

Decoding the Web CMS Landscape: A Comparative Study of Popular Web Content Management Systems

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Abstract

A web-oriented Content Management System (CMS) is a class of software platforms critical for the success of organizational websites. Mainly focused on content management, a CMS provides end-users with an abstraction layer of the technological details allowing them to focus on the most important web portal asset: content management. Studies suggest that the analysis and comparison method for CMS systems does not appear to exist or is simply based on ambiguous and overlapping side-by-side features comparison. This paper proposes a CMS reference model, which can be used and applied to compare the most popular CMS systems. The paper describes how a Content Management System (CMS) can successfully resolve the problems associated with managing Website data content. This paper reviews the most frequently used and searched CMS systems to show their popularity. The authors intend to highlight the merits and demerits of various Content Management Systems from its features and usage perspective to aid in informed decision-making towards selecting an appropriate Content Management System.

Keywords: Content Management system, CMS Hub, WordPress, Drupal, Joomla

1 Introduction

In this 21st era, in all sectors of industries from manufacturing to service industries, the motive is to successfully deploy the business content and related activities to users and customers on the online platform. To be well known amongst the public and attract more customers just to increase profit at a reduced cost

that is by using a web-oriented Content Management System (CMS). Content Management System is a built-in web-based application that publishes a dynamic website, transforms, and controls digital content without having technical expertise in web programming [31]. It consists of graphical user interfaces [6] that allow novices to create, edit, update, and modify the digital content on the website dashboard along with a database that can be accessed from local networks which enables them to design interactive websites that the viewers can vigorously interact from any size screen. The displayed content is conventionality compliances and acceptable which is centrally managed and remains under a control system [31] that is publicly accessible at a reasonable price by the website owners. Using CMS, the websites are designed and used with ease [27] whereby providing step-by-step instructions to interact with web-based applications. Whenever the need arises, the websites are effortlessly restructured and repaired along with a content management system at the minimum cost, as such giving an elegant look to the websites as perspective changes for website owners, and viewers occur in the digital market. A CMS provides many advanced plug-ins, extensions, and search engine optimization (SEO) which further assists in streamlining, handling, and knowing the current position of the websites while comparing them with the other websites [29]. Most prominently, CMS provides built-in stylish website templates with more built-in functionalities, and profusions of choices, just for easy setup with all possible transactions, web pages, blogs, catalogs, forms, and ads [29].

The content management system is divided into two segments, a content management application (CMA) and a content delivery

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application (CDA) [6]. CMA is a form of front-end CMS that focuses on planning, building, amending, and editing built-in template websites using user interfaces and WYSIWYG (what you see is what you get) interfaces for easy interaction by handlers [6]. The CDA supports back-end services like controlling and transferring content within the content management system [6]. The built-in web-based application is used in a variety of fields namely by e-commerce businesses, educational sectors, Food and Catering services, hospital industries, Construction and Real Estate Developers, Travel Agencies, Legal Practitioners, Entertainment, IT support services, Car Rentals, Support services just to enrich the companies brand reliability, perceptibility and to boost on sales. Depending on the type of organization transactions, businesses need to make a wise choice in embracing the types of content management systems namely: “component content management system” (CCMS), “document management system” (DMS), “enterprise content management system” (ECM), “web content management system” (WCMS), “digital asset management system” (DMS), while setting up the digital content on the websites [39]. Above all within the content management system, various popular CMS software assist in publishing digital content. In the following sections, the most widely content management system software is reviewed. This research paper is structured as follows: (I) Introduction- provides the background of CMS platforms including CMS HUB, WORDPRESS, DRUPAL, JOOMLA, SHOPIFY, MAGENTO, MAGNOLIA, OPTIMIZELY, PRESTASHOP, TYPO3, CROWNPEAK, CONTENTFUL, STORYBLOK, CONCRETE5, CONTENTSTACK, WEBFLOW, and UMBRACO, (II) METHODOLOGY, (III) STATISTICAL COMPARISON PARAMETERS- provides the statistical comparison for CMS , (IV) NEWS, IMAGE, and YOUTUBE SEARCH PAST 5 YEARS | WORDPRESS AND JOOMLA- provides the statistical figure for searchers in the past five years CMS ,(V) DISCUSSION- expresses the answers to the research questions from experimental and survey results, (VI) LIMITATIONS OF THE STUDY- outlines the limitations of the current study, (VII) Conclusion- the final section of the study examines and concludes by emphasizing the research contribution and (VIII) Future work- outlines the further exploration or discussion in future research.

