

Business Intelligent Tool for Enhancing User Interaction

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Abstract— A number of user interact with website but it is difficult to understand their expectation in terms of content likes/dislike, entering location and exit without experiencing more and identifying user expectation. In existing content management system lacks in analyzing and visualization capabilities and traditional result to enhance user interaction. Thus, providing business intelligent tool that enhance better data analysis and visualization is a major challenge. In this paper, we provide automated solution which captures each and every user interaction to build a result set on which tool does the analysis and improving user experiences with more users interactive.

Key words: Content Management System (CMS), Business Intelligent (BI), Analytics, Information Architecture, Collection, Acquisition, Aggregation

I. INTRODUCTION

Business Intelligent tool will help us in the process of collection, acquisition, aggregation, understanding and calculation of user interaction. In this way, we can arrive at optimal or realistic decision by analysis the existing data to enhance more on user interaction.

Business Intelligence tool for enhancing user interaction help us more on gathers the data about marketing field from legitimate sources to provide valuable information to improve decision makings. Thoroughly research helps us on both quantitative and qualitative research techniques, the collected data on user interaction can help us on preparing for analysis and interpretation to improve user interaction. Market research play an important role to provide information on identifies and analyze the market needs, market value, market segmentation and competition. Usually to enhancing user interaction from the business point of view to achieve beneficial decisions, it requires manual effort with analyzing each and every page on the website. Manual effort needs more effort but still result-set are not much fruitful to get the appropriate results. Considering the example of any website build on Content management system can easily improve, with collecting data from user interaction and applying business Intelligent in collection, acquisition, aggregation, understanding and calculation of user interaction. In this paper, we provide automated solution which captures each and every user interaction to analyzing the behavior of visitors and understanding their expectation. It can provide the business to enhance website to retain or attract new user for goods or providing services to increase the revenue from each customer with improving decision making. To solve this Business Intel ligancy, it is necessary to collect each and every user interaction data and perform the process of collection, acquisition, aggregation, understanding and calculation of user interaction. It can provide an optimal or realistic decision by analysis the captured data to improve decision making to enhance business strategies. The analysis comes about can be given

with informative in graphical form that gives you relevant data in showcasing field. This process suggests entities like companies, industries, e-commerce business to improve their website in lacking area.

A first step of our proposed solution is to collect each and every user's interaction on the websites. A first step of our proposed solution is to collect each and every user's interaction on the websites, once collection is done "acquisition" will help us on learning or developing of a skill, then next step is "aggregation" will help us on the formation of a number of things into a cluster and last step is understanding and calculation of user interaction to improve business strategies. In traditional way, there are two approaches available to collect the data from user interaction. First approach is "log file" method, this approach used tracking files that are stored in web host server. It automatically records visitor behavior and each and every user's interaction (such as time on site, pages visited, exit pages and much more). The drawback of this method that needs more space on server and bandwidth issues. Second approach usage "JavaScript method", currently Google Analytics and other analytics method are also using the same techniques to capture user interactions. It needs JavaScript code on each web page that sends visitors activities to analytics service provider. We are considering the JavaScript method for our solutions because the data is real-time, and it cans records visitor behavior and each and every user's interaction. In Acquisition, which user's activities are more important for business intelligence? What are the content on need to be focus more? In Basic Acquisition Analytics, need to focus on analyzing traffic sources and conversions. In First- and Last-Touch Attribution, analyze when customers visited your site from multiple marketing campaigns, it also refers anonymous user tracking along with Amplitude. Advanced Attribution supports the tools like Attribution, Convertro, and Improvely which provide calculate and compare the use of various acquisition channels. Data aggregation is a process where information is gathered and expressed in a summary form likes statistical analysis. Aggregation creates groups and reduces live or historical data from the collection database for reporting. In our Automated solution, we are using batch aggregation process is the background service that can schedule to run at regular intervals to process in live interactions. Understanding and Calculation is last step in business intelligence to get the result in dashboards format that can be customize by date range and other attributes and similarly it can be categories such as Audience Data, Audience Behavior and Campaign Data.

