Developing a Corporate Website for Anlu Aima Electric Bicycle Shop

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Developing a Corporate Website for Anlu Aima Electric Bicycle Shop

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Abstract

The aim of this bachelor’s thesis project was to develop an easy-to-managed website for Anlu Aima Electric Bicycle Shop, which is a small-to-medium-sized company operating in China. This website is used to display the company’s information, promote products and create an online customer service access. The thesis project proceeds from website design based on the customer’s requirements to a completed website based on the same design on the WordPress platform.

WordPress is a content management system that is widely applied to develop different type of website. For a small-sized company, the advantage of using WordPress is that the content management is simple and easy to update through a user dashboard instead of manually coding. This thesis explains the procedure the author used to develop a corporate website on WordPress and also includes a user manual for client company for content updating in the future.

This project applies the Waterfall model as the web development guideline. Moreover, a mixed-methods research approach was used to collect data in this project. Interviews and benchmarking were deployed to gathering user’s requirements for the website. Usability testing was carried out through an online survey form to gather feedback of the demo website from target audiences.

The theoretical part discusses background knowledge used in the thesis project. The knowledge base concerns the importance of the website for small business, the WordPress CMS and web wireframe, and the functionality of technical tools such as HTML, CSS, XAMPP, Azure and so forth.

The practical part of the thesis project is based on the designing and developing process of the website. It begins from capturing requirements for wireframe design and turns to website development including WordPress installation, theme and plugins utilization, and content composition. The functionality and usability testing are conducted on the demo website. Fortunately, the client company is satisfied with the demo website which is packaged in the zip file to be delivered with thesis document.

Keywords: WordPress, Content Management System, corporate website, Anlu Aima Electric Bicycle Shop
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Introduction

As recently as 2005, with the creation of technology and the advocate of environmentally-friendly commuting in China, the electric bicycle industry experiences a surging demand in Chinese market. In the meanwhile, the retailers flooded into the market correspondingly. According to rough investigation, there are approximately 10 electrical bicycle shops in the urban area of Anlu in 2015, which has been increase to over 40 shops in 2018. Thus, the market environment is extremely tough under the fierce competitive environment.

As Sowards (2018) claims, under the strained market situation, having a website can become a competitive edge for a small company. Meanwhile, website helps build business credibility and accessibility, provide marketing channel and improving the customer service.

To build an informational website, the prior consideration of company is that the content is easy to update and manage on the web pages. WordPress Content Management System (WordPress CMS) recently is the most popular software used to build a corporate business site. It doesn’t need complex coding and technical skills to manage the website that is quite suitable for small business. There are a lot of themes and plugins available that you can customize the website. Because it is an open source system, many free sources are available on the platform. Besides, you are allowed to extend it further depends on your own needs.

1.1 Case Company

Anlu Aima Electric Bicycle Shop (Anlu Aima EBS) belongs to AnluAnlu Jinbohong Co., Ltd. that is a small-sized private company founded in 2006. The long-termed employees are composed by the owner, financial manager and technician. In season, the company could employ some temporary sellers occasionally. For keeping the pace with the market change, in 2015, the company decided to be a regional brand franchiser of Aima Corporation.

The main products of the Anlu Aima EBS are to sale electric bicycles and provide after-sales service. The electric bicycle needs to have a simple assembly and configuration by technicians before running on the road. Under the circumstance, customers are mostly encouraged to buy those products in the physical store. Hence, the target customers of the case company are the local residents.

Anlu Aima EBS is the third-year to be a distributor of Aima Corporation. In the last three years, there was around 20 new bicycle shops opened on the same blocks. Under the circumstance of the stable market demands, customers have more options to choose products that means the market shares of the shop decreases immediately. Otherwise, the shop only has the traditional way such as leaflets to advertising. Many customers reflect they would like to
read advertisement from internet rather than physical posters. Thus, the shop lost many potential customers.

Meanwhile, the shop hasn’t upgraded their service quality simultaneously. For example, the shop claims that it provides 24/7 after-sales service. But, actually, the telephone service is answered only when the shop is open. Thus, the company received a lot of complains on its after-sales services.

