

Capabilities of E-Commerce Strategy by using Web Mining Methodology

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Abstract

Web mining is the application of data mining methodologies and techniques to discover and extract useful and interesting information from the World Wide Web(WWW). Web mining is used to know customer behavior, evaluate the effectiveness of a particular Web site, and help quantify the success of a marketing operation. Web is one of the largest sources of information, collection of many files stored in different web servers and its size is also growing rapidly. E-Commerce also not only keep your business up and running but also make it hard to view in the competitive world of e-business. E-commerce has provided a cost efficient and effective way of doing business in the web. E-commerce, as we know it today, is based on developments pertaining to the Internet. The main purpose of this paper is to study about the information of web mining in e-commerce and the develop the capabilities of e-commerce applications using Web mining techniques.

Keywords:*E-Commerce, WebMining*

I. INTRODUCTION

Web is the best standard of communication in today business. Business over internet make available the opportunity to customers and partners where their products and specific business can be found. Nowadays online business breaks the barrier of time and space as compared to the physical office. Large companies around the world are realizing that e-commerce is not just buying and selling over Internet, rather it improves the efficiency to compete with other giants in the market. Data mining sometimes called as knowledge discovery is used and Web mining is data mining technique that is applied to the WWW. [1]

There are vast quantities of information available over the Internet. All the e-commerce sites have high traffic. People surf these sites very often but the income is not always very high. So, the web data mining appeared and also nowadays much attention is paid to it. It is very important to apply web data mining to ecommerce in order to gather knowledge about users and rank data accordingly. [1] Web data mining is a branch of data mining. It is successful technology through which information is filtered easier. E-commerce is all about carrying out transactions, essentially buying and selling products and services by consumers and businesses respectively on the Web. [2]

Users face problems due to the huge volume of information that is consistently growing. In particular, Web users have issues in getting the correct information due to low precision and low recollection the page. For example, if a user wants to get any information by using Google and other search engines, it will provide not only Web contents dealing with this topic, but a series of irrelevant information, so called noise pages, resulting in difficulties for users in obtaining necessary information [1]

II. WEB MINING

Web mining is the application of [data mining](#) techniques to discover patterns from the [WWW](#). It creates utilization of automated apparatuses to reveal and extricate data from servers and web reports, and it permits organizations to get to both organized and unstructured information from browser activities, server logs, website and link structure, page content and different sources. [5]. Web mining is applied to extract the interesting, useful patterns and hidden information from the Web documents and Web activities. Web mining simply refers to the discovery of information from Web data that include Web pages, media objects on the Web, Web links, Web log data, and other data generated by the usage of Web data. The web mining is composed of three tasks: the discovery

of the data sources, the selection and processing of the information, and the discovery of patterns from the websites [6]. Web mining extends analysis much further by combining other corporate information with Web traffic data. Practical applications of Web mining technology are abundant, and are by no means the limit to this technology. The web mining could be divided in three major categories: web content mining, web structure mining and web usage mining. These categories depend on the data used to induce the models. [3]

It can be applied in following areas:

- a). Web mining can provide companies managerial insight into visitor profiles, which help top management take strategic actions accordingly.
- b). Web Mining can obtain some particular measurements on the effectiveness of the marketing research, which will help the business to improve and align their marketing strategies timely.
- c). Web mining can be quite useful in determining the connection between two or more business Web sites.
- d). Web mining can allow accounting, customer profile, inventory, and demographic information to be correlated with Web browsing
- e). Web mining can identify the strength and weakness of its web marketing campaign and then make strategic adjustments, obtain the feedback from Web Mining again to see the improvement.
- f). Web mining can search engine Google provides advanced and efficient searching capabilities. [4]

III. ROLE OF WEB MINING IN E-COMMERCE

The Web mining technology for the e-commerce solutions within the social networks is the application of the data mining to acquire the customer's knowledge and then improve it. The use of these techniques in the e-commerce solutions within the social networks might help to increase the sales, show the products or services characteristics, and provide shopping recommendations to the customers based on their profiles. All of the possible applications in Web research, e-commerce and e-services have been identified as important domains for Web-mining techniques. Web-mining techniques also play an important role in e-commerce and e-services, proving to be useful tools for understanding how e-commerce and e-service Web sites and services are used, enabling the provision of better services for customers and users. The possible research topics of Web-mining applications in e-commerce include customer behavior analysis, transaction analysis and Web site design. [7]

According to the [3], role of web mining in e-commerce includes reviewing of costs and revenues, calculation and comparative analysis of corporate income statements, analysis of corporate balance sheet and profitability, cash flow statement, analysis of financial markets and sophisticated controlling. Web mining can be an effective tool.

