



WEB BROWSER'S VITALITY IS INDISPENSABLE FOR USERS EFFICIENCY IN TODAY'S TIME AND THE TIME HEREAFTER

¹Kaustubh Verma, ²Shilpi Sharma
ASET, Amity University,
Noida, Uttar Pradesh, INDIA

Abstract: In order to get our work done easily and effectively web browsers were designed. These are the software applications which are used locating, retrieving and displaying content on Internet. They have proved their worth in every field but still we find out that a lot of competition has been taking place between them and naturally a person would look for the web browser which is less costly yet more constructive. This paper gives out the details of top browsers in today's time, the obstacles they face in order to go ahead of others and the clash that is still ongoing.

Keywords: browsers, compatibility, market value, security, competition

I. Introduction

With the arrival of the best browsers, the competition has been very fierce. According to the survey conducted in 2014, Microsoft has gone from having 90 percent web browser market share to 55 percent or less [1]. Opera and Mozilla Firefox had been great alternatives at that time but they had made progress slowly and steadily. The browser market had been lifeless unless a new web browser called Google chrome was launched and others were trying to catch up when it was launched.

At that time Google chrome was head and shoulders above others and the competition among them had ended, but today all popular browsers compete on a level playing field. Google chrome has reached version 31, Mozilla Firefox 26, Internet Explorer 11, Opera 18 and Safari is now 5.1. All these web browsers were tested in Windows 8.1, reviewed and several benchmarks such as BMark, Octane 2, Peacekeeper, Sunspider and others were used to determine their performance [2].

Hence in today's fast paced generation everyone needs the best web browser to finish off their task within minutes, but with the all growing competition choosing the right browser has become a difficult decision. Therefore for making people choose the right web browser, a detailed description of each browser is given out in this paper.

II. Overview

Generations have passed and many versions of each web browser have been developed during that time, but today we have reached a stage in which each popular browser has its latest version making it difficult to decide which one to pick.

Given below is a brief summary of top 5 web browsers that can help us choose a better one.

A. GOOGLE CHROME

Google chrome is a freeware web browser which is used for accessing World Wide Web and running web based applications. It was launched by Google in 2008 and is available for Windows, Mac OS X, Linux, Android and IOS operating systems. Majority of Chrome's source code was released as an open source project Chromium by Google.

In 2010 Google launched the Chrome web store, an online marketplace where users can buy and install web based applications to run inside the browser. As of 2014, it was being estimated that Google chrome has a 45% worldwide usage share of web browsers [3].

B. MOZILLA FIREFOX

Mozilla Firefox simply known as Firefox is an open source web browser developed for Windows, OS X and Linux. It is based on Mozilla code base and also offers other customization offers. This browser uses Gecko Layout engine to render web pages which implements current web standards.

In 2014, Firefox has between 12% and 22% of worldwide usage and is making a particular success in Indonesia, Iran, Germany and Poland [4].

C. INTERNET EXPLORER

Internet Explorer sometimes referred to as Microsoft Internet Explorer is a series of graphical web browsers developed by Microsoft. As with most modern browsers, it supports java, JavaScript, ActiveX, RSS, CSS and Ajax, while also offering other features like tabbed browsing, private browsing and phishing protection.

In 2014, Internet Explorer has between 21% and 26% of worldwide usage [5].

D. OPERA

Opera is a web browser developed by Opera software in 1995 and is available for Microsoft Windows, OS X and Linux operating systems. This browser is designed to optimize performance on a range of devices, from simple phones to latest generation smartphones and tablets.

In 2014, Opera has between 1% and 1.5% of worldwide usage [6].

E. SAFARI

Safari is a web browser developed by Apple Inc for OS X and iOS operating systems, and was released in 2003. It is based upon Apple's Webkit, an application framework based on two open source framework – WebCore and JavascriptCore. This browser is faster and more efficient than other browsers, so the sites are more responsive. Iphone and Ipad touch run an adapted version of safari.

In 2014, Safari has around 5% of the worldwide usage [7].

III. Specifications and marketshare

Some of us might want to check the specification and popularity of a browser before selecting it. Specifications include its installation, compatibility (OS platform) and recent updates involved whereas popularity refers to the scope that it has made in the market. Hence a detailed information of them is given below:

A. INSTALLATION, COMPATIBILITY AND UPDATES

Installation of these top 5 browsers is inherently the same. Users can download them from the respective websites and each will be downloaded depending on the internet connection. During installation only internet explorer would require the user to reboot his/her system unlike other browsers while only require a quick browser closure.