1.2 About the Project

The author took a summer internship in the client company. During the intern period, the author recognized that the client company was planning to create a company website. After discussed with the company supervisor, the author is commissioned to create the website for the client company. This website is a thesis project, and the thesis supervisor is the author’s teacher Arvind Sharma in Laurea University of Applied Sciences.

The project is agreed to be performed in a remote mode because the client company is in China and the author will develop the website in Finland. The author and the client company discussed about the project details via Wechat and email. The project is to build a corporate website for Anlu Aima EBS. The author is totally responsible for the design and development of the website based on the client’s requirements. Client company is aiming to launch the website in the beginning of the March 2019.

1.3 Objectives and Limitations

The overall objective is to develop an easy-managed corporate website for Anlu Aima EBS. The client company requests that the content update of the website can be handled by themselves with basic computer operating skills. Through this project, the author will get more practical experience on how to grasp effective customer requirements and have a deeper learning on developing a website using WordPress CMS.

This project has some specific objectives. We first should have clear understanding on what the website’s content and functional needs are. Based on specification the requirements research, the web wireframes are created to display the elements and layout of the website. Ultimately, the final demo website is used to conduct the usability testing for collecting comments before delivered to client company.

The website’s development time is the main limitation because the author has to graduate in 4 months, which means author will finish the webpages with the initial content provided by the client. Moreover, the author has only beginner level skills for editing images with Photoshop. But there is a wide range of images offered by client company which need to be altered for fitting on webpages. It is a time-consuming part in this project.
2 Research and Development Methodology

Research is an exploring process to discovery and obtain new knowledge and understanding (Dawson 2009). Research methodology defines how the research activity is carried out. In a practical web development project, research methodology is to identify what methods are used to collect and analyze data (Pérez 2008). Development methodology provides a systematical framework including specific phases to structure, plan and manage the software development process (Software Development Methodologies 2018). The research methodology contains interview, benchmarking and usability testing applied for supporting this project. Besides, the Waterfall model is utilized in this project leading the website development.

2.1 SDLC - Waterfall Model

The SDLC represents the acronym of Software Development Life Cycle, which generally is applied by software development teams for accomplishing a high-quality software project. It ultimately depends on the customer requests concerning functional requirements, time and budgets (SDLC - Overview 2018). As Dawson (2009) indicates, the typical SDLC method involves 5 primary phases including requirements capture, design, build, test and implement that happens chronologically.

Waterfall is the earliest and elementary SDLC model applied on software development process. The pre-condition of the next phase begins that is based on the previous phase is completed in the Waterfall Model. Furthermore, another characteristic of the Waterfall Model is that the end users generally are termed, in the development process, as a type of source data rather than a simple participator. The client company in this project is a typical example as a source data for the author during the development process (Balch 2010 p120). In advance, it is a linear approach that is easy to understand and used by freshman.

As introduced by Dawson (2009), the classical waterfall model consists of 6 main phases, shown on the following Figure 1. Compared to stage-wise model, in order to have a more effective development process, the classical waterfall model emerges that allows several back arrows between stages. This small iterative adjustment is beneficial to address the unflexible drawback from the original model.
The first two phases in waterfall model can be generalized to be the requirements capture process in SDLC accordingly. Requirements capture involves a set of research methods to collect and analyse user’s needs. When all requirements have been gathered already, a comprehensive requirement report creates. It generally consists of “requirements specification” and “functional specification” (Dawson 2009 P116). In this case, the requirements capture relies on the research approaches of interview and benchmarking with the client company supervisor to identify the specific layout and functions of the website.

Once the requirements have been approved by users, the progress turns to the design phase. Generally, requirement report is like a script to guide the design loop, which is the prerequisite for a product to build a clear structure (Dawson 2009). In this project, the architecture of the project website is presented through web wireframe, which concisely explain the primary layout and functionality of some representative pages.

According to the explanation of Dawson (2009), the forth phase of the classical waterfall model refers to coding by using proper programming language to achieve the software development. In this project, the coding phase can be termed as the process of building the business website by using WordPress CMS, which will be introduced in the Chapter 3.2.