1.1 CMS HUB

Under the CMS platform, CMS hub is the Software as the Service solution [11] that is readily available with built-in interfaces for content structures, themes, blogs, customer databases, reports, forms, widgets, etc. whereby it focuses on the marketing hub, sales hub, operational hub and service hub [40]. It is the drag-and-drop website builder that is an easy tool to use for developing businesses [11] which enables to make updates to the schedule with ease without relying on web designers. The CMS hub manages all internal logic of the websites where the users just browse from page to page to edit, update, manage, optimize, and track the performance of content [2] without knowing and understanding the complicated codes and related external devices using the domain manager, file manager, design tool, landing and website pages, blog, SEO and marketplace tools [11]. Language support [20] where the visitor can easily

switch to the preferred language to browse or interact with the webpages. The webpages need to be at the point in terms of the content page, title page, tagline, description, blog categories, domain name, and adding pages effectively which further supports website traffic to webpages from the search engines. CMS hub provides application programming interfaces (API) [2] for the ease of accessibility of the tools and resources that are in need when managing the webpage or websites hence improving the user experiences and meeting the viewer’s expectancy all in one window. API in the CMS hub plays a vital role as it motivates the users to interact with a system with all-in-one updates [2].

Creating the content along with the CMS hub gives flexibility [40] in the task as it combines the finder tool which focuses on managing files and folders, and the layout editor tool [20] enables users to make changes to the content, code editor, inspector, module editor, and file manager tool to finish the task comfortably with joy. The built-in template [40] is available with three modules namely, default modules, special modules, and custom modules [20] which control the design, style, and function of the webpage. Web developers, on the other hand, need to understand on kinds of modules, stylesheets, device managers, Hubspot FTP, and Proprietary language for HubL during the development of the application [20]. With built-in security features along with CMS Hub, it protects from DDoS attacks, hackers, and other anomalies [40]. Marketing industries and businesses that are privately owned with a smaller number of employees prefer Hubspot CMS Hub for publishing digital content hence the technical supports are in hit-miss mode [11].

1.2 WORDPRESS

WordPress is the backend development of websites that provides universal access to the content management system to create, modify, update, or publish fully functional dynamic websites [21]. WordPress is a blogging software that was on the market on 27th May 2003 and was designed using server scripting language within open-source relational databases [1]. It is the wp-admin or WordPress admin area to work on the website dashboard, posts, media, add pages, plugin comments, adjust or select themes, widgets, blogs, add forms, and work on tools, settings, and appearances based on the website user’s preference furthermore, it combines all related files, databases, themes and plugins for easy accessibility with zero programming skills or search of files along with application programming interfaces [1]. Considered a sustainable design approach to creating, updating, modifying, and publishing dynamic digital content or blogs to websites at minimum cost [1]. Examples of WordPress websites are the following: multimedia, social sharing, popular online games, culture, and design blog creative, placing the best ads, launching online magazines, agencies specializing in visual identity and brand creations, business law firms, artists, podcast, dealers, E-Learning [19]. Depending on the type of business transaction, the website owners need to understand the various versions of available WordPress every month before the installation process which differs in terms of hosting, layout, functionality, monetization, safety, and preservation.

WordPress has the advantage that any newbie can easily create updates and publish along with the plugins and widgets which back in the processing features like adding forms, improving SEO, increasing site speed, or accessing additional features, content, snippets, or interacting with the site [9]. Any later amendments or modifications in the built-in templates, the website owners are easily able to regulate. Instinctive interfaces enable users to organize and manage the backend of the website [1]. Secures the websites [19] and provides alerts along with security plugins. The website that is designed along with WordPress is viewable from any size screen [1]. WordPress is an open-source content management system [9] that is freely available for use. However, to have better functionality of WordPress, the users add additional plugins, themes, and widgets which later cause disruption in the functionality and slow the webpage to load when viewers wish to browse the website from the front end [1].

1.3 DRUPAL

Drupal is one of the accommodating content management systems that is based on Linux, Apache, MySQL, and PHP software for easy setup of reusable digital content on the website [16]. It is the open-source backend web application framework [9] that mainly emphasizes web services, Web API, and web resources to design a dynamic website with no programming skills. There are various modules available in CMS Drupal which are of three types namely, core modules, custom modules, and contributed modules that accommodate creating, updating, modifying, or setting the user-centered content and controlling user accounts [9]. Vigorous installations of modules [19], allow users to add or delete any features within the modular design. As per the release of the new versions of modules, themes, and core, Drupal robotically informs the user to update it, where the structure and layout of templates are controlled by themes. Mainly, industries like retail, financial services, sports and entertainment, travel and tourism, e-commerce, NGOs, and non-profit organizations opt for CMS Drupal [19] which tracks records of continuous inventions. The enhancement of CMS Drupal is greatly contributed by the dedicated Drupal community in handling, building, and preserving Drupal-related sites, themes, modules, pages, polls, articles, forums, and blog layouts along with Drupal API which further assists in adding new functionalities [9].

