Abstract—This Paper presents an overview of the Mobile Web analytics, with a focus on providing insight and actionable outcomes from collecting and analyzing Internet data. The amazing and tremendous growth of web site over the Mobile Internet has raised many concerns for organizations to analyze the lifetime value of their customers, and also improve their marketing strategies in the competitive world through the the website. So this has uplifted the need and requirement of Mobile Web Analytics. There are short comings of applying traditional web analytics to mobile web analytics. Mobile Web analytic process converts the collected data to meaningful key performance indicators in order to measure the organizational goals or potential opportunities. Mobile Web analytics in used to improve Web systems, increase customer satisfaction, and target revenue through effective analysis of user interactions with the organization’s Website.

Keywords—Analytics, Mobile Web Analytics, Web Analytics, Key Performance Indicators

I. INTRODUCTION

The amazing and tremendous growth of web site over the Mobile Internet has raised many concerns for organizations to analyze the lifetime value of their customers, and also improve their marketing strategies in the competitive world through their website. A large population now looks towards their comfort so they prefer internet to accomplish their work. This leads to the internet usage through mobile as through that people need to put minimum effort. Due to that organization need to have site compatible with upcoming mobile phones and for that reason analytics is necessary.

The first step is to define the time frame for which the data log will be collected and worked upon. Therefore, the main problem faced is the quantity of time frame for which the data should be processed to discover patterns and give results in the form of graphical representation. The main objective would be to design “A Framework for evaluating Mobile User Engagement” that would give the characterization of the user behavior and the information about the location of the user and device information of the user.

Till now there are many tools that are used for mobile web analytics. Various tools for mobile web analytics like Omniture, Mobilytics, Google Analytics, and Bango Analytics are developed to deal with the data collected through the mobile web.

The report generated by the SiteCatalyst of Omniture includes mobile devices, device manufacturer, screen size, cookie support, video format support and audio format support. But these tools do have drawbacks like Google analytics have limitation of GA for large websites.

Process of analytics is done through the steps as follows. First data is collected by running a JavaScript then after the collected data is analyzed to find the meaningful pattern and give results in the form of charts and graphs. On basis of that the web site owner can make improvement to their sites according to the results they get. Improvement can be of any form like Personalization, System Improvement, Site Modification, and Usage Characterization.

II. ANALYTICS

Analytics is the science of analysis whereby statistics, data mining, computer technology, etc is used in doing analysis. In others word Analytics is the discovery and communication of meaningful patterns in data.

The most common application of analytics in real world is to business data in order to describe, predict and improve business performance. Specifically, arenas within analytics include enterprise decision management, retail analytics, marketing and web analytics.

a. Web Analytics

Web analytics is the practice of measuring, collecting, analyzing and reporting on Internet data for the purposes of understanding how a web site is used by its audience and how to optimize its usage.

Web analytics is not just a tool for measuring web traffic but can be used as a tool for business and market research, and to assess and improve the effectiveness of a web site.

b. Mobile Web Analytics

Mobile web analytics studies the behavior of mobile website visitors in a similar way to traditional web analytics. In a commercial context, mobile web analytics refers to the use of data collected as visitor’s access a website from a mobile phone.[12]

III. REQUIREMENT OF MOBILE WEB ANALYTICS

The existing popularity of cell phones and other mobile devices capable of connecting to the Internet, coupled with the dramatic increase in popularity of powerful smart phones like Apple’s iPhone, has led to a surge in interest among
businesses throughout the world in having a presence on the “mobile Internet”. Through a study done by IDC press release June 25, 2008 it has been found that the no of mobile internet users in 2008 were about 546 million and by 2013 this figure will increase up to 5.5 billion.

These are the main fields in which mobile web analytics is required:

a. **Price**
   
   It is an important factor in this world. People in this current world do business through their website and earn. So basis of analytics the sites can be improved and people can earn more.

b. **Technology**
   
   Everyday new technologies are up coming in the mobile world. So if the companies do not design the website that is mobile compatible the companies would be at loss. So analytics is necessary to remain updated about new technologies in mobile world.

c. **Traffic**
   
   The popularity of the site is decided upon the traffic coming to that site or in other words the number of users visiting the site. Organization requires analytics to be done to make improvement of their site to increase traffic which thereby increases their business.

d. **Security**
   
   It is most important for any organization. If someone tries to do some malicious activity like phishing then it would be difficult to identify the person uniquely without doing analytics.

e. **Nature of your Business**
   
   As time changes we need to change according to the time. Same is applicable to a business, to remain in competition and to set the business according to the need of people therefore there is a need to change the nature of business. This is possible through analytics.

### IV. MOBILE WEB ANALYTIC PROCESS

A framework for analyzing website performance should include the following steps:

- **Define Goals**
- **Define Metrics**
- **Collect Data**
- **Analyze Data**
- **Implement Changes**

![Figure 1: Process of Web Analytics](image)

**a. Defining Goals**

The answer to the following question is critical in defining a website’s goals: why does your website exist? The goal should serve the purpose of the website and should clearly specify the reason of performing analytics for the website.

