

Open Source Content Management Systems: A Canvass

Amjad Farooq¹, Furzand Javed¹, Majid Hussain¹, Tahir Abbas² and Aatif Hussain³

¹COMSATS Institute of Information Technology, Sahiwal

²Ritsumeikan Asia Pacific University, Japan

³Computer Science and Engineering Department, UET Lahore

Abstract– The ubiquity of Omni-dimensional open source platforms imbued from the diversely pervasive market web requirements has lured the researchers to focus their concentration to develop an adaptable, evolvable and robust mechanism which could grapple lucratively with more-or-less all web development prerequisites. Content Management Systems (CMSs), the wide-ranging software suites, comprehensively confront the long sustaining relevant challenges and reflect a new wave in the era of web development and maintenance outside the realm of traditional stand alone tools. In recent times, a substantial number of open source content management systems (CMSs) have been proposed which have attracted a significant proportion of developers. WordPress, Joomla, and Drupal are the famous inclusions of this category. A sizeable number of analytical discussions, comparative analysis and closed surveys of existing CMSs have been made resulting in the evolution of a root level pivotal query. i.e., “How to choose an optimal Content Management system for multi-dimensional scenarios”. This paper provides a thorough comparative analysis of available CMSs based on their documentation, Themes, Plugins, setups, Administration, Flexibility and Ease of Customization, Security, Scalability and the other relative aspects, and , suggests an explicit way to choose best Open Source Context Management System in multiple scenarios.

Keywords– CMSs, Client, Open Source and Management System

I. INTRODUCTION

A content management system is a software package that lets you build and maintaining websites very fast and easy. With CMS you can manage all the events on your website with minimum use of technical knowledge. The content (text, images, media, etc.) are stored in the database and the system automatically pull the content our and how them on appropriated pages based how flexible structure of CMS is. Design or look and feel of the website can also be customized from CMS. In [2], [9] content management system introduction is discussed in details.

The objective of this paper is to provide all the necessary information to compare important open source Content Managements Systems. We will analyze and compare open source systems in terms their setup, plugins, themes, documentation, community, multilingual-ness, administration, loading time, security, scalability, Role Management [4], intuitiveness, flexibility and ease of customization, extensibility via plugins and modules, optimized for

performance and speed, security, social networking [5], documentation and community support, emphasis on web standards and best Practices etc. Some performance measures and performance analysis of content management system discussed in [3], [6].

Here, we will not evaluate performance of different content management systems. Performance evaluation of content management systems is discussed in [1]

To select an appropriate open source CMS have become a very difficult task for an application. This paper will provide a comprehensive comparison list of WordPress, Joomla, Drupal. We will also present content management systems graphs and charts from which someone can choose best CMS in specific conditions.

Motivation for comparing popular open source content management system is to create awareness for the people about content management systems. This paper will be a great help for the people who wish to develop interactive and powerful websites with minimum information technology knowledge. One motivation is creating awareness of using cost effective and reliable content management system instead of using previous conventional website developments methodology.

Another motivation is to learn these CMS by comparing which CMS should be used in which circumstances and in which conditions. They will be able to differentiate and select appropriate open source CMS which are being used in the market.

Most important motivation is to discuss the future of these CMS, what will be their advantages in coming future. WordPress is an open source content management system which has approximately 17% of total market share of web development. This paper will present a clear understanding of content management system for the future work.

There are many content management systems available now days. A comprehensive list of content management systems is presented in [10].

II. CONTENT MANAGEMENT SYSTEMS

WordPress [15] was initially designed for blogging platform but now it has become a general and powerful content management system. The main feature of WordPress is that developers can design their own plug-ins to improve the functionality of content management system and then

released for public use. Plug-ins are actually add-ons to user interface functionality. Joomla [14] is also another powerful Content Management system which is freely available to design and develop interactive websites in a very short span of time. Web applications like online communities, content management, Media, Blogs, and E-commerce can be developed in Joomla. Joomla is fully customizable like other open source systems. It also provide template feature so users are free to use available templates for Joomla.