CMS Drupal has the following merits: it gives flexibility in managing and designing content using multiple languages along with modules and API which is freely accessible to visitors to meet its requirements [16]. Drupal can automatically configure updates and validation in never-ending innovation [16]. With personalized content [19] it enhances good user experience which offers a user-centric layout for each of the components of CMS Drupal. However, it allows all-in-one translation that adds various networks of digital marketing tools. Provides frontend and backend content [16] where the users effortlessly update and publish the content on pages, blogs, forum topics, and article entries on one or more sites. A disadvantage of CMS Drupal is that with the vast availability of modules and themes users need to make a wise choice that best fits with the organization's transaction [9]. The dedicated Drupal community needs to be the

expert personnel in each level of development or modifying process of the system [16].

1.4 JOOMLA

Joomla is an open-source content management system [19; 10; 25] that is easy to use, learn, and deal with. Joomla is designed with a general-purpose scripting language, an open-source relational database management system [9], and objects that have data fields with single attributes and behavior. It contains components that are divided into two parts an administrator part and a site part which adds custom functions from the menu to the site [19]. The site part allows users to interact with the webpage during the design process of the webpage. The administrator part assigns a designated task for interfaces and controls different features of components, language, library, modules, plugins, and templates of extensions for CMS Joomla. CMS Joomla website has various built-in templates [26] in terms of brand, labels, fields, content sections, plugins, and modules for e-commerce businesses, health, education, arts, media, science industry, etc.

CMS Joomla has an advantage in that it directs the newbies from forums, brief documentation, and training via videos or provides a free website on launch during the installation process and in designing templates along with extensions and modules. It saves the cost of designing a fully functional website [16] from hiring experts to develop CMS and its extension. Model view-controller web application [19] consists of various shopping cart extensions that enable users to build an online operational store in less than 10 minutes in the digital market.

The demerits of CMS Joomla are as follows; it requires the experts [1] to design CMS Joomla's website which is the challenge to build the backend of the Joomla webpage or to cooperate with the viewer's custom design. There could be a failure in the installation process [9] of the extension if the user does not unzip the files before the installation process also user cannot use an automated installer, hence it requires the users to follow the accurate procedure during the installation process [16] and choose the right the extension just to avoid malicious extension.

1.5 SHOPIFY

Shopify is an online tool for users to design, manage, and boost business E-transactions. It is the type of application for an online e-commerce store that enables users to develop the business on a digital platform that meets all business needs [7; 28]. That combines the buying and selling of products and services online, m-commerce, receiving inventory shipments, Inventory storage, order processing, shipping services, providing outstanding customer service, inventory management, customer relationship management, Point of Sale (POS) capabilities, and much more under one platform [26]. The product details, images, applications, and services are accessible over the network and use a content delivery network [7]. Shopify creates the website within minutes using a web builder that consists of a header, slideshow, and collection list. The slideshow promotes special sales, discounts, and adds a new menu by editing the settings in the theme's header section and the collection list shows all

collections in the store [7]. The merit of Shopify is that the users can easily access, customize, modify, and load the websites [8] wherever the network connection is available. Hence it provides backend management of the online store that improves the functionality [8] and adds extra services on request at the minimum cost.

Website owners cannot design something unique of their own since Shopify builds the standard website [8] with a limited layout to design the website for the online store. Under the Shopify platform, the website owner must pay [8] for the individual transaction made. The service like receiving the email messages and related files via website domain addresses that are stored on the server is not being facilitated on Shopify [8]. Users opt in for third-party email hosting services to send the message at the extra cost.

1.6 MAGENTO

Magento CMS is open-source software that is designed using a general-purpose scripting language along with a relational database management system (RDBMS) [33], mainly for managing and updating the digital content of e-commerce sites. It consists of modules, themes, and language packages [33] that support frontend and backend layout interaction along with the website. The appearance of the Magento website templates consists of a header that has store navigation, search, and store link, the left content block has callout and popular tags, the content block in the middle has product listing, and the right content block has a mini cart, product compare, callout, poll and the footer which obtains footer links [33].

The merit of Magento's CMS is that it provides functional websites with various available Magento extensions that support web traffic [33]. Magento CMS caters to a wide range of customers with a variety of product displays. The website can be easily modified as the preferences change occurs among the website owner and viewer. However, it is costly to obtain [33] in terms of maintenance cost, updates, and plug-in software. Magento CMS requires users to follow the step-by-step instructions during the installation process of Magento's latest version of applications [33] like XAMPP, the current Magento website version with phpMyAdmin database, Apache, and MYSQL server.

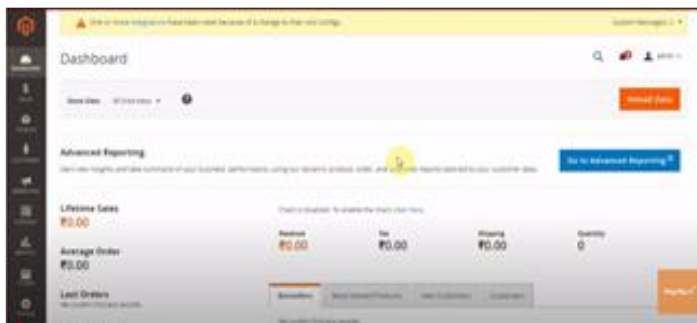


Figure 1 shows enhancing the MyAdmin page to incorporate a customized module into the Magento Content Management System (CMS).

