Developing Occupational Health and Safety Website Using WordPress: Study Case Katigaku.top

Agung Supriyadi[1]

{ Agung.supriyadi@alumni.ui.ac.id }

[1]OHS System Management System Lecturer, Institut Medika Drg.Suherman, Cikarang Utara, Kabupaten Bekasi

Abstract. Indonesia has more than hundred thousand of workplace accidents. Katigaku.top developed as occupational health and safety (OHS) website since 2014 for giving contribution to reduce workplace accident in Indonesia. This paper has objective to describe how katigaku.top as OHS website developed from WordPress and its effectivity. We use Manhas framework that describe on how a website developed. We use jetpack plugin wordpress data to show total post, authors, views, visitors from 2014-2018. Katigaku.top firstly designed using domain komunitask3.wordpress.com in 2014 then hosted in hosting provider and fully operational until now using domain katigaku.top with still using WordPress as content management system (CMS). The website can be viewed in personal computer (PC) and mobile phone because it uses responsive theme. Total 304 post already published from 5 authors and viewed more than 1.4 million times. Developing OHS website using WordPress in study case katigaku.top is easy and give great impact in term of viewer reach.

Keywords: occupational health and safety website, WordPress, katigaku.top

1. Introduction

Workplace safety accident is increasing year by year. In 2001, workplace accident recorded by Manpower Social Security Administrator (*Badan Penyelenggara Jaminan Sosial Tenaga Kerja/ BPJS Tenaga Kerja*) is 104.714[1]. That number was decreased in 2004-2011. Workplace accident in Indonesia showed increasing number starting 2012. The number at its peak in 2018 with 173.015 workplace accidents recorded[1].

Workplace accident brings loss for workers, their families and global economy as well. For workers, workplace accident can lead to loss quality of life or even premature death. Workers's family have risk to loss income source from the accident. Loss production by workplace accident to global GDP according to ILO is estimated 4% of the global GDP (roughly 2.8 trillion US dollars)[2].

Government, private sector and workers have been doing some efforts to decrease workplace accident. Government already has 1579 personnel as government manpower supervisor (*pengawas ketenagakerjaan*)[1]. They trained 16.791 professional personnel as general safety expert (*ahli K3 umum*), first aider (*petugas peran P3K*), occupational health and safety management system (*sertifikat manajemen keselamatan dan kesehatan kerja/*SMK3) auditor, and occupational doctor. Government also has validated 647 company as audit body and Occupational Health and Safety Company Service (Perusahaan Jasa Keselamatan dan Kesehatan Kerja)[1]. Private sector put contribution to OHS in Indonesia with 5119 companies certified with SMK3 and 9098 companies already awarded by zero accident award from government[1].

Big number of workplace accident in one side and many OHS professional, government supervisor, OHS company service in another side have created necessity to access valid OHS information easily. When it comes to question about getting information easily, the answer must be: internet.

Indonesia is in digital age. Indonesia has 88.1 million users of internet in 2015 and it has been predicted by McKinsey that the user will be nearly doubled in 2020 [3]. It is believed that 73% of internet user access via mobile [3]. Increasing user of internet open opportunity for OHS professional to access OHS information through internet.

To build specific website is important in the age of digital in Indonesia. Nowadays, most of the websites are powered by different content management systems (CMS) that allows website administrators to make changes to their websites without web programming tools knowledge. WordPress, Joomla and Drupal are popular open source CMS technologies, but WordPress has become far more popular among three in the past couple of years [4]. Wordpress is CMS that used by 23.3% of the top 10 million websites [5].

WordPress offers many benefits for website builder. WordPress is easy to use even for new user and it gives good result when it come to user and reader interface. It gives great Search Engine Optimization (SEO) positioning [6] because WordPress has many plugins to improve a quick inclusion in search engines, compared with other WCMS [7]. WordPress also provides quick integration with social medial such as facebook, instagram, linkedin, and twitter.

Create an OHS website that easy, good reader and user interface, and have great Search Engine Optimization can be useful for OHS professional in Indonesia. This study aimed to describe on how WordPress can be used to build OHS website and show its effectivity.

2. Methods

2.1 Website Development

Website development are different in a number of respects to existing types of IT systems [8]. Manhas [9] mentioned that there are 14 models that are traditionally being used for the process of website development.