Drupal [10] is third popular open source system available in the market. By using Drupal users can build robust websites without having any technical programming knowledge and with very short period of time. It is fully customizable so developers can change its functionality and expand it. It provides a community support in order to facilitate the developers to get help of using it and for customization. All these open source CMS provide multilingual support for the users and administrator.

1) CMS Comparison features checklist

Comparison of different content management systems are discussed in literature but it is not comprehensive. In

[7,8,12,13], comparison of different content management system is discussed.

The Following tables provides a comprehensive comparison of the popular open source content management system

2) Primary Applications

Primary applications are applications which are built in or available in content management system by default. Each user has different type of requirements. Someone can use content management system for small application or some other can use content management system for large application. Following comparison table can assists users to decide which content management system is preferable for their requirements.

3) Performance Features

Performance features are mainly related to performance of content management system. This comparison table helps user of content management system to decide which system is better for his requirements among these three content management systems.

Table 1: Primary features of Content Management Systems

Features	WordPress	Joomla	Drupal
Content Editor	80/100	75/100	60/10
Blogs	26%	26%	26%
XML-RPC interface	Solid	Solid	Solid
Password Protected Posts	Excellent	Solid	Solid
Spam protection	Solid	Solid	Solid
Web Services	Solid	Solid	Solid
Calendar	Solid	Solid	Solid
E-Commerce Features	Solid	Excellent	Excellent
Integrated Help System	Solid	Solid	Solid
Page Templates	Solid	Excellent	Solid
Image and Document Library	Excellent	Excellent	Solid
Web Importing	Solid	Solid	Solid
Multilingual	Solid	Solid	Solid
Plugins	Excellent	Solid	Solid
Access Control	Fair	Solid	Solid
Easily editable content	Excellent	Excellent	Excellent
Themes	Excellent	Excellent	Solid

Table 2: Performance features of Content Management Systems

Features	WordPress	Joomla	Drupal
Loading Time	Excellent	Solid	Solid
Content syndication	Excellent	Excellent	Excellent
Web 2.0 Functionality	Excellent	Solid	Excellent
interoperability	83/100	75/100	85/100
Mobile Web	80/100	30/100	50/100
Better code	Solid	Solid	Solid
Web Analytics Ready	Solid	Solid	Solid
Optimized for Performance and Speed	Excellent	Solid	Excellent
Security	Solid	Solid	Solid
File Storage	Excellent	Excellent	Excellent

4) Management

In content management system, different type of contents exists. Content can be a text document or content can be media file such a video or image file. So, management of these contents is an important feature of each CMS. Following comparison table helps interesting user to opt suitable system for his needs.

Table 3: Management features of Content Management Systems

Features	WordPress	Joomla	Drupal
User Roles and Workflow	Fair	Fair	Solid
Multiple authors	Excellent	Solid	Excellent
Template Management	Solid	Excellent	Solid
Syndication and Newsfeed Management	Excellent	Solid	Solid
Banner Management	Solid	Excellent	Solid
Media Manager	Solid	Solid	Solid
User Management	Solid	Solid	Solid
Meta Data Management	Solid	Solid	Solid
Site Administration	Excellent	Solid	Solid

5) GUI Features

These features are related to nonfunctional requirements of the system. For example drag and drop feature of Word Press is better than rest of two. So, if someone wants to choose a CMS among these content management systems having sophisticated drag and drop functionality as a crucial requirement, then he should opt Word Press for his application.

Table 4: GUI features of Content Management Systems

Features	WordPress	Joomla	Drupal
Design & Display	Solid	Solid	Solid
Organize & Find	Solid	Solid	Solid
Multiple File Upload	Excellent	Excellent	Excellent
Drag and Drop Editing	Excellent	Solid	Solid

6) Scalability Features

Scalability is considered when an application expected to grow in terms of his resources. For example, in content management system, it is expected that visitors on application will increase with the passage of time.