1.7 MAGNOLIA

Magnolia is an open suite headless content management system that is freely available for any updates that are designed using high-level, class-based, and object-oriented programming language on the digital platform [24]. This platform furnishes users with numerous mixed supply and advertising channels for marketing, with various languages, and countless operational site tools that meet the industry's needs. Magnolia CMS templates have a home page, sections, and articles and add new pages that are under the main area, it enables the user to add comments, add content, edit on page header, and add on an extra area to add components namely: calendar, contact, download list, external page teaser, internal page teaser, latest newest teaser or download file transfers [4].

The merits of the Magnolia content management system are that it offers one solution in terms of usage and creation of sites along with REST API [24]. The dynamic website of Magnolia enables the user to easily interact and easily incorporate with third-party systems [4] on the availability of network connection. The simple structured dashboard of backend systems is efficiently modifiable [24] which saves the time and cost of the website owner and viewer in designing and browsing the webpage. Hence, it is time-consuming [24] for the non-specialist user to set up the standard site layout. There are a few open-access documents on Magnolia CMS for developers and users for further understanding of the application [4].



Figure 2 shows preview of Magonila CMS Template

1.8 OPTIMIZEZY

Optimizely CMS is known as Episerver, which is a highly task-oriented content management system that is written using C# programming language and later upgraded with Visual Basic.Net and J# programming language with the .Net Framework on the web development platform [35]. It provides services on the cloud and normal installation [35] that serve in handling, browsing the content, assist in the workflow of tasks which is available with countless linguistic features. The Optimizely CMS works with add-ons [35] that assist in setting up the webpage, adding modules, gadgets, visitor group criteria, virtual path providers, page, and search providers, and so on along with registered modules that further provide the best customer services. The content on the websites can interact with a wide range of digital devices from the user to digital brand media. It is the real-time web interaction [35] that boosts user engagement

with the website. Conversely, there's not enough open access reading or guidelines on Optimizely CMS for newbies to design or understand the backend of the webpage.

1.9 PRESTASHOP

Prestashop is an open-source CMS application [14; 18] that is freely available for an online store to create, edit, and update the content in the built-in webpage which is designed using general-purpose scripting language and open-source relational database management system languages. It uses Windows, Mac, and Linux as the communication bridge [14] which enables users to interact with the system. The themes are personalized with several features namely, viewable from any size screen, image component is added, PSD files to edit the images, custom color, and fonts, mega menu, image zoom properties, newsletter subscription forms, support in multi-language, more fields in product page, parallax scrolling, advanced EU compliance, blog system, and sticky shopping cart [14; 3]. It has interchangeable modules and independent functionality programs that are retrieved from the basic version installed on the web server along with the domain name.

Prestashop CMS conveniently reaches out to its potential customers with the latest offer provided from the online store's end via email which supports search engine optimization. Optionally free to use the CMS system unless adding additional features would be costly to obtain. In the case of plug-in conflicts, it will require programming knowledge to resolve the issue.

1.10 TYPO3

TYPO3 is the freely available content management system that allows businesses to use, share, change, manage, and distribute the webpage that runs on the web browser which is designed using a general-purpose scripting language. It is a layered-based web application that also consists of application programming interfaces (API), plug-ins, and extensions, modules that further support backend and frontend interaction for the users [5]. The TYPO3 extension supports accessibility, design, and TYPO3 shop with the TYPO3 plugin on the TYPO3 website [5]. The users simply use the browsers to navigate through any website to edit at the backend by typing using TYPO3 CMS whereby the user types on the end of the browser's URL with forward slash TYPO3 to login to edit on the webpage hence offering the systematic approach in managing the content. In TYPO3 CMS, the content editor [5] effectively controls the content on the webpage with multi-languages amongst multi-sites which enables the user to complete the desired setup on the content beforehand within estimated budgets.

The merit of TYPO3 CMS is that it provides a step-by-step documentation guide for the installation process of the system. It can adjust the page layout without a pre-fixed order of blocks, sections, or articles. The TYPO3 is a user-centered design [5] where users effortlessly create a dynamic webpage, work with responsive forms and efficiently participate in multiple desktops and dashboards at the same time. The system is available with

various extensions, plugins, and modules subsequently allowing the user to actively work on blogs, chats, newsletters, registration, add images, forms, videos, and online purchases [5].