Manhas (2017) proposed framework for website development that grouped to 4 stages namely objective identification, design, development and implementation.

2.1.1 Phase 1 : Objective identification

First thing to do in website development is identifying objectives. We need to answer questions: What are the organizations expectations from a website? Who are desired visitors of the website?

In this stage, we need to set the objectives. Some considerations to take account are: technology to use, skill set analysis, content analysis, user analysis, cost analysis and risk analysis.

2.1.2 Phase 2: Design

Simplicity and the design are success keys for a website. The design of the website is worked out keeping in view the facts listed in objective document.

This phase contains following stage:

- Structure design: it refers to network of hyperlinks, which is responsible for making the navigation through the webpages of website possible. It will help on simplicity access from a user.

- Appearance design: it deals with the look and feel of the website. This stage will concern on different colors, images, pictures, animations, fonts and graphics used in the website.

- Design testing: This step helps the designer to evaluate its structure and appearance design at an early stage of development so that the desired objectives can achieved effectively.

2.1.3 Phase 3: Development

This phase focuses more on development and is driven by objective and design document finalized in previous stages. It has following steps:

- Resource gathering: it includes various resources such as development environment, front end and back end software, database, hardware, trained staff and other technical specifications are gathered for future use.

- Coding: website needs to be coded in such a way that it can efficiently handle all the security threats. The performance of web based system on different search engines must be taken care of during this phase.

- Testing: testing of the code for desired performance needs to be evaluated before its implementation. If some problem occurred, it can be located and rectified by iterative looping between coding and testing stage.

2.1.4 Phase 4: Implementation

Implementation phase involves the launch of website on World Wide Web. This phase includes:

- Implementation: in this phase the presence of concerned website on network must be made aware to the entire user community. This can be achieved by carrying out

various promotional steps such as advertising, etc. The performance of the website on various search engines also needs to be improved so that it can be easily searched.

- Maintenance: this step involves continuous monitoring of the website to ensure that the contents and information displayed are up to date and future changes can be easily incorporated.

- Objective review: since World Wide Web is an ever changing domain and new technologies become available after a short span of time. The websites must be developed in such a way that they can easily meet the requirement of ever changing dynamic environment.

2.2 Jetpack Plugin

Plugin is a specific and customized function that can be installed in a WordPress website. A WordPress plugin is made up of standard PHP code that makes use of the WordPress plugin API. This API provides several extension mechanisms: hooks that allow custom functionality to be called when specific site events occur; user-provided tags (called shortcodes) that can be embedded into posts and are then expanded into HTML; and database APIs that allow new configuration options to be added for plugin customization or new metadata to be added to blog posts, users, and comments [5].

Jetpack is a WordPress plugin that originally made by Automattic, same company that made WordPress. Jetpack has function to collect detailed visitor statistics [10]. We use Jetpack to investigate website statistic during 2014-2018.

2.3 Empirical Data

Empirical data can be used because the researcher had direct experience in making katigaku.top. The researcher knows each detail progress that experience by katigaku.top. This empirical data will be described using words or table.

Empirical data also will be collected from WordPress dashboard data that including WordPress reader interface, website author, and other data. We use also data from hosting provider to complete our description.
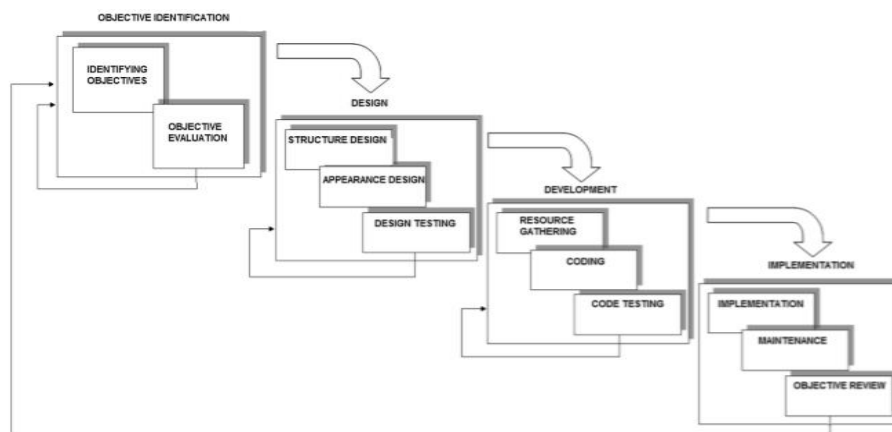

Fig 1. Manhas Framework for Website Development

3. RESULTS

Using method offered by Manhas (2017), the development of website katigaku.top will be described.