The remaining phases are constituted by testing and implementation. Testing means to discover and report issues which need to be modified. Once the systematic testing of the whole program is completed, the final phase refers to implementation. After that, the final product is delivered and deployed by the clients (Dawson 2009). In this project, the usability testing is carried out in a format of online questionnaire survey, which is sent to case company supervisor and random users. Once the test phase finishes, the final product the corporate website is delivered to the case company.
Lotz (2018) demonstrated that waterfall model can be considered as a Plan-Driven software development process. If developers would like to recognize whether waterfall model is suitable for the project, they can apply the following possible traits to identify, concerning “customer availability, scope, feature prioritization, team and funding.” As the summary of TutorialsPoint (2018), waterfall model is appropriate for this type of project that equipped with unambiguous requirements, steady product definition and short project length.

In this case, the author is the core and only developer of the business website. In addition, the author and company supervisor have a well-prepared insight on the website’s requirements. Moreover, this project as the author’s thesis project is a short-term program less than six months. Under the circumstance, it is undoubted that applying waterfall model is a sensible choice in this project.

2.2 Research Approaches

The research methodology conducted aimed at data collection and analysis of the website development, which universally leans on an integration of various type of research approaches. In Mahmood’s perspective (2018), the purpose of applying mixed research methods primarily highlights on researchers who would like to grasp a comprehensive and specific perceptions on the research problem.

The mixed researches method involves both quantitative and qualitative methodologies that contribute to a remarkable advantage referring to triangulation. It helps us improve the accuracy of the identification capacity on a phenomenon from diverse aspects (Mixed Methods research 2016). Depended on the nature of this project, the miscellaneous methods are employed in the case for extracting data concerning interview (qualitative), benchmarking and usability testing (survey), which provide an elaboration in the following sub-sections.

2.2.1 Interview

Dawson (2009 p27 2.4.3) manifests that interview can be employed on various of phases of a project ranging from the requirements capture to evaluation of a completed product. Interview offers possibility to have direct interaction with people in a verbal communication format that essentially is beneficial to access in-depth information. In addition, the outcomes to some extent are readily to be understood (Interviews 2016).

Fundamentally, Interview has contribution reflecting during the requirements capture process in this project. The interview was hold with proprietor and store manager of Anlu Aima EBS. During the interview, we clarify the purpose and target audiences of the client company website. Referring to the design concept, furthermore, we discuss the layouts and content feeding of the website, primary function features, and the initial time and budget arrangement.
The details of interview are sorted out as a structured-question paper and also translated to English version from Chinese that attached in the appendix section of the report.

2.2.2 Benchmarking

Benchmarking is a primary research method that mostly be utilized with the purpose of achieving the best performance. Construction Industry Institute (1995) defines that benchmarking is aimed at figuring out the orientation of the best practices on an organization’s improvement or changes through a systematically measuring process on the competitors’ performance (CII 1995). As the similar view pointed out by Bhutta and Huq (1999), the nature of benchmarking is a systematic process of searching for the superior standards on “products, services or processes” to achieve creative breakthroughs.

Benchmarking is adopted in this project by systematically analysing the benchmark site to figure out what we should use for reference. It generally facilitates to create more customer-friendly features and satisfy the client’s expectations. Regarding the benchmark site as a “neighbourhood” rather than a competitor, which means people can sort out good ideas used on the new sites and discard the bad features. It is extremely beneficial for making sensible decision on interface design and logical navigation (Lazar 2005).

Under the situation, the owner takes the Aima Corporation’s website as our benchmarked object. Lazar (2005) suggestions that benchmarking usually happens on finalizing the explicit requirements of a site. In essence, the client company is a local branch of Aima Corporation. Hence, the project website is prone to be a child website of parent company according to the client company’s opinion. The overall framework of site pages fundamentally follows the Aima Corporation’s website. Moreover, there are a set of customized features added such as shop’s location and contact details as well as the online repair reporting service. For more details of the benchmarking results, those can be found in the Chapter 4.2 of this report.