The demerit of TYPO3 CMS is that users bear the prospective cost [5] of receiving assistance from support, for installation and update services. When installing the TYPO3 CMS extension, users must be very careful in getting the appropriate TYPO3 plugins, if the wrong plugin is installed then it can cause an error in the site [5], reducing the speed in displaying the website, unwilling malicious code damages the system.

1.11 CROWNPEAK

Crownpeak CMS is the content management system for anyone to create, edit, and manage content on the enterprise website on the online platform. It is a web-based hosted application that is available to the end-user as the on-demand software to manage and publish the content of the websites along with web builder (WYSIWYG) on the single-screen dashboard [32; 34]. The template is written using a general-purpose, multi-paradigm programming language's API and later modified using Java scripts API and HTML tags by the end user's design [32]. Within all digital channels [32] namely, websites, social media, mobile apps, and more Crownpeak CMS manages customer's or employee's feedback, fosters customer or employee's success, with current and updated product information, assists in the quality of product information display and in retrieving the holistic brand that inspires all in the digital market. Besides, Crownpeak CMS consists of the component library [32] that facilitates multiple numbers of templates, models, and modules that are reusable on demand by end-users.

The merit of Crownpeak CMS is that it enables the user to design with the template conveniently and efficiently [32] along with the open-source and free component libraries patterns. Even end-users save time and effort with the features provided by Crownpeak CMS that best suit their business needs. Nevertheless, Crownpeak CMS does not facilitate the end-user to work on recent object content if the connectivity to the source is lost [32].

1.12 CONTENTFUL

Contentful CMS is a digital management experience platform [12] that empowers businesses to design content and measure it across different channels and platforms. It is the modern way to manage the content that combines the content into a single hub that flows into any digital channel where the content is restructured which is easy to use. An intuitive web application [12] enables users to input content, preview content, and update the content without the code and sends the fresh content to the hub within a very digital experience, meanwhile, developers incorporate tools, like conversion, subdivision, and search that is ready for next innovation [12]. It consists of open-source client Libraries and SDKs [12] within any programming language like Java, JavaScript, C-sharp, Swift, Ruby, and PHP.

Contentful separates the content from the code and its language, framework-agnostic [12].

Contentful CMS offers the user GraphQL and REST API [12] and many other tools to build the content faster and easier. It consists of sets of APIs [12] which assist in the design, as the customizable web controls every component of the content. Thereafter distributes Contentful content anywhere and fetches data using HTTP. Content is an essential component of digital experiences that aids clients to learn, buy, and enjoy the product. The application provides documentation, and tutorials as the guide for newbies to initiate with Contentful and offers free community projects [12] that further assist users in meeting their project or business needs. Hence, it requires some level of programming skills when dealing with Contentful data modeling procedures [12].

1.13 STORYBLOK

Storyblok is the back-end content repository [13] that enables the user to easily learn, understand, and use the user-friendly web-based application on a digital platform within the visual editor. It is the creator's and marketer's tool to create and edit the content with no coding skills. With that combination, the website is built on multiple components, APIs, and content editors [13] that further support structuring the project, choosing the right technologies, and extending the UI in a way the user requires. Adding the custom application, tool plugins, and field type plugin [13] improves the efficiency of the Storyblok content. The following tabs are found on the backend of Storyblok that is dashboard, content, assets, components, data source, application, and settings tab [13].

The merits of the Storyblok are that it is a great opportunity for businesses to meet the customer's expectation [13] within the estimated budget that provides full localization provision and a conversion workflow for all types of content and assets: rich text, URLs, SEO metadata, and responsive images [13]. With flexibility, the user is easily able to edit the content using the nestable content block. Provide the application's information as the documentation guideline in terms of learning hub, Storyblok GitHub, and beginner's tutorial for a better understanding of the system. The demerits of Storyblok CMS are that there are no client-side forms that support UI [13] which cannot be customized to Storyblok while preventing unauthorized changes [13].

1.14 CONCRETE5

Concrete5 is an open-source content management system that is designed using the general-purpose scripting language and with a relational database management system [17] for growing businesses at a reduced cost. Editing the content on Concrete5 is like Microsoft Word which has handy add-on tools to add cool features to the backend of the website via turning on the edit tool. In the marketplace of Concrete5, there is a free commerce extension [17] which is added safely to the website within a few clicks of the Concrete5 site. The web builder [17] further supports edit processing of the content. Concrete5 controls the

recent post within the pre-built blog feature and adds a real-time comment system [17] just to further improve its service and enable users to share their experience during the interaction process of the web-based application.

The merit of the Concrete5 CMS is that the editing tool controls and designs the website effectively within the estimated timeframe. Moreover, the system provides full authorization [17] to selected members to retrieve the designed content of the websites. The website is viewable from any size screen along with a navigational menu [17]. The users can create forms and reports [17] and with just one click of interaction can easily update to the latest version of the application.

The demerit of the Concrete5 CMS is that the application is not suitable for all types of business with its various respective transactions. Adding the extra add-ons is like adding extra cost [17] to the user.

