Journal of Science Research and Reviews
PRINT ISSN: 1595-9074
E-ISSN: 1595-8329
DOI: https://doi.org/10.70882/josrar.2026.v3i2.200
Homepage: https://josrar.esrgngr.org
Review Article

Review of Modern Web Development Frameworks and Productivity Tools

***[1]Agu, Sunday C. and †[2]Elugwu, Felix**

[1]Department of Computer Science, Benson Idahosa University.
[2]Department of Computer Science, Delta State Polytechnic, Otefe, Nigeria.
*Corresponding Author's email: sagu@biu.edu.ng Phone: +2348033740913
ORCID iD: *https://orcid.org/0000-0003-0635-1939 †https://orcid.org/0009-0007-3153-5955

KEYWORDS
Static website,
Dynamic websites,
Hybrid website,
Content Management System,
Website Builder,
Hand-coded Website,
Frameworks,
APIs.

CITATION
Agu, S. C. & Elugwu, F. (2026). Review of Modern Web Development Frameworks and Productivity Tools. *Journal of Science Research and Reviews*, 3(2), 113-117. https://doi.org/10.70882/josrar.2026.v3i2.200

ABSTRACT
The rate of dissatisfaction over the intransigent website provided by web development companies to government, organizations and businesses, not meeting their routine operational demands has increased in recent time. In this light, we explore the modern web development frameworks and productivity tools by considering the distinctions amongst the types of web applications and the different tools that are used for building website which have posed serious problems, confusions and debates amongst developers and their clients. We equally examined the features of the different types of the website and the tools that would enable organizations determine the type of web app they need and the corresponding tools most effective for actualizing the overall goal of the business. Finally, we compared the web frameworks to enable clients decide the tools appropriate for their type of businesses websites that would reduce the cost of building and maintaining the website, enhance performance and productivity that would stand the taste of time.

INTRODUCTION

Businesses have expressed disappointments over websites that have botched to meet their mundane operations (Steve, 2015). Good understanding and comparison between and amongst different types of websites and the different tools that are used for creating the websites will greatly assist in ensuring that the websites meet their routine working needs (Sync, 2016).

Today we live in the era of Content Management Systems (CMS). Dynamic sites, created with a CMS such as WordPress, Joomla, Magento, Drupal, etc became popular very quickly as they are quick to maintain and one needs no special knowledge to manage content with them. However, static websites can perform almost every task as dynamic website (Helen, 2018) such as

1. Template + Content: unique content and logo for brand can be designed with online logo maker.
2. HTML + CSS: website can be created faster using static site generator. The most popular and free open-source are Jekyll, Hugo and Hexo.
3. Hosting: With a static website any option is suitable - cloud file storage, static file hosting, any traditional hosting.
4. Dynamic functionality: is capable with a static website. For instance, (i) Site search can be created with the help of the Google site (ii) Blog comments can be easily implemented with Discus. (iii) Online shops can be implemented with Ecwid or Snipcart. (iv) Webforms can be created with Formspree, Google Forms or Wufoo.
5. Content management: content can be easily manageable with the help of hosted CMS systems like Surreal CMS, Forestry.io or Prose.

There are controversies on the differences between Website Builder and CMS and other tools used for building

websites. There seems to be an everlasting debate about the best solution disregarding the specialization of these systems and not considering their distinctive features (Howard, 2017). The major difference is that a dynamic website unlike a static website is not expected to have a fixed part or portion in the website. The Home page, Services page, Contacts page, and the About page and even the Settings (background, colors, image, text and so on) should be dynamically created, read, updated and deleted by the website owners.

Modern web development relies on an ecosystem of servers, architectures, and development tools that collectively influence application performance and developer productivity. Web servers handle HTTP requests and deliver web content, while database servers manage data storage and retrieval within client–server architectures. Common web servers include Apache, Nginx, IIS, and LiteSpeed, whereas widely used database systems include MySQL, PostgreSQL, MongoDB, and Oracle (FastWebHost, 2019).

Web applications themselves can be broadly categorized into static, dynamic, and hybrid types. Static websites deliver fixed content and are suitable for simple informational purposes (Rauf, 2018), whereas dynamic websites generate content in real time through server-side processing and database interactions, enabling scalability and interactivity. Hybrid websites combine both approaches to balance performance and functionality (Jared, 2019).

To support these architectures, developers utilize a range of tools, including website builders, content management systems (CMS), frameworks, APIs, and manual coding techniques. Website builders, for instance, provide user-friendly, low-code solutions for rapid development (John, 2018), while more advanced frameworks and CMS platforms enable greater customization, scalability, and integration. The choice among these tools and architectures plays a critical role in determining the efficiency, flexibility, and overall productivity of modern web development processes (Westpress, 2014).