Table 5: Scalability features of Content Management Systems

Features	WordPress	Joomla	Drupal
Extending and Integrating	Excellent	Excellent	Excellent
Graphical Flexibility	Excellent	Excellent	Excellent
Structural Flexibility	Solid	Solid	Excellent
Scalable expansion	Solid	Excellent	Excellent
Extensibility via Plugins and Modules	Excellent	Solid	Solid
Flexibility and Ease of Customization	Solid	Solid	Solid
Scalable feature sets	Excellent	Excellent	Excellent

7) SEO Features

Search engine optimization is very crucial now days. Without careful SEO management, application had fewer chances to be popular in a hurry. Proper SEO management of an application increase chances of an application to be popular. So following table compares SEO features of these three content management systems

Table 6: SEO features of Content Management Systems

Features	WordPress	Joomla	Drupal
SEO Suggestions	Solid	Solid	Solid
Customizable URLs	Excellent	Solid	Solid
Accessibility and SEO	Solid	Solid	Fair
Search Engine Visibility	Solid	Solid	Solid

8) Supporting Features

Each application provides some type of supporting features. Applications like content management system have some common supporting features like downloading of CMS package, installation of CMS, documentation to use CMS and support for development community to extend or increase capabilities of content management system. Following table compare supporting features of following three content management systems.

Table 7: Supporting features of Content Management Systems

Features	WordPress	Joomla	Drupal
Ease of Setup	Excellent	Excellent	Fair
Installations	Excellent	Solid	Solid
Downloads	Excellent	Excellent	Solid
easy to understand and use	Excellent	Solid	Solid

Documentation	Excellent	Solid	Solid
Programming Knowledge	Fair	Solid	Solid
Versioning	Solid	Solid	Solid
Developer Support	Excellent	Solid	Solid
Community Support	Excellent	Solid	Solid
Support and Community Strength	Excellent	Excellent	Excellent
Third Party Support	Excellent	Solid	Solid

9) Reputations Features

There are some factors which can judge the popularity or reputation of an application. Like, Market leadership and popularity comparison are features which can be compared to review popularity of an application. Comparison table below listed above and some other factors which can be used to evaluate the reputation or popularity of these three content management systems.

Table 8: Reputations features of Content Management Systems

Features	WordPress	Joomla	Drupal
Popularity Comparison	Excellent	Excellent	Solid
The Market Leaders	Excellent	Solid	Solid
Search Engine Query Volume	Fair	Solid	Excellent
Brand Familiarity	Excellent	Solid	Solid
Books in Print	161	88	71
Average Budget Comparison	Normal	High	Very High
Web standards upgrades	Excellent	Excellent	Excellent

10) CMS Comparison Charts and Graphs

The charts and graphs of the big three content management systems are being shown from the following charts and graphs.

11) Most Popular Site Run

According to rankings for the top one million websites on which WordPress is the most popular site run share in percentage other than Joomla and Drupal.

12) Average Budget Comparison

The following graphs show the average budget cost for open source CMS. Drupal projects have large budget.

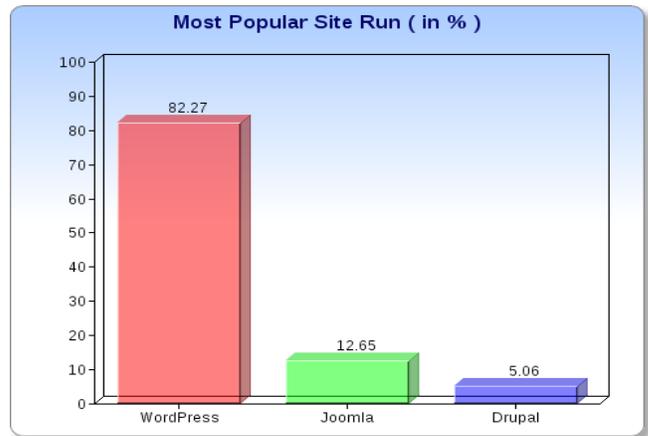


Fig. 1: CMS usage ratio of popular site

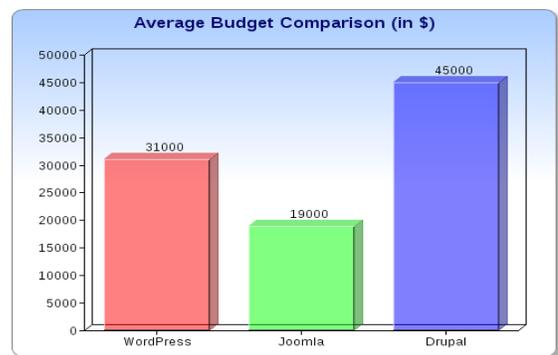


Fig. 2: Average Budget Comparison

13) Blogs

The following chart shows the share of the brands in the blogosphere. Drupal and Joomla share is same whereas WordPress has fewer shares.

