterns in one step. An example of pattern discovery is the analysis of retail sales data to identify seemingly unrelated products that are often purchased together. Other pattern discovery problems include detecting fraudulent credit card transactions and identifying anomalous data that could represent data entry keying errors. Data mining techniques can yield the benefits of automation on existing software and hardware platforms, and can be implemented on new systems as existing platforms are upgraded and new products developed. When data mining tools are implemented on high performance parallel processing systems, they can analyze massive databases in minutes. Faster processing means that users can automatically experiment with more models to understand complex data. High speed makes it practical for users to analyze huge quantities of data. Larger databases, in turn, yield improved predictions.

- **Research challenges in marketing knowledge management**

One of the research challenges is to make this process more structured and thus improve the productivity of the data mining efforts. A second challenge is to manage knowledge that crosses organizational boundaries and is distributed across supply chain partners. Customer knowledge is typically distributed across supply chain partners, and marketing is an important beneficiary of this knowledge. But, managing the cross-organizational knowledge requires organizational and industry level efforts. The key research issues are the development of appropriate inter-organizational knowledge management models, protection of knowledge rights and distribution of knowledge benefits among partners. A third challenge for knowledge management re-search is multiple classifications, a situation in which customers can belong to more than one category. In the current customer-centric business environment, it is our firm belief that there is a need for deeper understanding of use of data mining and knowledge management for marketing decision support .

#### V. RESULTS AND DISCUSSIONS

Marketing decisions, such as promotions, distribution channels and advertising media, based on traditional segmentation approaches result in poor response rate and increased cost. Today's customers have such varied tastes and preferences that it is not possible to group them into large homogenous populations to develop marketing strategies. In fact, each customer wants to be served according to her individual and unique needs. Database marketing, characterized by marketing strategies based on the great deal of information available from the transaction databases and customer databases became popular w14x and most organizations have built up massive databases about their customers and their purchase transactions. But, due to lack of appropriate tools and techniques to analyze these huge databases, a wealth of customer information and buying patterns is permanently hidden and unutilized in such databases. Knowledge-based marketing, which uses appropriate data mining tools and knowledge management framework, addresses this need and helps leverage knowledge hidden in databases. There are three major areas of application of data mining for knowledge-based marketing is customer profiling, deviation analysis and trend analysis.

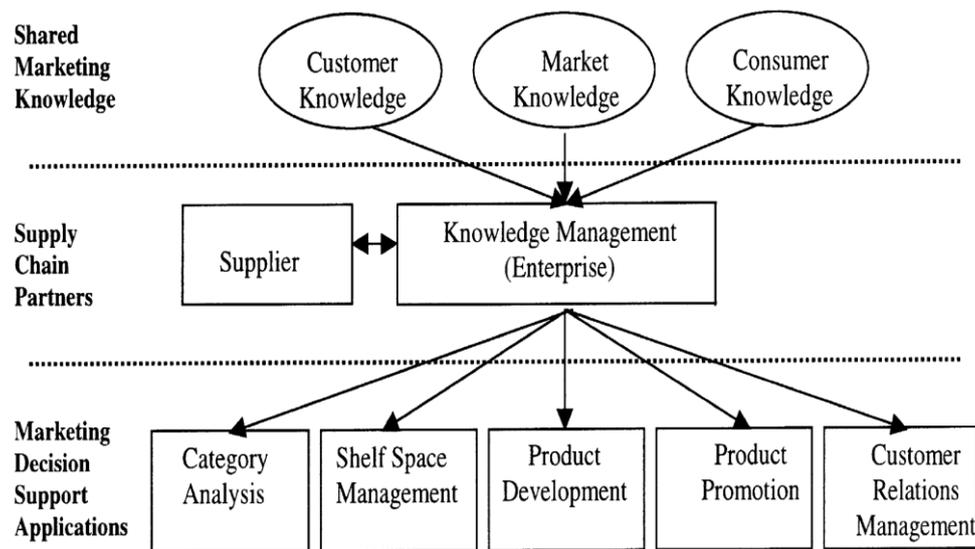


Fig 5.1

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## III. CONCLUSION

Though data mining techniques are used in several areas such as fraud detection, bankruptcy prediction, and scientific discoveries, their use for marketing decision support highlights unique and interesting issues such as customer relationship management, real-time interactive marketing, customer profiling and cross-organizational management of knowledge. In the current customer centric business environment, it is our firm belief that there is a need for deeper understanding of use of data mining and knowledge management for marketing decision support. Towards that end, in this paper, we have shown how data mining can be integrated into a marketing knowledge management framework. With the availability of large volume of data, made possible by modern information technology, a major problem is to filter, sort, and process, analyze and manage this data in order to extract the information relevant to the user..

## IV. FUTURE ENHANCEMENTS

As the case study, we finished some basic researches and provide specific solutions for problems of heterogeneous data. The correlation of the data is important and useful in the fields of personal query, promotion and social network prediction. With the aim of data correlation, we analyzed the basic characteristic and the network characteristic of the big data. According to those features, the clustering algorithm is able to analyze the data which is received from multiple sources. Then we proposed efficient clustering algorithms to analyze the data correlation of the big data based on online user behaviors. Those algorithms are successful in analyzing the data correlation. In the future, we will study the appropriate clustering algorithms of the data extraction for different kinds of data. On the other hand, we will study the description and calculation of the big data correlation.

## REFERENCES

- [1] Ahmed and Karypis 2012, Rezwan Ahmed, George Karypis, Algorithms for mining the evolution of conserved relational states in dynamic networks, Knowledge and Information Systems, December 2012, Volume 33, Issue 3, pp 603-630
- [2] Alam et al. 2012, Md. Hijbul Alam, JongWoo Ha, SangKeun Lee, Novel approaches to crawling important pages early, Knowledge and Information Systems, December 2012, Volume 33, Issue 3, pp 707-734
- [3] Aral S. and Walker D. 2012, Identifying influential and susceptible members of social networks, Science, vol.337, pp.337-341
- [4] Machanavajjhala and Reiter 2012, Ashwin Machanavajjhala, Jerome P. Reiter: Big privacy: protecting confidentiality in big data. ACM Crossroads, 19(1): 20-23, 2012.
- [5] Birney E. 2012, The making of ENCODE: Lessons for big-data projects, Nature, vol.489, pp.49-51.
- [6] Bollen et al. 2011, J. Bollen, H. Mao, and X. Zeng, Twitter Mood Predicts the Stock Market, Journal of Computational Science, 2(1):1-8, 2011.