3.1 Phase 1 : Objectives

3.1.1 Objectives of Katigaku.top

Katigaku.top designed to give occupational health and safety references for Indonesia citizens generally and OHS professionals specially. It targeted visitors coming from search engines, direct visit, and social media.

3.1.2 Objectives evaluation

In term of website development, there are 2 type of WordPress: wordpress.com and wordpress.org. For many people, WordPress.com is their first and only experience with WordPress. At WordPress.com, you can sign up for a totally free WordPress site. WordPress.com runs the software for you, takes care of upgrades, and maintains the servers. All you have to do is sign up and start adding content. This is one of the services run by Automattic, the company closely allied with the development of WordPress. The free service doesn't allow the complete flexibility you have when you run the software on your own server, but it's a great place to start experimenting and get a feel for how WordPress works [11].

The WordPress.org website is home to the WordPress software itself. If you are going to install WordPress on your own webserver, download the latest version of WordPress from here. WordPress.org is also home to the documentation, WordPress add-ons (themes and plugins), and most important, the WordPress community, which provides support and a place to share ideas on the development of WordPress [11]

For development sake of website, we chose WordPress.org. With WordPress.org, katigaku.top will have great chance to do customization but still in easy way.

At initial, this WordPress site is mainly built by one person. He learnt WordPress by self-taught from internet source, Facebook group discussion, and book. No formal education received by him to develop the site.

Contents planned to be in site is contents related to health and safety. The contents can be article, pictures, quotes, or videos. Google keyword planner from Google Ads was used to do keyword research analytic [12]. Google keyword planner helps the website stays on top of keyword trends to refine search campaigns and ensure content remains relevant [12]. The result of this tool indicates that the keyword is effective enough to be used and elaborated in content writing [13].

User analysis that used is from Google Analytic and Google Pagespeed Insight. Google Analytic enable us to show effectiveness of different variable on various dependent variable which all are times series and especially shows how to use time series regression on one of the most important and primary index [14]. While Google Pagespeed Insight, it profiles a page load and report its best estimate of the critical path from the client's perspective [15].

Budget was one of main consideration in this phase. As the site was only managed by lone person, budget could not be too high. The person set limit for IDR 1 million as yearly budget to rent shared hosting from hosting provider and domain name.

Threat that gives risk to the site can be from virus, malware, or spam comments. It can make the site get problem in future such as loss of visitor, hacked admin page, or even loss all data. The founder of the site planned to cooperate with shared hosting provider and WordPress plugin to make the site less vulnerable.

3.2 Phase 2: Design

3.2.1 Structure design

To access an article of website, we usually click to hyperlink. Form of hyperlink can be set from permalink which is main form for all hyperlink in the sit. There are several permalink that can be used. Katigaku.top using permalink below with consideration easiness in traceability and search engine optimization.

https://katigaku.top/yyyy/mm/dd/sample-post/ (….)

Katigaku.top divided into several categories mainly about: technical, organization and personnel. Each of article in katigaku.top can be grouped to minimum 1 of category. Beside category, there are also site "page" that is used to put homepage and author list information.

3.2.2 Appearance design

Katigaku.top appearance was designed to meet simplicity, highly customized, and mobile ready. Simplicity means easy to use and light in term of speed accessed. Highly customized represents modification easiness of an appearance and freedom given to design the site according our willingness. Mobile ready means ability of an appearance to have full feature and easy to access via mobile phone.