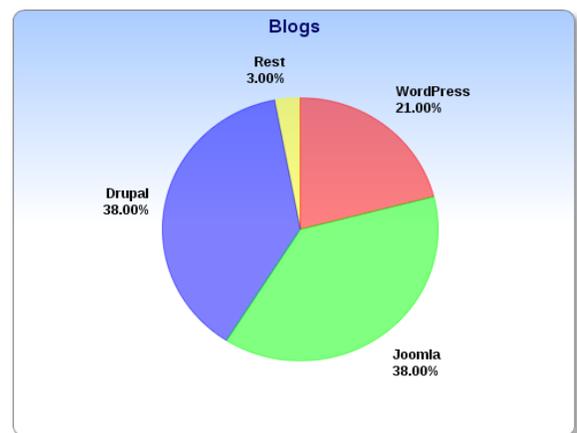


Fig. 3: Blogs

Facebook

Following chart shows the Facebook results from our survey report on the internet.

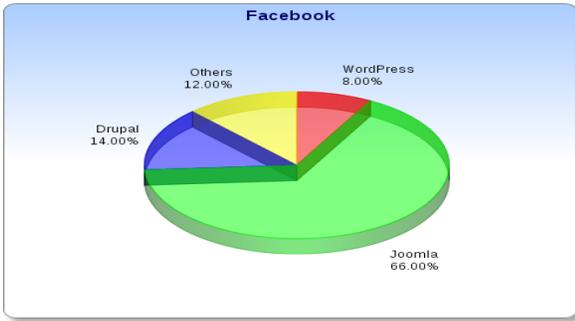


Fig. 4: Facebook Results

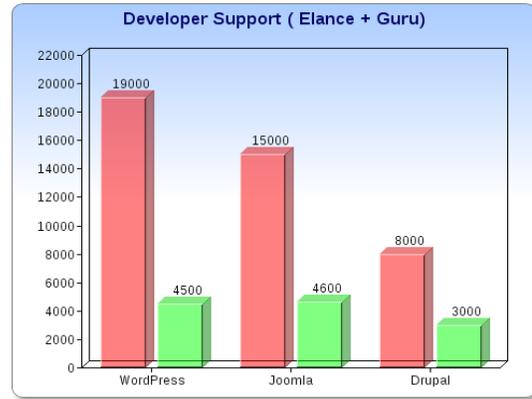


Fig. 7: Developer Support

Twitter

We use Google search to get insight into the prominence of each the various open source CMS on Twitter in 2012. Following Figure shows the results.

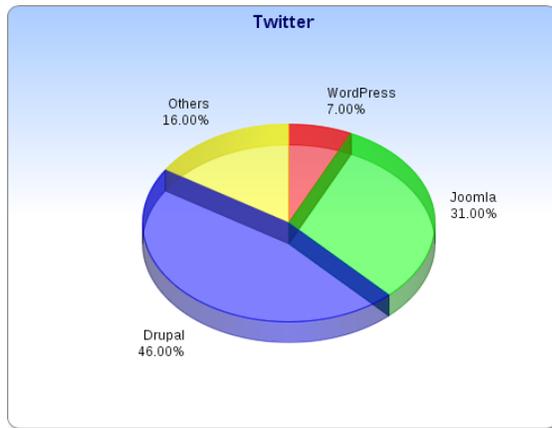


Fig. 5: Twitter Results

Downloads

Which open source CMS downloaded by most users in 2011. This is shown from the following figure.