In this paper, we are providing solutions to enhance user interaction using Business Intelligence in Content Management System. Content Management and Web Analytics are two distinct tools that we are combining in one central repository. Progressively these two modules are

merging, as site distributors and marketers look for to take activity based on quantifiable comes about. Without a doubt, there is a solid case of integrating content management with web analytics. With this automated solution, to begin with or first step of utilizing analytics to progress the adequacy of content management system and next utilizing of content management system to move forward analytics capability. In content management system, we are proving dashboards and reports for marketing analyst to classify pattern and trends in experience data.

II. LITERATURE SURVEY

A. *Content Management Systems - Business Effects of an implementation (Therese L. Karlsson, Jennie K. Boije Af Gennäs, 2005)*

We have started review of existing Content management system which provide Business Intelligence to improve decision making and business strategies primarily from an organization prospective. The research results were few Content Management system provide Business Intelligence to improve decision making but still those are not up to the mark. Keywords we have considered for searching information is “Content Management System”, and “Web Analytics”. We also reviewed literature on IS/IT-evaluation where we used keywords such as “IT investment”, “IS investment” “evaluation”, “ex post e evaluation”, “post evaluation”, “intangibles”, “tangibles”, “benefits”, “costs” and “ROI”.

B. *Using Google Analytics & Think-Aloud Study for Improving the Information Architecture (Seher Demdrel Küttükçü, September 2010, Case Study)*

This case study focus more on attention on observations, think-aloud, questionnaires and eye-tracking methods. Similarly, this case study helps us on website effectiveness and dimension need to be used for evaluation of websites. Website evaluations or planning is mostly user effective and customer centric through which it is profit centric. Web Analytics investigation apparatuses which are equipped for giving profitable data in regards to the site clients, for example, their route practices and program points of interest. Google Analytics has important reports which are not utilized on account of their multifaceted nature. To enhance the data engineering of data driven sites, this case study utilizes greeting page improvement technique which is accessible in Google Analytics. Content related recommendations found that the great deal of data is situated under profound connections, there is excessively content and utilized textual style is too little; this issue should be comprehended.

C. *Atlantis the Palm – Content Management System*

We have done the study of existing system i.e. a Luxury Hotel and 5-star resort in Dubai that is developed on Content Management System. Initially the resorts website was not developed in Content Management System so modifying any content requires development effort and time. Later business has decided to go with Content Management System so that modification of content cannot require development effort and do not need to rely on anyone. Using Content Management System any non-technical persons are also able

to develop a new page and can modify content easily. Using only Content Management System, it can provide the business to enhance website to retain or attract new user for goods or providing services to increase the revenue from each customer with improving decision making. To improving retain the customer and generate more revenue, they have done Web Analysis to identifying the lacks in analyzing and visualization capabilities and traditional result to enhance user interaction. The observation found that the mostly revenue growth comes from website which was initially coming through their call center. Similarly, results have been considered that the 80% revenue growth reported considering the results from Web Analytics.

D. *Content Management System & Web Analytics ([21] Thomas Robbins and [22] Sitecore Community)*

We have studied the existing Content Management system and its available feature and we found that the SiteCore and Kentico are the Content Management System in which these two-distinct objects are combined i.e. Content Management System provides Web Analytics to improve Business Strategies. Analytics gives dashboards and reports to advertisers to recognize examples and patterns in encounter information gathered from their sites, and additionally possibly other outer information sources. In the event that you need to change or redo a default report that accompanies Analytics, it is best practice to duplicate a current report, alter it and after that rename it. Analytics data to encounter information or break down the execution, enhancement, and the level of responsibility of your contacts by contrasting measurements, for example, site hits, change rates, esteem per visit, and others. Advertisers can likewise see a dashboard with numerous reports that gives them a chance to channel report information by date run or by site.

III. PROBLEM DEFINITION

A many organizations would like to improve their websites with proper understanding of user expectation in terms of content likes/dislike, entering location and exit without experiencing more and identifying user expectation. Content Management System lacks in analyzing and visualization capabilities and traditional result to enhance user interaction. Market research plays an important role to provide information on identify and analyze the market needs, market value, market segmentation and competition. Enhancing user interaction from the business point of view to achieve beneficial decisions, it requires manual effort with analyzing each and every page on the website. Manual effort needs more effort but still result-set are not much fruitful to get the appropriate results. Website build on Content management system can easily improve, with collecting data from user interaction and applying business Intelligent in collection, acquisition, aggregation, understanding and calculation of user interaction. Identifying patterns and trends in experience data collected from their websites, as well as potentially other external data sources.