To design the appearance, WordPress provide us may themes that can be installed to a site easily. We tested some of magazine themes in WordPress to meet our requirements. In the end, we choose Jannah theme from TieLabs that meets to our requirement.
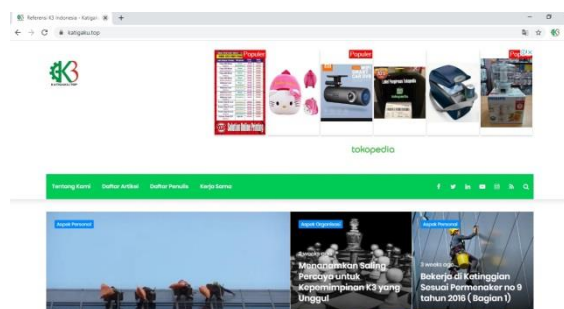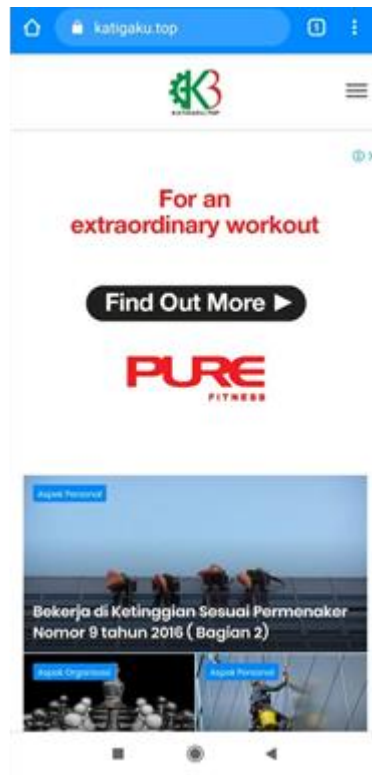

Fig.2 web view of katigaku.top

Fig. 4 Mobile view of Katigaku.top

3.2.3 Design testing

Because WordPress is easy to be used, any change that we made in term of design can be evaluated directly during testing.

3.3 Phase 3: Development

3.3.1 Resource gathering

WordPress enable the user to develop backend and backend of website easily. In backend, WordPress give access to do major change with some click effectively in admin page. In hosting side, we use cpanel with full support from hosting provider. With easy and effective resource in backend, it enables katigaku.top to give good user interface in frontend.

In early development, there was only 1 person fully develop the website. His job was designing website, managing hosting, managing ads and providing content. Today, katigaku.top has recruited 9 writers to provide content in the site.

3.3.2 Coding

Coding activity was reduced in katigaku.top because minimum knowledge of coding existed in katigaku.top team and WordPress provides many advantages that enable us to do less in coding. Specific function in front-end website such as displaying calendar, displaying statistic,

linking to social media, can be performed using WordPress plugin without any coding knowledge needed.

3.3.3 Testing

Some features of WordPress provide preview page before we do the change permanently so we can directly know the result. If we wish to cancel the update, we can undo our action in the site. Katigaku.top always do testing after modification performed to ensure the readers feel best performance.

3.4 Phase 4: Implementation

3.4.1 Implementation

Katigaku.top known by public through 3 ways: search engine, social media and direct visit. Each visitor origins have their own characteristics.

Visitor from search engine coming from search engine optimization. search engine optimization (SEO) is enabling a web site to appear in top result lists of a search engine for some certain keywords [16]. SEO can be divided to on-page SEO and off-page SEO. On-page SEO includes optimization inside our website such as site hierarchy, website domain name, site title, site description, site keywords, etc. Off-page SEO includes optimization outside our website such as link building, reciprocal linking, etc.

On-page SEO in katigaku.top performed using Yoast plugin help. Yoast enable us to complete and check on-page SEO features such as snippet, tittle, keyword reciprocal, inbound link, outbound link, etc. After we complete SEO requirements, our post will have green signal from Yoast.

Katigaku.top article is shared in social media such as Facebook, Instagram, Twitter, Whatsapp,etc using publicize plugin. Katigaku.top social media has follower as follow:

- Facebook page : 1372 followers
- Instagram : 866 followers
- Twitter : 65 followers

Sharing using whatsapp cannot be counted because the whatsapp sharing counter feature is not available in whatsapp and WordPress as well.

Fig.4 social media counter

3.4.2 Maintenance

Maintenance of katigaku.top performed by following actions:

- Hosting data server maintained by hosting provider. Some improvement related to hosting also can be supported from hosting provider action

- Self-website maintenance performed by katigaku.top's administrator. The actions include: update plugin, daily monitoring of website, display change, etc.