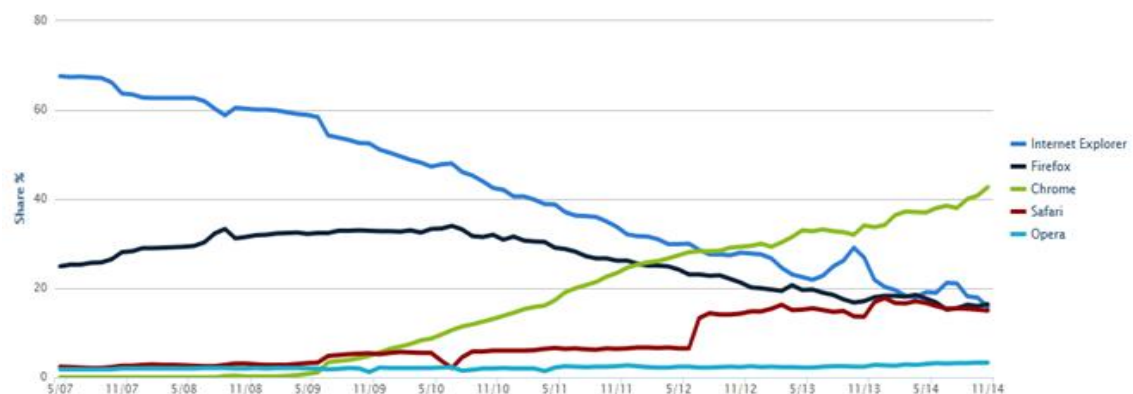
Finishing off with the installation we come over to browser compatibility which refers to the ability of a web browser to effectively display the HTML code and execute the scripts on web pages. Many users consider it to be valuable as it allows them to interact with others [8]. Given below is a list of browser compatibility for these popular browsers: -

- Google chrome: Windows, Mac OS X and Linux
- Mozilla Firefox: Windows, Mac OS X and Linux
- Internet explorer: Windows
- Safari: Mac OS X
- Opera: Windows, Mac OS X and Linux

When it comes to updates, Opera, Mozilla Firefox and Google chrome have more advantage than the other two. These browsers install silently, quickly and transparently download updates in the background and automatically apply the new software when you want to relaunch the program. Hence all the major problems are fixed quickly in these three browsers. Users can also install updates if they want to have greater control over the browser. While using any web browser one thing must be kept in mind that turning off important updates can put your computer at risk [9].

B. POPULARITY IN MARKET

Figure 1: Browser market share of top 5 web browsers by month



The graph shown above gives information about the progress that the top 5 web browsers have made from 2007 to 2014 in the market. According to the W3Counter, in 2014 the browser market share of Google chrome was more than other browsers, gathering 42.7 percent of the global market share. Internet explorer, Firefox and Safari continue to be popular by holding 15.8, 16.4 and 15 percent of the global market share. Whereas, opera browser has around 3.3 percent of the global market share respectively.

In 2007, Internet explorer was more popular in market than others by having 67.6 percent of the global market share, but its value started decreasing when Google chrome was being launched in market. Now, in present, Internet explorer stands with Firefox and Safari, as Google chrome reaches top of market [10].

IV. Features

While purchasing a browser we all look for the one which has better features which in turn separates one browser from another. Given below is the feature comparison chart of top 5 browsers in terms of their generalisation, security measures and technical support:

Table 1: Feature comparison of top 5 web browsers

FEATURES	GOOGLE CHROME	MOZILLA FIREFOX	INTERNET EXPLORER	SAFARI	OPERA
TABBED BROWSING	Yes	Yes	Yes	Yes	Yes
INTEGRATED SEARCH ENGINE	Yes	Yes	Yes	Yes	Yes
CUSTOMIZE	Yes	Yes	Partial	Partial	Yes
PASSWORD MANAGER	Yes	Yes	Weak	Yes	Yes
ZOOM	Yes	Yes	Yes	----	Yes
HTML5 SUPPORT	Yes	Yes	Yes	Yes	Yes
ADDONS	Yes	Yes	Average	Average	Yes
OPEN SOURCE DEVELOPMENT	Yes	Yes	No	No	No
SPELL CHECK	Yes	Yes	No	Yes	Yes
TAB ISOLATION	Yes	No	Yes	No	No
SYNCHRONISE	Yes	Yes	Partial	No	Average
MOUSE GESTURES	No	No	No	No	Yes
POP UP BLOCK	Strong	Strong	Strong	Weak	Average
ANTI PHISHING	Yes	Yes	Yes	No	Yes
PRIVATE MODE	Yes	Yes	Yes	No	Yes
EMAIL SUPPORT	No	Yes	Yes	No	Yes
ONLINE HELP	Yes	Yes	Yes	Yes	Yes
USER MANUAL	Yes	Yes	Yes	Yes	Yes
FAQ'S	Yes	Yes	Yes	Yes	Yes
TELEPHONE SUPPORT	No	No	Yes	No	No

In the table shown above we observe that some features of the web browsers are same and some are not in different fields.