Content Management System (CMS)

A CMS is a tool that allows a web developer to create dynamic websites without necessarily having technical skills (Steve, 2015). Contents (images, links, etc) can easily be added and deleted to or from the website. It comes with the choice of several ready-made template and plugins for additional functionalities. They give the clients, the ability to manage the content of the website when they login. CMS is suitable for businesses that run ecommerce stores, add new products or other contents on routine basis, manage inventory, change pricing and perform any number of functions, and large projects and Portals. The popular open source CMS are: WordPress, Joomla, Drupal, Blogger and Magento (for ecommerce).

A website developed with any of these open source CMS needs an expert to handle it for the website owners because of the followings:

1. They are highly sophisticated and complex.
2. The experts have to be learning constantly in order to cope with regular new updates.
3. They have a lot of template – some with low quality.
4. Some free CMS lack official support except users' community.
5. They require installation of external plugins for managing many other functionalities such as: galleries, multimedia, search engine optimization (SEO), security, etc. (Sync, 2016).

Frameworks

A framework is a written custom code within a predefined set of rules using PHP, JavaScript, HTML and CSS as the primary scripting or markup languages. This allows developers to develop modules and applications using core library functions from these languages. It can also consist of other frameworks to add support for various features. Working with frameworks, developers can build a more customized website, but the site must be designed and maintained exclusively by the IT team (Steve, 2015).

Static websites are built using frameworks such as Bootstrap. Bootstrap helps website designers in laying out and styling web contents instead of the rigors involved in using hand-coding Hyper Text Markup Language (HTML), Cascading Style Sheet (CSS), and JavaScript from the scratch. Dynamic websites are also developed using frameworks, Complex websites and web applications demand extra effort developing the website from the scratch. Hence, JavaScript and PHP frameworks provide a more structured natural way of developing website to curb the extra effort required in developing complex websites (John, 2018). JavaScript frameworks are Angular, React, Ember, Node, JQuery, XQuery and XPath. And PHP frameworks are Laravel, Zend, Cake PHP, Phalcon, Symfony, CodeIgniter, Yii, Aura, Flight, Kohana, Slim, FuelPHP, PHPixie. Although the most recent PHP framework, Laravel released in 2011 is the most popular framework among developers. It is good to note that Ruby is the language behind the Ruby on Rails framework but not PHP.

The reasons why many developers prefer PHP frameworks to other tools is because It easy the website development process in terms of speed; provision of well- organized, reusable and maintainable code; scalability; security; adopts the Model-View-Controller (MVC) pattern that ensures the separation of presentation and logic; promotes object-oriented programming paradigm (Anna, 2018).

API

Application Program Interface (API) is a set of routines, protocols, and tools that are commonly used in the building of software applications. It plays an important role in programming the graphical user interface (GUI) components (World, 2017). There are API tool from various available web API development companies that are suitable for designing, testing and developing web applications. Notable API tools include:

1. SoapUI, a web API testing tool
2. Parasoft, useful in automating the complex scenarios that are across the databases, mainframes, and ESBs.
3. RequestBin is one of the simplest web API development tools that is useful in keeping a record of requests.
4. Fiddler, is one of the best web API security-based tools. It allows the user to monitor, manipulate as well as reuse the HTTP requests.
5. CKEditor, a smart WYSIWYG editor component with collaborative editing.

Hand-Coding

Hand-coding means that the website is basically developed from the scratch and that the code is well understood and can attain a level of control that might not be possible with a CMS (Rauf, 2018). This gives the developer the ability to double down on the tiniest details of the website and this sort of control can be very difficult to achieve if a CMS were to be used. However, building a website manually from scratch can take more time and, therefore, costlier and expensive. Some of the functionalities and performance aspects of the website can take many days to write, even for proficient programmers.

Manual coding, or hand coding as it is also known, involves functional code or layout directions in the basic language in which they are compiled. It helps the developer to reach full potential with the realization of a web page that is made to fit the client's needs and which also increases the speed of the website (Nagendra, 2017).

There are nine reasons why hand-coding is always better than site builders (Emma, 2016).

1. The developer retains 100% control over the site and where it is hosted.
2. Developers are not bound to provide free advertizing and are also not restricted over what they want to do.
3. Developers who use Website Builder tools or CMS tools to develop a dynamic website would be seem irrelevant to the customers because the developer is promoting and encouraging website built by other people in the name of CMS, Website builder and so on and most importantly by the time the customer has learnt how to use the CMS or is trapped into an impossible task in which even the developer cannot assist due to lack of proficiency in programming and in-depth use of database.
4. Developers understand their own code
5. Developers code is nearly always more efficient.
6. Better security.
7. It is easier for a developer to iterate his own code.
8. Developers code is original and (9) the developer grows in skills and expertise.

The basic technology use for hand-coding websites are HyperText Markup Language (HTML) for displaying the content of the website on the browser, Cascading Style Sheet (CSS) for presentation and styling of the website, JavaScript for (browser manipulation) front-end scripting language, PHP for (server manipulation) back-end scripting language, MySQL database and Apache Web Server.