3.4.3 Objective Review

Katigaku.top designed to give occupational health and safety references for Indonesia citizens generally and OHS professionals specially. It can be seen from achievements from 2014-2018 as follows:

- Total author in Katigaku.top : 5 authors

- Total article in katigaku.top : 304 articles

- Viewers katigaku.top : 1.439.724 viewers

4. Conclusions

This study showed that katigaku.top as WordPress based website can be easily developed even started by only 1 person. Not only it is easy to use WordPress, but also it still gives great impact in term of display, sharing in social media and total viewers of website.

Manhas method (2017) to describe development of website enable us to deliver the description easily. It also can be used for evaluation of a website.

5. Discussion

This study did not include on "google dance" discussion. Google dance is series of google algorithm update that will affect google rank of a website. Update in google rank will affect also statistic viewers of a website. This study not include google dance because it mainly lay on google decision and difficult to relate with developer task in a website.

Revenue on a website is important to make a website live. The revenue can be acquired from google adsense, direct ads or another ads provider. This study not include revenue aspect because it is seen as confidential.

Future study can enlarge the scoop of the study to include this google dance issue and website revenue. The study can be specific discuss about one topic.

6. Conflict of interest

Authors declare that they have no competing interest.

7. Funding

References

[1] International Labor Organization. (2019, Juni). Profil Keselamatan dan Kesehatan Kerja Indonesia 2018. Jakarta: International Labor Organization. Retrieved from https://katigaku.top/wp-content/uploads/2019/08/Profile-Nasional-K3-bahasa-final.pdf

[2] Leppink, N. (2015, October 14). Socio-economic costs of work-related injuries and illnesses: Building synergies between Occupational Safety and Health and Productivity. Retrieved from ILO: https://www.ilo.org/wcmsp5/groups/public/---europe/---ro-geneva/---ilo-rome/documents/genericdocument/wcms_415608.pdf

[3] Das, K., Gryseels, M., Priyanka, S., & Tan, K. (2016, October). Unlocking Indonesia's digital opportunity. Retrieved from McKinsey: https://www.mckinsey.com/~/media/McKinsey/Locations/Asia/Indonesia/Our%20Insights/Unlocking%20Indonesias%20digital%20opportunity/Unlocking_Indonesias_digital_opportunity.ashx

[4] Cabot, J. (2018). WordPress: A Content Management System to Democratize Publishing. IEEE Software Volume 35, 89-92.

[5] Hills, M. (2016). Navigating the WordPress plugin landscape. 2016 IEEE 24th International Conference on Program Comprehension (ICPC) (pp. 1-10). Austin Texas: Institute of Electrical and Electronics Engineers.

[6] Caro, J. M., Hernandes, A. J., Perez, A. G., Iborra, R. S., & Cano, M. D. (2018). A Comparative Study of Web Content Management Systems. MDPI Information, 1-15.

[7] Shivakumar, S. (2016). Enterprise Content and Search Management for Building Digital Platforms. Hoboken, New Jersey: John Wiley and Sons.

[8] Taylor, M., McWilliam, J., Forsyth, J., & Wade, S. (2002). Methodologies and website development: a survey of practice. Information and Software Technology, 381-391.

[9] Manhas, J. (2017). Initial framework for website design and development. International Journal of Information and Technologies, 1-13.

[10] O'Neill, J. (2017). Deploying a WordPress-based learning object repository to scale up instruction and effect a culture of sharing. Reference Services Review, Vol. 45, 1pp.

[11] Jones, K. (2011). Getting Started with WordPress. Library Technology Reports, 9-15.

[12] Google. (2020). Keyword Planne. Retrieved from Google Ads: https://ads.google.com/intl/en/home/tools/keyword-planner/

[13] Indriyani, E. P. (2017). Optimizing Students Blog Based Online Business by Utilizing Google Keyword Planner and Google Trends . The 4th UAD TEFL International Conference, 192-200.

[14] Omidvar, M. A., Mirabi, R. V., & Shokry, N. (2011). Analyzing The Impact of Visitors on Page Views With Google Analytics. International Journal of Web & Semantic Technology (IJWesT) Vol.2, 14-32.

[15] Chow, M., Meisner, D., Flinn, J., Peek, D., & Wenisch, T. (2014). The Mystery Machine: End-to-end performance analysis of large-scale Internet services. 11th USENIX Symposium on Operating Systems Design and Implementation Proceeding, 217-231.

[16] Yalcin, N., & Kose, U. (2010). What is search engine optimization: SEO? Procedia Social and Behavioral Sciences, 487-493.