1.15 CONTENTSTACK

Contentstack is the headless modern content management system on the content experience platform [15]. It is the content-as-a-service architecture [15] that manages and publishes content on mobile applications and multiple channels. With the built-in layout of themes, users use the respective fields like URL, single-line textbox, multiline textbox, rich text editor markdown, select, modular blocks, number, Boolean, date, file, link, reference, group, global and customs to add, create and edit the content to publish which is available with various languages [15]. It consists of two main elements that are organization and stack, organization is the parent entity that takes in all resources that are placed within it like plan and usage, user, organization role, single sign-on, and stacks whereby stacks themselves contain content type, entries, assets, roles, users, environment, languages, webhooks, extensions, releases, workflows, tokens, publish queue, audit logs and trash [15]. The modern CMS delivers content everywhere. The clients are blazing-fast content creation and migration, providing integration and analytics on various digital channels at a faster pace.

The merit of Contentstack is that it manages the content with RESTful API and SDKs [15]. With the text editor tool users easily edit the content, images, and videos. The user interfaces enable users to interact, analyze, and communicate, which further improves the usability of the application [15]. The application provides multiple APIs and a built-in workflow feature [15] to boost the design of the websites.

The demerit of the Contentstack is that it is not available as a free plan [15] whereas a scale plan would be costly for the users to obtain. It requires some level of skills in proper strategies and using editor tools in the designing process of content.

1.16 WEBFLOW

Webflow is a real-time collaboration content management system that is further structured using JavaScript, HTML, and CSS in a visual canvas [20]. In Webflow CMS the data structure is built from content fields [20] which enable users to edit and create content individually or using CSV data files. Multiple items in various fields are combined into one collection which is

the top-level container for content [20] It contains two types of collections, a collection page and a collection list that has itself dropped in collection content. The collection page automatically creates collection items. As such, the web-based application consists of sections, containers, div blocks, grid, slider tabs, lightbox maps, buttons, social media, link blocks, headings, paragraph, image, video, forms, animations, and navbar elements that are used in the designing process of the website.

Users can change, edit, and publish the content at any time as the developer or editor adds blog posts, employees, and news on the live website. No coding is required and provides live samples and real-time changes [20] of the product that clears the doubts of users in the digital market. Within just one click the responsive single webpage [20] appears on social media, e-mail campaigns, and internet marketing. Nevertheless, Webflow CMS does not support live chats and phone support [20].

1.17 UMBRACO

Umbraco is a friendly content management system that is freely available on the online platform for effectively controlling and publishing the content of the websites [33]. It uses a general-purpose programming language that supports more than one programming language which consists of content editors, designers, developers centralized media library tools, and third-party APIs [33]. It is functional with all types of operating systems and devices along with .NET SDK in the installation process of the system [33]. The on-demand-based content management system [33] recovers the previous content and supports validation and accessibility of the application by the users along with the standalone application [33]. The Umbraco CMS allows the users to freely design the setup of the layout of the website as per the expectation of business transactions within the pre-built templates [33]. The merit of the Umbraco CMS is that the newbies are easily able to create and manage the content on the website with zero programming skills which are automatically adjustable and viewable from any size of the screen [33]. The website is easy to learn and use and for the user to deal with text, images, source code, forms, and media. Hence, displays the contents and interaction section tools efficiently and reliably on the back office of the Umbraco CMS. [33] However, the user needs to understand the steps of installation of the application.

2 Methodology

A quantitative study was proposed for this research to support the findings which included data analysis using the following methods.

1. Dataset: The study's dataset, which focused on search volume information for particular CMS systems between 2004 and 2020, was taken from Google Trends. There were hundreds of rows in the dataset, and its properties included geographic distribution, time periods, and search terms. To concentrate on particular CMS systems or keywords pertinent to this study, the

dataset was filtered. The time frame was chosen to highlight important developments and adoption patterns in CMS. Any missing or inconsistent values were addressed by applying data cleaning procedures.

2. Experiments: Using Tableau, an experiment study was carried out to examine trends in CMS platform acceptance. The experiment's goal was to use search data over time to find important trends and comparisons between particular CMS platforms. To track variations in search volume across various platforms, a number of visualizations were created, such as trend plots and line graphs. Custom filters and settings were implemented to Tableau version 2023.1 in order to maximize the visualization and analysis process.

3 Statistical Comparison Parameters

Interest over time keyword” content management system”
Zone: (Worldwide)

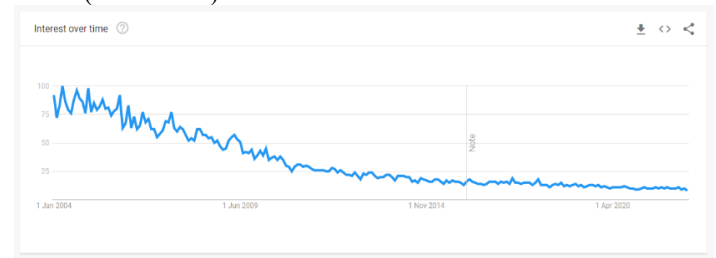


Figure 3. shows that there is a general decline in the number of people searching for “Content Management system.”

