

Usability of Academic Websites

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Abstract

With the popularity of the websites, online users can attain more benefit and possibly be success rapidly. One key success factor is the usability of the websites. Many users may interact with internet for collecting their relevant data. The unique measurability of websites allows the collection of detailed information about the behavior and characteristics of website visitors. Web analytics focus on the trends – analyse how visits, engagement metrics or traffic source distribution change. The aim of the paper is to study the usability of the website and also helps to improve the performance of the website by the utilization of web analytics tools. This paper presents the competitive market intelligence data of various colleges website in Tiruchirapalli District and also gives the details of usability of websites to enhance the E-Commerce Business in a profitable way.

AMS Subject Classification: Data mining

Key Words: Web Analytics, Web Metrics, Tracks, Visits, Website, Rank

1 Introduction

As the technology increases in day to day life, Internet users also increase in gathering their relevant data through online searches from the websites as E-Commerce, E-Business, E-learning, Social Media discussions etc. Data Mining Techniques helps to extracting and digging data from huge amount to the users in various forms. E-business and website owners need to offer better quality website for attracting more customers or visitors. Researchers use Analytics tools to track activity of websites for web-based businesses in ease of use in affordable manner. Web Analytics serve the purpose of understanding and optimizing the web usage. Web analytics is a process to analyze the website's usage statistics in order to better reach the target audience, and customize web content to their needs. The effectiveness of each of the web pages helps to improve the quality of the site content and it increases website

interaction by the audience. Ultimately, it can increase audience recognition of the organization's impact [12]. Web Analytics Association defines Web Analytics as the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimizing web usage [14]. Figure 1 shows the process of Web analytics. The main task of web analytics is to monitor traffic of the website, on the basis of which the web audience is determined. The functionality of a web resources increases with the behavior of web visitors in order to make decisions on the development [1]. Web Analytics does not purely focus on the amount of traffic which might only be helpful in evaluating the bandwidth usage and server's capabilities. Instead it focuses on in-depth comparison of available visitor data, referral data, and site navigation patterns to tell the amount of traffic to receive over any specified period of time [13].



Figure 1: Web Analytics Process

2 Related Work

Alisa Dibrova described the process of Usability analysis of Websites belonging to a company in Stockholm. From the many existing tools of analytics, the author chooses Google analytics and Yandex Metrics tool to improve the website performance. The result shows that the overall bounce rate reduced, the number of visits to the page containing order forms significantly increased [1]. Dwyer et al., discovered a significant amount of member activity in a seemingly passive online community. This activity demonstrates a clear engagement and participation of members in the community [2]. Geocy Shejy el al summarized that using Web Analytics solution allowed Ryanair to identify the traffic received was quite low. Thus, they learned on what things to focus and how to improve business model. The use of their strategic decision about how their visitors wanted to interact with their web site and accordingly they can customize it in most optimized way. As a result of improving the homepage design increased the visitor traffic and Campaigns to personalize emails for double the revenue [3]. Ivan and Daniela analyzed the impact of web analytics tools for measuring the performance of a business model to support analysts in obtaining useful and relevant insights into market dynamics. A qualitative and quantitative focus is placed on reviewing web analytics tools to exploring their functionalities and ability to be integrated into the respective business model. The author suggested the Croatian firm to focusing on the proper tools and metric to strengthen management support and achieved better business results based on the growing needs of global market trends [4]. Gurpal Singh discussed various operations, types, advantages and disadvantages of web analytics. The types of web

analytics are compared. Users may interact with Internet for their needs to collect relevant data such as number of visits and time on visits. The author investigated ON –Site web Analytic is the best tool and its sub types techniques are more suitable for gathering more accurate results [5].Tommi Riihimäki suggested different web metrics can be analyzed to reveal important characteristics of site visitors and evaluate the effectiveness of the different aspects of a website. The author identified two key web metrics for the site under examination: search engine traffic for relationship analysis and the rate of return visits for examine visitor characteristics and also stated that the segmented web metrics are needed in order to achieve a more diverse view of the web users [6].Scott Erickson, William Tastle and Danielle Puleo reviewed the process toward establishing a business analytics program at a small undergraduate institution especially concerning its growth as a business application and as a source of jobs in the upcoming decade. The author proposed track/concentration is included, with current courses with additional resources and make such an approach is an opportunity to establish a unique academic offering providing exceptional value to students and the organizations [7].Y. Thushara and V. Ramesh defined a good alternative to stay successful in E-Commerce business by understand customers better. Web Usage Mining technique and E-Commerce software (OPENCART) used to track the information of the web users using Google Analytics Tool. The customer segments of users in Tamilnadu and Karnataka state in India are clustered [8]. Joanna Palonka and Marcin Lora concluded that Web Analytics can be used to manage the implementation of an organization's strategy for specific activities, on the achievement of particular goals. Web Analytics can be regarded as a modern instrument in the management of the online operations. Google Analytics is a supporting tool which supplies detailed information about the behavior of visitors to a particular website, the usability of the content provided, etc. The synergy of those elements is able to effectively support the decision-making process and optimize management activities for creating a new way of managing the organizations online operations[9].Mohammad Amin Omidvar, Vahid Reza Mirabi et.al introduced a methodology to measure the success of the website with its time series data. The study focused on one of the most important variables which are page views and showed how to use the most suitable data for that. The regression model used on all websites on time series data[10].

Web Metrics

The common features of web metrics including collecting specific visitor actions and the exclusion of search engine robots that search content on the website while indexing it. Effective web metrics has to be based on generally accepted terms, definitions and practices [14]. Web analytics incorporate web metrics, thus providing benefits for online businesses [15] such as the ability to analyze and increase sales, ability to track revenue generated by the site, ability to identify exit pages, and consequently improving website usage, the monitoring of visitor traffic and detection of website errors.