**b. Defining Metrics (KPIs)**

Measuring goal achievement can be done by defining Key Performance Indicators (KPIs) that would describe whether the website is getting closer to its objectives or not.

Good KPIs should contain four attributes:

- **Un-complex**: If only the web analyst understands the KPIs, it is not easy to make decisions across as different people from different department decides the goals for the company.
- **Relevant**: It should be applicable to the business.
- **Timely**: Great metrics must be provided instantly so that decision makers can make timely decisions.
- **Instantly useful**: It is vital to understand quickly what the KPI is, so it is easily useful and used quickly.

### C. Collecting Data

It is necessary that data be collected accurately and saved on a local or external database for further analysis. Following are the ways of capturing data from websites:

1. **Web Logs**
   
   The WAP gateway logs are the mine of information that can be analyzed to get relevant information as all the mobile traffic goes through these servers.

![Figure 2: Log File Data Collection Visualization](image)

2. **JavaScript Tagging**
   
   This technology consists of inserting a small JavaScript (which is not allowed to be cached) in every page of a website. This means that every time a visitor opens a page, this JavaScript is activated and the visitor information and actions are saved in a separate file.
3. **Web Beacons**

Images can be forced to work for mobile web analytics, provided that the transmitted image is always unique.[12]

4. **Packet Sniffing**

It is also known as tagless data capture or passive network capture, this technique uses a tap between the mobile users and the web server to capture the full content of the client-server exchange[12][14]. Tagless data capture techniques are increasing in popularity for mobile web analytics because they capture all users, work with all devices and do not require JavaScript, cookies, server logs, or plugins.

5. **Link redirection**

It is an important method of tracking mobile visitor activities. It is the only reliable way to record clicks from advertising, search, and other marketing activities. It also records visitors clicking on links to leave a site. This method helps address the lack of HTTP referrer information on mobile.

6. **HTTP header analysis**

It tells you a number of basic facts about the mobile phone and the browser. It can be used in conjunction with a device database such as WURFL (Wireless Universal Resource FiLe).

**d. Analyzing Data**

To understand the customer behavior from the collected data, the (web) analyst should follow the following steps.

1. **Begin from the Basics**

Any web analytics tool presents a summary report, a group of basic metrics that are available immediately after logging into the tool.[8]

Following are the basic parameters for which any web analytics gives tool a summary report:

- **Visits**: number of times someone interacted with the site.
- **Bounce Rate**: the percentage of single pageview visits.
- **Pages/Visit**: number of pages seen, on average, in each visit.
- **Average Time on Site**: duration of people stayed on the site.
- **New Visits**: people who visited the site for the first time.

2. **Traffic Sources**

It shows the percentage and absolute number of visitors that came from each type of source. The following are the traffic source parameter for which analytics tool gives the report:

- **Direct Traffic** represents visitors that enters the website’s URL or from a bookmark. When looking at the direct traffic, a website owner can understand how much traffic s/he is getting from people who know the website deep enough.

- **Referring URLs** are other websites linking to the website being analyzed. These could be a result of
banner ads, campaigns, or blogs interested on your website.

- **Search Engines** like Google is the vehicle most Internet surfers use to find their destination.

3. **Save Money according to data**

   Now a days people do not lend on the website’s page directly rather they lend through a search engine to a specific page of the website and it might not be the home page. So bounce rate for each page would be different for all pages of a single site. So analysts need to record the page with highest bounce rate and act according to the data that is recorded and save money.

E. **Implementing Changes**

   All the data collected is useless unless the data is understood and implemented. A Website should be analyzed and applied in a relevant context. So the data and outcome found should be applied for the improvement of the websites.

V. **CONCLUSION**

   This paper has attempted to provide the information on upcoming technology mobile web analytics. Mobile web analytics is needed as internet usage has increased through mobile. Doing it one can improve the business and their website. It is always done on the data collected and analyzed for a specific period of time. It is a long process and requires the need of many fields of analysis, statistics and mathematics.

   REFERENCES


Authors Profile

Mrs. Ruchi Gupta is M.Tech student at Department of Computer Science, Rollwala Computer Center, Gujarat University, Ahmedabad. She has completed her B.Tech from CSE, Jhansi, UPTU, Lucknow.

Ms. Kinjal Mehta is M.Tech student at Department of Computer Science, Rollwala Computer Center, Gujarat University, Ahmedabad. She has completed her B.E. from A.I.T.S., Saurashtra University, Rajkot.

Mr. Kaushal Bhavsar is pursuing PhD in Computer Security from CHARUSAT, Changa. He is certified Diploma in Cyber Security from Gujarat Forensic Science Institute. He has completed his M.C.A. from L.D. College of Engineering, Gujarat University, Ahmedabad and B.Sc. Electronics and Telecommunications from Sardar Patel University.

Dr. Hiren Joshi is working as Assistant Professor of Computer Science at Dept. of Computer Science, Gujarat University. He has 10+ years of teaching experience. His teaching experience includes various master programs - MCA, M.Tech., PGDCSA, M.Sc [ IT & CA]. He has written a book on Web Technology. His research interest includes Biometric Authentication ,DBMS and Information Security.