- Step #1: Visit the web pages. Note objectives, customer experience, suckiness.
- Step #2: How good is the acquisition strategy? Traffic Sources Report.
- Step #3: How strongly do Visitors orbit the website? Visitor Loyalty & Recency.
- Step #4: What can I find that is broken and quickly fixable? Top Landing Pages.
- Step #5: What content makes us most money? \$Index Value Metric.
- Step #6: How Sophisticated Is Their Search Strategy? Keyword Tag Clouds.
- Step #7: Are they making money or making noise? Goals & Goal Values.
- Step #8: Can the Marketing Budget be optimized? Campaign Conversions/Outcomes.
- Step #9: Are we helping the already convinced buyers? Funnel Visualization.
- Step #10: What are the unknown unknowns I am blind to? Analytics Intelligence.

IV. PROPOSED APPROACH

The system composed of Content Management System and Business Intelligence approaches for information extraction from the user interaction, implemented as a web application that gathers the data about marketing field from legitimate sources to provide valuable information to improve decision makings. In this automated solution which captures each and every user interaction to build a result set on which tool does the analysis and improving user experiences with more user interactive. We are introducing one more database in Content Management System for web analytics to captures user interaction for expert knowledge. Introducing new database will be a file system database like mongo-db, file system database is comparative much faster and while capturing user interaction data from web pages' performance should not be impact as this process will work in background and user will not come to know that in background it is capturing user interaction and every action.

A. Document Analysis

Data repository contains information extraction from the user interaction. These user interaction and action are validating against the static domain and further carry out structural analysis and data analysis. Structuring analysis needs to performed remove unused elements like multiple visited pages, while retaining metadata and enriching information. The output of this module is the unused free data consist user interaction and every user action required for further processing.

B. Information Extraction

This process i.e. information extraction helps on identification of relevant entities and user expectation to legitimate sources to provide valuable information to improve decision makings. In order to perform information analysis from the captured data, we need to carry out more analysis to understand user's expectation. These analyses are performed to get the business intelligence result in dashboards format that can be customize by date range and other attributes and similarly it can be categories such as Audience Data, Audience Behavior, and Campaign Data.

C. Analysis

We are performing analysis using Descriptive Analysis, Predictive Analysis and Prescriptive Analysis. Let's understand the responsibility on these analysis systems. Descriptive Analysis is basic form of Analysis that aggregates huge data and gives useful perception into past. Predictive Analysis is used to data reduction, it employments different factual demonstrating and machine learning methods to analyze past information and anticipate the future results. The last Prescriptive Analysis uses combination of

trade rules, machine learning and computational demonstrating to prescribe the finest course of activity for any pre-specified result.

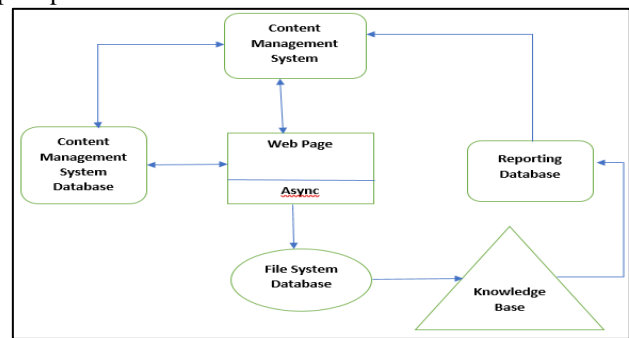


Fig. 1:

When user interacts with web pages on websites, asynchronously on background it captures all user activities and keeps those data in file system database. As file system database are much faster and will not impact on user performance. File system database will act as a repository where we can apply knowledge base for acquisition, aggregation, understanding and calculation of user interaction. Once this raw data is in converted to understand system lacks in analyzing and visualization capabilities and traditional result to enhance user interaction. A knowledge base repository interacts with file system database and contains all the pre-defined rules and actions. Reporting database will pull data from file system database with applying knowledge base and dump in Reporting database. Content management system will use the reporting database to providing dashboards and reports for marketing analyst to classify pattern and trends in experience data.

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