2.2.3 Usability Testing

Usability testing is strictly defined as a process. It is adopted to identify how many the specific needs of a product have been achieved. Some target audiences are involved to be testers servicing the usability testing (Rubin & Chisnell 2008 P21). Usability testing conducted by target users primarily emphasizes on whether the interface of the site is manageable. The objective of performing usability testing is to figure out drawbacks and collecting useful advice for improving the user experience of the site later on (Lazar 2005).

Questionnaire survey is one type of method in usability testing. Marsh (2018) states that survey is a useful approach to acknowledge the customer satisfaction on current experience, the improvement possibility and usability evaluation on existing products and services. Lazar
(2005) indicates that a user-based testing generally aims at customer-friendly interface improvement in the usability testing process.

The usability testing is conducted by online questionnaire survey to collect the quantitative source data from client company and users. For more details of the usability testing, those can be found in the Chapter 6.1.2 of this report.

3 Theoretical Background

3.1 The Importance of a Website for a Small Company

Nowadays, website is one of the most popular and frequently-used tool for people. It helps efficiently approach relevant information of a corporation. Meanwhile, under the fiercely competitive market environment, sustainable development is a key strategy. Many big companies have built their own business website in order to offer better services. Otherwise, it is equally important and necessary for small-sized company to build their own website.

As Thomsen (2015) released in PR newswire, there are three essential reasons on why small business need a website. First, website has the education function. Your customers read your brand’s story and relevant information, which give them an impressive profile on your business and attract them coming back more. Secondly, the appearance of the website is the representation of your business so that customers generally rely on it to picture your business. Relatively, a user-friendly business website supported by well-organized layouts and contents is a reliable strategy on construction of cultural soft strength of a corporate. Finally, website is a vital bridge on the credibility building and consolidating between company and customers. Website records the business history chronologically that seems like a conversation opportunity for customers to recognize the past and present of the company.

Besides that, there are a set of advantages for small companies to have their own website. A website facilitates the business to produce competitive edge, improve the accessibility, widen the market possibility, boost cost efficiency, and enhance the quality of customer service (Sowards 2018).

3.2 Content Management System - WordPress

Content Management System (CMS) is a software application to help people easily create and manage digital contents on the website (Król 2017). WordPress is one of the most popular Content Management System (CMS) in the world. It is a free and open-source platform equipped with robust features such as themes and plug-ins that facilitate to build and maintain a website quickly and cheaply (WordPress 2018).
In the beginning, WordPress is famous for providing a unique blogging system. With the continuously functional enhancement, WordPress nowadays becomes more popular to create different types of website, concerning “normal website, blog website and e-commerce website.” There are three prime advantages by using WordPress to establish a website. Foremost, someone can fully control and manage on everything of the website. Besides that, there are a vast number of themes and plugins available to beautify the website’s look and equip the website’s function. Last but not least, the open-source attribute of WordPress offers a relatively free condition to create some extensions without the worry on legal issues such as copywrite. (Król 2017)

It is regularly a wise choice by using WordPress to build an informational business website for the small company. Firstly, according to the interview result, the budget of the client company is less than 500 RMB (around 70 euros) excluding domain and webhosting fee. WordPress is an open-source software. The free plugins and themes are available to enrich the layouts and functionalities of the site. This characteristic is especially in favor of the small company (e.g. client company) that cannot afford a big cost on website building. On the other hand, it is a time-saving project. Under the circumstance, the risk of the development project is relatively low for the company.

In addition, there is no one who has the programming techniques or experiences in the client company. WordPress as a CMS software creates the possibility for people who don’t have programming knowledge to manage a website. For developers, it is easy to customize website’s layouts. Otherwise, in this aspect, this is a limitation for client to maintain a website. The function of multiple user accounts could authorize different access rights to each account. In other words, according to specific account type, each staff has own responsibility range to manage the website’s content. Furthermore, it is simple to upgrade the version via the dashboard with one-click process. Updating the latest version timely is beneficial for keeping away from the ill-disposed attacks and approaching more new features.