Interest over time numbers represents search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means that there was not enough data for this term.

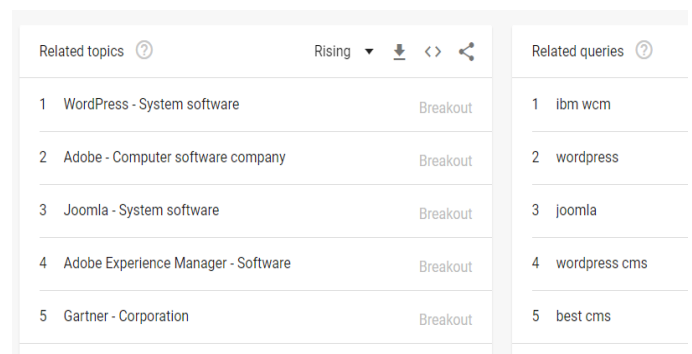


Figure 4. shows that individuals who searched for the term "Content Management System" predominantly conducted additional searches related to "WordPress and Joomla."

The most popular topic scoring is on a relative scale where a value of 100 is the most searched topic and a value of 50 is a topic searched half as often as the most popular term, and so on. Rising – Related topics with the biggest increase in search frequency since the last time. Results marked 'Breakout' had a

tremendous increase, probably because these topics are new and had few (if any) prior searches.

4.1 News Search Past 5 Years | Wordpress and Joomla

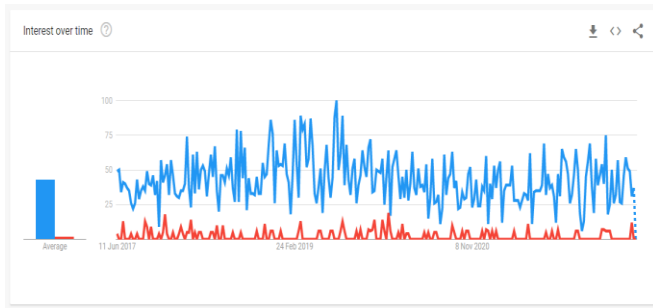


Figure 5 shows News Search for the past 5 years where “WordPress” was most searched in News as compared to Joomla.

4.2 Image Search Past 5 Years | Wordpress and Joomla

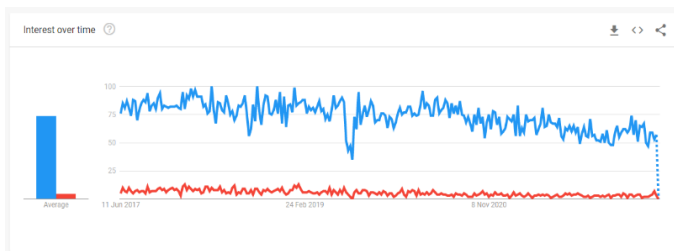


Figure 6. Image Search for the past 5 years shows that “WordPress” was the most searched in Images as compared to Joomla.

4.3 Youtube Search Past 5 Years | Wordpress and Joomla

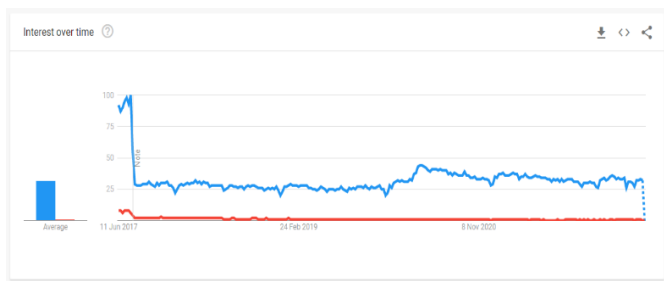


Figure 7 shows Youtube Search for the past 5 years where “WordPress” was most searched on YouTube as compared to Joomla.

4.4 Web Search Past 5 Years | Wordpress and Joomla

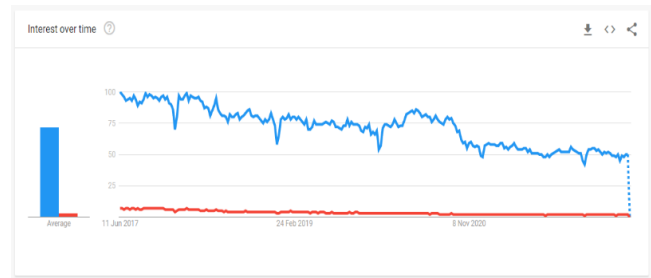


Figure 8 shows Web Search for the past 5 years where “WordPress” was the most searched on the Web as compared to Joomla.