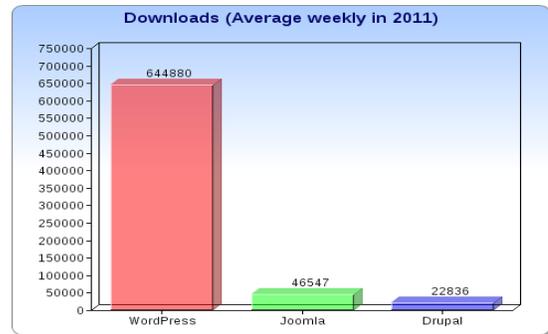


Fig. 8: Average Downloads in 2011

Books Print

The chart below shows the book printing for WordPress, Joomla, and Drupal in 2011 and 2012.

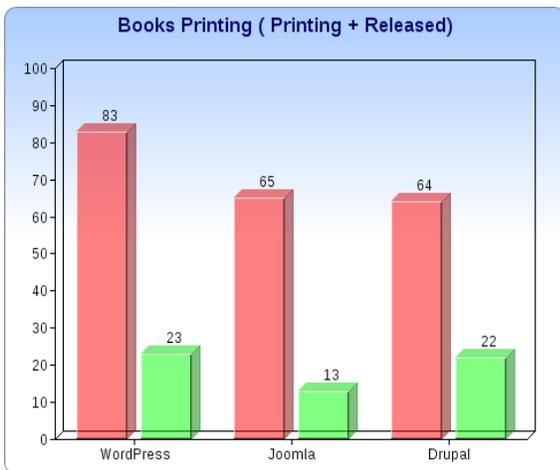


Fig. 6: Books Printing Comparison in 2011 and 2012

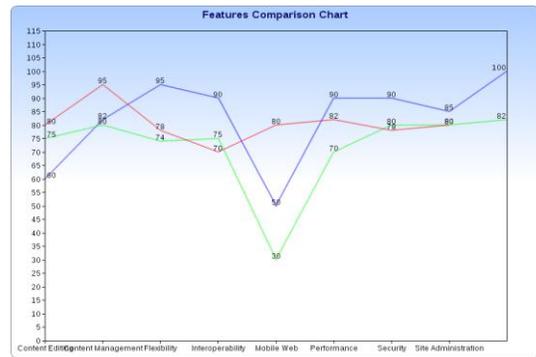


Fig. 9: CMS Feature Comparison

Features Comparison

The fig below shows that Joomla and Drupal are on the same rating for content management features while WordPress is little higher rating for the same features.

Developer Support

The figure below shows which CMS has most of the developer support on Elance and Guru.

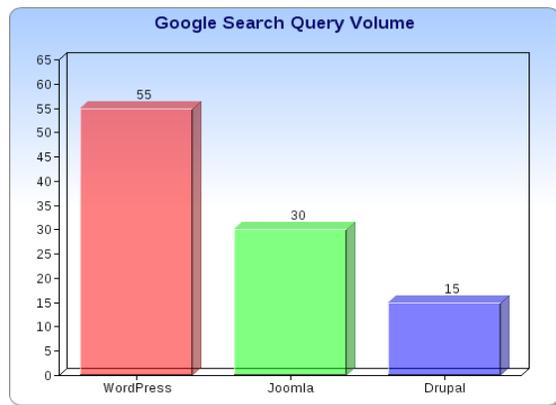


Fig. 10: Google Search Query Volumes

Google Search Query Volume

From the following graph, we can say that WordPress is searched almost 55% of total CMS search queries.

Inbound Links

Which CMS uses most of the inbounds links from other websites is shown from the following graph.

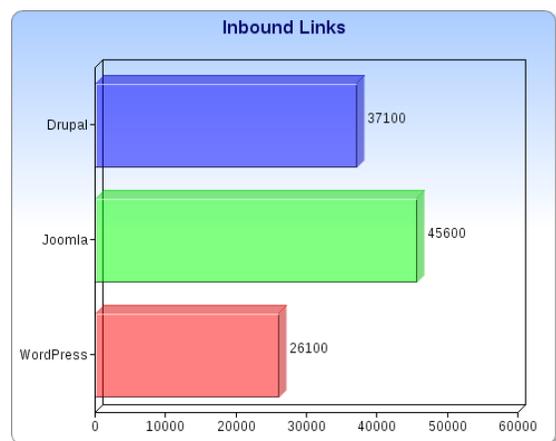


Fig. 11: Inbounds Links

CMS Installing

In 2011 WordPress was installed 47.2% whereas Joomla and Drupal are installed 25.5 and 27.3 respectively.