Financial Analyses: It includes reviewing of costs and revenues, calculation and comparative analysis of corporate income statements, analysis of corporate balance sheet and profitability, cash flow statement, analysis of financial markets and sophisticated controlling. Web mining can be an effective tool. [8]

Marketing Analyses: where includes analysis of sales receipts, sales profitability, profit margins, meeting sales targets, time of orders, actions undertaken by competitors, stock exchange quotations, and market identification and segmentation. Web mining can be used here as a key tools that helps in building effective marketing strategy. [8]

Customer Analysis: where concern time maintaining contacts with customers, customer profitability, modelling customers' behavior and reactions, customer satisfaction, churn analysis etc. web mining tells us what strategy should be used to get number of customers with quality. [8]

Production Management Analysis: where work is mainly to identify production 'bottlenecks' and delayed orders and enabling organizations to examine production dynamics and to compare production results obtained by departments or plants, etc. [8]

Logistic Analysis: where can be effective to identify partners of supply chain quickly, reverse logistics analysis and handling. [8]

Wage analysis: where analysis of wage related data including wage component reports made with reference to the type required, reports made from the perspective of a given enterprise, wage report distinguishing employment types, payroll surcharges, personal contribution reports, analyze of average wages, etc. [8]

Personal data analyses: where includes examination of employment turnover, employment types, presentation of information on individual employee's personal data, etc. [8]

IV. WEB MINING TECHNIQUES IN E-COMMERCE

Web Mining techniques make use of the web information and are based on web content mining, web structure mining, and web usage mining. They provide clustering analysis, web link analysis, pattern analysis, association analysis and correlation analysis. The web consists of a large number of unstructured text-based documents using information retrieval, where the user needs effective techniques like keyword based retrieval and indexing techniques. The study of web servers and web log analysis are helpful in applying the web mining techniques. It is normally expected that either the hyperlink structure of the web or the web log data or both have been used in the mining process. [9]

Web Content Mining: It deals with discovering useful information or knowledge from web page contents than hyperlinks and goes beyond using keywords in a search engine. Web content consists of information such as unstructured free text, image, audio, video, metadata, and hyperlink. Search engines, subject directories, intelligent agents, cluster analysis, and portals are used to find out what a user might be looking for. [9]

Web Structure Mining: It deals with discovering and modeling the hyperlink structure of the web pages based on the topology of the hyperlinks. This gives similarity between sites or sites for a particular topic or web communities. [9]

Web Usage Mining: It deals with understanding user behavior with a web site and to obtain information that may assist in web site reorganization to suit user needs. The mined data includes data logs of user's web interaction, having web server logs, proxy server logs and browser logs, having data about referring page, user identification, user spent time at site and sequence of pages visited. Also cookie files contain information. [9]

V. DEVELOP THE CAPABILITIES IN E-COMMERCE

An E-commerce innovation introduces huge changes to organizations, such innovation will fail to contribute to organizational capabilities and performance unless organizations are capable of appropriating it. Based on the E-commerce innovation model, previous IS capabilities studies and the dynamic capabilities perspective [11], the ability of an E-business to exploit an E-commerce innovation rests on two basic capabilities, these are technological and business. The two basic capabilities combine, along with organizational routines, to form the dynamic capabilities of E-business. The technological capabilities include planning IT-infrastructure, integrating software platform, designing content, and delivering new services. The business capabilities are envisioning customer value, executing business innovation, matching with economic opportunities, and building relationships. [10]

In the future ecommerce will further confirm itself as a major tool of sale. Successful e-commerce will become a notion absolutely inseparable from the web, because e-shopping is becoming more and more popular and common. At the same time severe challenge in the sphere of e-commerce services will intensify their development. Thus future trends of e-commerce will be the growth of Internet sales and evolution [11]. According to a new study from the Center for Research in Electronic Commerce, e-commerce will become the industrial revolution of the 21st Century.

VI. CONCLUSION

This paper has proposed to develop the Capability of E-commerce using Web Mining Techniques and also described the information of web mining, their techniques and roles in e-commerce. With the growing of Web-based applications, specifically e-commerce, there is significant interest in analyzing Web usage data to better understand Web usage, and apply the knowledge to better serve users.

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