4.5 Web Search for The Past 5 Years | Wordpress, Joomla, Magento, Drupal, And Umbraco

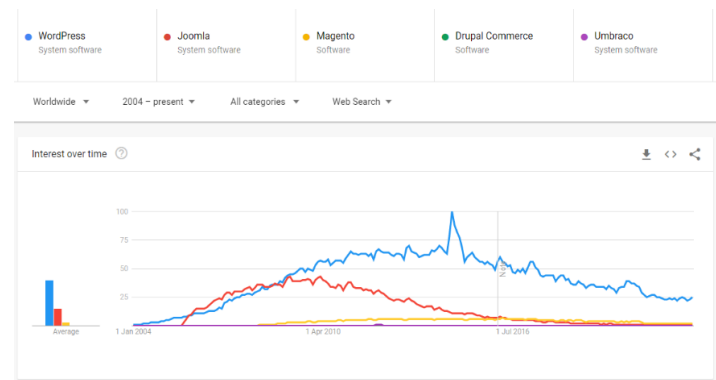


Figure 9 shows Web Search in the past 5 years for WordPress, Joomla, Magento, Drupal, where Umbraco shows that WordPress was most common followed by Joomla.

5 Discussion

This paper reviewed the most frequently used and searched web-oriented CMS system. The advantages and disadvantages of these systems have been discussed along with a comparison of different systems in terms of performance and popularity. WordPress is well known for its user-friendliness, and many people prefer it to compete with CMS platforms. Its users are a mix of novices and experts in the field of technology. It is also simple to set up and utilize. Most newcomers may quickly pick up the basics because of the control panel's simplicity. The interface is basic and easy to use, while the backend is simple and tidy. The different content areas of the site, as well as the settings that may be adjusted, are located on the left side of the page. Joomla may be an asset to a company if users take the time to learn the fundamentals, but it will take more work and brainpower for beginners to get there than WordPress owing to the sheer quantity of admin screens. Joomla makes use of both Articles and Categories. To put it another way, before you begin developing content on Joomla, you must first build categories for the various types of material you intend to publish. This method may be more difficult than WordPress, especially for non-programmers. Figure 9 shows how WordPress web search is leading as compared to Joomla, Drupal, Magento, and Umbraco.

WordPress's popularity made data breaches, hacking attempts, malware, and Trojan assaults frequently targeted. From a security viewpoint, this may be a nightmare. Furthermore, most of its complex extensions require plugins, and you must edit the core file to enable SSL connections. WordPress already has its collection of security extensions and plugins to assist users in securing their websites to the greatest possible degree. Joomla extensions and plugins, which account for 84 percent of all hacked sites in the system, provide certain security dangers to Joomla, like WordPress. Recognizing that no CMS is completely safe, Joomla includes several security extensions and plugins. While WordPress requires the installation of additional plugins to enable SSL, Joomla features "Joomla Force SSL," which allows users to activate the Joomla SSL Certificate in their core system without the need to install any more extensions.

6 Limitations Of The Study

One limitation of this study is the restricted focus on only a few popular CMS platforms, such as WordPress, Joomla, and Drupal, excluding newer or niche CMS options. The reliance on Google Trends data also presents a limitation, as search interest does not fully reflect real-world usage or adoption across different industries.

7 Conclusion

WordPress and Joomla have grown in popularity generally because they both allow users to customize their websites in various ways. Both provide a variety of themes and plugins that users can quickly integrate into their websites without requiring any web development experience to produce a functioning and appealing website. This popular CMS features dozens of free WordPress themes and hundreds of paid alternatives that allow users to develop anything from a simple website to a professional one, even if they have no coding or design experience. Joomla's competitive edge is its ability to customize. Although Joomla does not have an official template library, it does offer many third-party templates as well as plugins that allow users to construct a variety of multi-functional websites. Furthermore, Joomla allows users to utilize numerous themes across the website. After analyzing the performance of Joomla, Drupal, WordPress, Umbraco, and Magento under identical circumstances, this article was prepared. Separate tests were conducted for each of the above-mentioned CMSs to determine which of these CMSs works well on both a local and live server. Because WordPress caches a larger quantity of data in cache memory, it may be advantageous to speed up your job in some instances. Figure 3 shows that there is a general decrease in the number of people searching for "Content Management System." According to Figures 3,4, and 5,6,8,9, WordPress is the most popularly searched-for and utilized Content Management system. Through this paper, the users will be able to choose and make an informed decision when selecting a CMS system to work with.

8 Future Works

Future research could expand the range of CMS platforms to include newer or less popular systems, offering a more comprehensive comparison. A detailed security and

performance analysis would provide deeper insights into each platform's robustness. Additionally, examining CMS adoption in specific regions and sectors would enhance the scope and relevance of future studies.

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