In terms of generalisation the web browsers share similar features of tabbed browsing, integrated search engine and HTML5 support. Tabbed browsing can be used to view many web pages at same time, integrated search engine refer to the search techniques for the browser and HTML5 support defines rules for embedding SVG and MathML inside a regular HTML document.

Looking the browsers differently we see that the features like customize, password manager and add-ons are all available in these but are weaker than others. The attributes which truly separates one browser from other are spell check, zoom, open source development, tab isolation, synchronise and mouse gestures that are given out in this table.

Now focusing on the security policy of the web browser we observe that Google chrome, Mozilla Firefox and Internet explorer have a stronger “pop up block” feature than the other two. In addition to this “anti-phishing” and “private mode” measures are supported in all web browsers except Safari.

Finally turning our attention to technical support we come to know “online help”, “user manual” and “FAQ’s” features are available in every web browser. Only “Email support” and “Technical support” features separates one web browser from another [11].

V. Which web browser will be best in future?

After going through this paper, one question might erupt in our mind about which web browser will make more scope in future. This question will become difficult to answer but by looking at the performance that they made in the past few years one can make some inferences about it [12].

Judging the value of all the browsers in the market in 2014 it is shown that Google chrome is making more scope and claims to be an essential player in the rise of web applications and cloud computing. However chances are there in the future that Google chrome will be simply called “Google”, a browser system that follows everywhere on our devices.

Now turning over to other browsers, Mozilla Firefox, Internet explorer and Safari are being given average rating by the people and all of them compete at almost the same level in the present time. However many versions of

these browsers are claimed to be released in the coming future so that it might be available for might be available for all devices.

Finally we come to Opera browser; this browser has been making a slow progress over the past few years. Opera co-founder Jon von Tetzchner believes that the Opera browser is whole lost now while reflecting the fate of the company which he left in 2011. Hence we can say that this browser can make little scope in the future [13].

In spite of the pros and cons of these web browsers, the goal of every browser is only one – “To reach the top of the market”. Hence this question will remain unanswered about which web browser will be best as there can be a chance of development of new web browsers.

VI. Conclusion

Getting information about every browser is easy but selecting the best one is difficult. Every person has his/her own choice of choosing a particular browser. However this paper can give an edge to them by telling which browser can be right. This paper gives out detailed information about top 5 web browsers regarding its overview, specifications involved, features, security measures and market share from the past years to the present. Also the scope of every web browser in the coming generation is given out in this paper. Hence no matter which browser a person purchases he/she finds its use in their own way. Therefore the selection does not concern much as each browser displays its own feature.

References

- [1] Mannoni Luigi, “The intensive process of internet browser testing”, January 28, 2014.
- [2] Waddilove Ronald, “Battle of the browsers 2014: Which is the best web browser for Windows”, December 16, 2013.
- [3] Reis Charles, Barth Adam, Pizano Carlos, “Browser security: Lessons from Google chrome”, Communications of the ACM, Volume 52, Issue 8, pp. 45-49, August 2009.
- [4] Khomh F, Dhaliwal T, Ying Zou, Adams B, “Do faster releases improve software quality – A empirical case study of Mozilla Firefox”, 2012 9th IEEE working conference, pp. 179-188, 2012.
- [5] Davis Steven J, Murphy Kevin M, “A competitive perspective on Internet Explorer”, The American Economic Association, Volume 90, Issue 2, pp. 184-187, May 2000.
- [6] Rouse Margaret, “Opera”, November 2007.
- [7] Younghwan Kim, Sujin Yoo, Seongbin Park, “A semantic web browser for novice users”, 2012 sixth IEEE International conference, pp 806-809, July 2012.
- [8] Anttonen Matti, Salminen Arto, Mikkonen Tommi, Taivalsaari Antero, “Transforming the web into real application platform: new technologies, emerging trends and missing pieces”, Proceedings of the 2011 ACM Symposium on Applied computing, pp. 800-807, March 21, 2011.
- [9] Widder Brandon, “Battle of the best browsers: IE vs. Chrome vs. Firefox vs. Safari vs. Opera”, November 25, 2014.
- [10] W3Counter, “Web browser market share trends”, November 30, 2014.
- [11] Khanse Anand, “Browser wars: Top 5 popular browsers – Feature comparison chart”, January 15, 2012.
- [12] Ossenbruggen Jacco van, Geurts Joost, Cornelissen Frank, Hardman Lynda, Rutledge Lloyd, “Towards second and third generation web based multimedia”, Proceedings of the 10th International conference on World wide web, pp. 479-488, April 1, 2001.
- [13] Browser Bash, “IE11 vs Chrome vs Firefox vs Opera vs Safari”, September 22, 2013.