Frameworks such as Angular and React allow developers to take hand coding to the next level by incorporating these technologies massive pre-written lines of code into their sites (Sync, 2016). The frameworks give the website the functions and performance that would otherwise take even the most skilled of programmer's endless hours to write. In contrast, there are potential downsides of using the latest and greatest technologies.

Table 1: Comparative Summary of Website Development Approaches

Website Framework Category	Strengths	Weaknesses	Best Applicable Context	Cited Instances
Website Builders (e.g., Wix, Squarespace)	Easy to use (no coding), rapid deployment, low cost, built-in templates	Limited customization, scalability constraints, vendor lock-in	Personal websites, small businesses, portfolios	Wix, Squarespace
Content Management Systems (CMS) (e.g., WordPress, Joomla, Drupal)	Flexible, plugin ecosystem, moderte scalability, user-friendly content updates	Security vulnerabilities (if poorly managed), plugin dependency, performance overhead	Blogs, corporate websites, news platforms, e-commerce	BBC (Drupal), The New York Times, (WordPress).
APIs (Application Programming Interfaces)	Enable integration, modular architecture, scalability, interoperability	Dependence on third-party services, latency, security risks	Microservices, mobile-backend integration, cloud-based systems	Stripe API, Google Maps API
Hand-Coding Frameworks (e.g., React, Angular, Vue.js, Django, Laravel, Ruby on Rails, ASP.NET Core)	High flexibility, scalability, performance optimization, full control	Requires expertise, longer development time, higher cost	Enterprise systems, complex web apps, high-performance platforms	Netflix (React), Instagram (Django), Stack Overflow (ASP.NET)

As shown in Table 1, the comparison reveals clear trade-offs among website development approaches. Website builders prioritize ease of use and rapid deployment but sacrifice flexibility and scalability. CMS platforms offer a balance between usability and extensibility, making them suitable for content-driven applications. APIs play a critical role in enabling modular, service-oriented architectures, particularly in modern cloud and mobile ecosystems. In contrast, hand-coding frameworks provide the highest level of control, scalability, and performance, but require significant technical expertise and development resources.

Overall, the choice of approach should be guided by the complexity of the application, scalability requirements, budget constraints, and long-term maintenance considerations.

CONCLUSION

There are different types of websites and corresponding tools for building the websites. However, lack of understanding of these facts has led to a situation where a web application that is supposed to assist the customers has turned out creating double task for the customers. The particular tool that should be adopted for a particular type of website is a function of what the site owner really needs and the sincerity of the web designers and developers to accept the level of their expertise to accomplish a particular job, calling for ethical values and meeting future needs. Hence, it is necessary for developers to collaborate if need be, in order to appropriate the modules of the website project to different developers based on their capabilities.

REFERENCES

Anna M, 2018. 10 PHP Frameworks For Developers, https://www.hongkiat.com/blog/best-php-frameworks

Emma G, 2016. 9 Reasons Hand-Coding Always Beats Site Builders. https://www.webdesignerdepot.com/2016/05/9-reasons-hand-coding-always-beats-site-builders/

FastWebHost, 2019. What is Web Server and Different Types of Web Servers? https://www.fastwebhost.in/blog/what-is-web-server-and-different-types-of-web-servers/#targetText=Web%20server%20is%20a%20program%can%20be%20a%20web%20server.

Helen V, 2018. Static Website vs Dynamic Website: Which Is Better for SEO? Available online at https://www.webceo.com/blog/static-website-vs-dynamic-website-which-is-better-for-seo/

Howard S, 2017. CMS vs Website Builder Unbiased reviews and comparison. Available online at https://superbwebsitebuilders.com/cms-vs-website-builder/ 29th January, 2019

Jared W, 2019. The Difference Between Dynamic and Static Websites. Available online at

https://www.hughesandco.ca/blog/the-difference-between-dynamic-and-static-websites

John S, 2018. 10 Most Popular Website Builders Reviewed, https://hostingfacts.com/website-builders/

Nagendra B, 2017. CMS Vs Hand Coding: Which is the right choice to build a website? http://blog.influx.co.in/cms-vs-hand-coding-which-is-the-right-choice-to-build-a-website

Rauf F, 2018. CMS Vs Hand-Coding Websites http://sodainmind.com/blog/cms-vs-hand-coding-websites/

Steve S, 2015. CMS or PHP Framework: A business technical comparison of CMS and PHP frameworks. https://www.ithands.com/blog/cms-or-php-framework-which-technology-is-better-for-my- business/

Sync, 2016. CMS Vs Hand-Coding Websites. https://www.syncwebdesign.com/cms-vs-hand-coding-websites/

Westpress, 2014. The Difference Between Static and Dynamic Websites. Available online at https://westpress.com/the-difference-between-static-and-dynamic-websites/

World WT, 2017. Top 10 Web API Tools That Work Great For Design, Development, And Testing. https://www.worldwebtechnology.com/top-10-web-api-tools-work-great-design-development-testing