The most common types of web metrics [4] are

- Metrics for describing visits refers to dimensions such as the entry page, landing page, exit page and visit duration - time on site, referrer click-through rate.
- Metrics for describing visitors refers new visitors, returning, repeat visitor, visits per visitor, recency and frequency.
- Metrics for describing the visitor engagement includes metrics that describe the degree of visitor interaction. The related metrics are page exit ratio, bounce rate and page views per visitor.
- Conversion metrics – the collection of special website activities that provide business value, such as metrics that indicate the number of successfully achieved set goals (conversion) and the ratio between the number of realized conversions and other relevant metrics (conversion rate).

Web analytics tools

A variety of web analytics tools have been developed and are available on the market that aim to obtain quantitative and qualitative data as a basis for the decision-making process, The web analytics tools has been classified based on usage into five categories[4]: Traditional web analytics tools, Social Networks Analytics tool, Feedback Web Analytics tool, Mobile Web Analytics tool and Testing Web Analytics tool

3 Proposed Model

The proposed Model has to implement the traditional web analytics to find user behavior interact with website and various web metrics. The model finds the traffic information about the E-Commerce websites and generates the report. 4 shows the design of proposed model.

The core metrics obtained through web analytics are: A hit is a successful request from a visitor's browser for ANY page element: images, media, scripts, etc
The Page View metric represents the number of times a web page, be it static, or dynamic, has been displayed. It is useful for determining the popularity of select content.

A Visit (or session as Web Trends refers to is) is represented by activity during a period of time (usually 30 minutes) that takes place on a website.

Visitors are one of the most unique metrics used in web analytics. By default, a visitor is represented by an IP address or a cookie. Uniquely identified visitors are cross referenced by another back-end system, usually an e-commerce or CRM system.

The bounce rate report presents how many people come to Web Analytics user site and leave without going anywhere. High bounce rate indicates that visitors find webpage irrelevant. Analytics allows users to view bounce rate over time, and it shows how it varies from page to page.

Methodology

Collection of data: This stage is the collection of the basic, elementary data. Usually, this data is counts of things. The objective of this stage is to gather the data.
 Processing of data into information: This stage usually takes counts and makes them ratios, although there still may be some counts. The objective of this stage is to take the data and conform it into information, specifically metrics.
 Developing KPI: This stage focuses on using the ratios (and counts) and infusing them with business strategies, referred to as Key Performance Indicators (KPI).

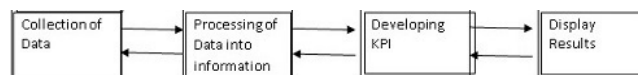


Figure 2: Design of Proposed Model

4 Results and Findings

The proposed model implemented for various Academic websites of Tiruchirappalli District from August 2017 to October 2017. 5 shows snapshots of rank of various websites. 6 shows the comparison results of global rank and country rank. 7 depicts number of page visits and bounce rate. 3 shows the number of total visits. The resultant metrics are listed in Table 1.

College Name	Global rank	Country Rank	Category Rank	Monthly Visit	Pages Visit /	Bounce Rate	Social Traffic	Top 5 Countries
Aiman College	7585514	486021	21802	<5000	2.86	18.23%	No Data	India, Nigeria, Brunei Darussalam
Jamal Mohamed College	2804141	123934	85291	30648	3.67	38.43%	No Data	India, UAE, Malawi, Taiwan, Canada
Bishop Heber College	788863	29108	40468	57073	2.59	48.24%	Face Book	India, US, UAE, Taiwan, UK
St. Joseph College	413474	15937	14922	78175	5.94	34.09%	YouTube	India, Pakistan, US, UAE, Newzeland
Periyar E.V.R. College	3921816	172122	106501	6202	1.77	24.22%	No Data	India, US, Ukraine
Shrimathi Indira Gandhi College	3757261	20432	13488	5670	2.64	39.91%	No Data	India, Turkey, Malaysia, Pakistan, Zimbabwe
Cauvery College	3540973	148314	13050	10807	5.06	4.45%	No Data	India, Kuwait, Nepal, Ukraine, Kenya

Figure 3: Resultant metrics

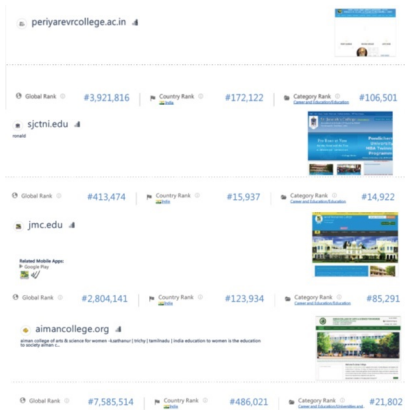


Figure 4: Rank of websites

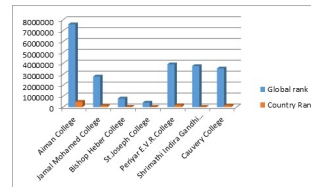


Figure 5: Comparison results of global rank and country rank

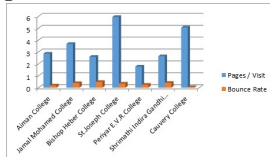


Figure 6: Number of page visits and bounce rate



Figure 7: Total number of visits

5 Conclusion

Web analytics is becoming an increasingly popular and effective web site optimization used by online business owners. By providing deep insight into the web user by knowing who, what, when, why and how of web site traffic and visitor behavior, web analytics tool can helps to improve the usability of the site. Regardless of business size and objective, an effective Web analytics strategy is becoming increasingly essential. So far we success in traffic information and analyzed the overall users in different colleges of Tiruchirapalli District. Hence, determine the relationship between Web Analytics and E-Business and also to apply Web mining technology in E-Commerce.

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