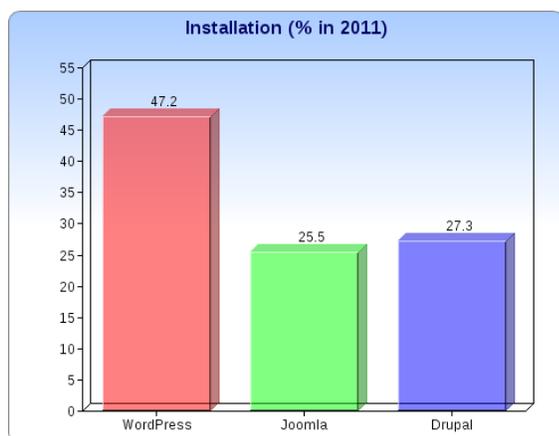


Fig. 12: CMS Installation in 2011

III. CONCLUSIONS

In this paper, we have compared and analyzed WordPress, Joomla and Drupal. The paper will help the people for choosing a better CMS from these three open source content management systems according to their needs. Each CMS has its own sets of features and advantages which makes it better from other two. According to this paper, all three content management systems has importance in some circumstances and conditions, so it is entirely dependent on the web application tasks that which content manage system is going to be used. We do not recommend any specific open source CMS but the features are listed above users can compare them and can select and use the open source content management system.

REFERENCES

- [1] Khalid S. Husain, Performance Evaluation Process of the Content Management System: Case Study of Kau Marz System, Middle-East Journal of Scientific Research 11 (1): 117-127, 2012, ISSN 1990-9233, © IDOSI Publications, 2012
- [2] Md. Sadique Shaikh, Vasundhara Fegade, Modeling Essentials of Content Management System (CMS) for Web-Based MIS Application, International Journal of Engineering and Technology Volume 2 No. 3, March, 2012
- [3] Sonika Tyagi, S.D.Sawarkar, Prashant Lokhande, Performance and Security Measure of Highly Performed Enterprise Content Management System, International Journal of Computer Applications (0975 – 8887), Volume 46– No.9, May 2012
- [4] Dijana Karuovic and Dragica Radosav, Managers' roles in web content management system, African Journal of Business Management Vol. 6(8), pp.2882-2887, 29 February, 2012, ISSN 1993-8233 ©2012 Academic Journals.
- [5] Kyung Rog Kim and Nam Mee Moon, Designing a social learning content management system based on learning objects, Springer Science+Business Media, LLC 2012.
- [6] Savan K.Pate, V.R.Rathod, Jigna B. Prajapati, Performance Analysis of Content Management Systems- Joomla, Drupal and WordPress, International Journal of Computer Applications (0975 – 8887), Vol. 21, No. 4, May 2011.
- [7] Darren L. Nye, Content Management System Comparison (white paper), JKDesign, January 2012.
- [8] Laura Quinn, Heather Gardner-Madras, Comparing Open Source Content Management Systems: Wordpress, Joomla, Drupal And Plone, Idealware, December 2010.
- [9] Dimitrios Michelinakis, Open Source Content Management Systems: An Argumentative Approach, The University of Warwick, Warwick Manufacturing Group August, 2004.
- [10] Drupal.org, "Drupal CMS Features List" <http://www.drupal.org/features>
- [11] List of content management systems, http://en.wikipedia.org/wiki/List_of_content_management_systems
- [12] Compare CMS Introduction <http://www.a3webtech.com/index.php/compare-cms.html>
- [13] socialcompare.com/en/comparison/popular-content-management-system-cms-comparison-table
- [14] Joomla.org, "Joomla Features Overview" <http://www.joomla.org/core-features.html>
- [15] Wordpress.org, "Key Features" <http://wordpress.org/about/features/>