3.3 Web Wireframe

A website wireframe can be regarded as a visually screen blueprint which only displays the architectural framework of a website. The main purpose of creating a web wireframe for a business objective is to interpret the brief content arrangement and functionality setting of the pages. Wireframe is a visualization technique that helps interactive communication between designers and clients on design concept. (Trista 2018)
Creative Director Haas (2011) indicates several reasons about the importance of the wireframe employed by website designers. Firstly, wireframes facilitate to transform website’s abstraction into graphic visualization. In addition, website features could be simply understood by clients via wireframe. Moreover, wireframes are treated as usability testing of the website that can help find out potential flaws during the conceptual design process rather than the website building period.

In this case, neither of the owner and the project supervisor specialized in any web development techniques. Hence, it is extremely reliable to apply website wireframe to interpret the functional or non-functional design of the website to clients. Wireframe can make clients readily understand whether the features and architecture of the site is in line with their expectation. The effectiveness of wireframe is apparently higher than explain clients how the website works orally. The wireframe of the case website is created after the first interview and benchmarking completed for capturing requirements.

### 3.4 Technical Tools Utilization

It is essential to familiar with basic technical knowledge before starting the website development within WordPress CMS. Those technical skills may provide practical solution for overcoming challenges during the advancing period of the project. The required technical knowledge and tools are briefly introduced in this section.

#### 3.4.1 HTML

HTML represents Hypertext Mark-up Language, which is radically for constructing the structure of webpages. The latest standardized version of HTML is HTML5 launched by the World Wide Web Consortium (W3C) in 2014, which primarily servicing Web content developers. The introduction of HTML5 brings many new features. For instance, the new syntactic elements provide the possibility to deal with multimedia natively. And the application developed with HTML5 is friendly to multi-devices such as smartphones and tablets. (HTML5 2018)

It is possible to customize them by HTML. Otherwise, the most common use of HTML for WordPress Users is basically in posts and pages. It is able to insert images, hyperlinks and lists in the body of the website with HTML mark-up. (Brand 2016) For example, if anyone wants to add an unordered list shown with bullet points in a page, the HTML mark-up can be written in the text penal, like Figure 3:
In the project process, HTML is barely used in editing pages or posts. Because WordPress has a friendly visual panel for users by clicking the tools button to set formats. That means users don’t need coding backgrounds to achieve content management in WordPress.

### 3.4.2 CSS

CSS is the abbreviation of Cascading Style Sheets that controls the visual appearance of the HTML elements. The worthiest trait of CSS is to provide the controllable presentation and content separately, which, to large extent, alleviate the programming workloads on the repetition of the content structure. (CSS 2018)

CSS is extremely important to the construction of WordPress themes. CSS could help to customize personal themes’ stylesheets. CSS facilitates to personalize the background pictures and colour, header images’ position, and some basic elements such as fonts. However, if you would like to personalize own themes by modifying the CSS file, we recommend making personalized coding on a child theme. Because coding happens in child theme that highly protects your new features away from the risk of losing your personal designs when you upgrade to a new version of WordPress. (Brand 2016)

In this project, 80 percent contents of the website don’t need to use CSS codes such as font color, size. Those elements mainly control by the theme’s build-in management function. However, in order to achieve specific changes in line with customer’s expectation, the author adds additional CSS codes through theme’s widget.
3.4.3 XAMPP

XAMPP is an open source cross-platform software distribution launched by Apache Friends. XAMPP software package is termed as web server solution stack, which principally equipped with Apache web server, MySQL database, PHP and Perl programming languages. XAMPP is an acronym which respectively represents for Cross-platform(X), Apache(A), MariaDB(M), PHP(P) and Perl(P). The cross-platform generally means that XAMPP is available to work under any operating system. (XAMPP 2018)

The process of XAMPP’s installation and deployment is extremely simple and fast for developers because XAMPP Control Panel gives an easy access to start and stop module individually. Additionally, XAMPP, in essence, plays the role as local server that provides developers a suitable environment for testing their applications or websites on the local computer before approaching to the remote web server. (Ganesan 2017)

3.4.4 Apache

Apache HTTP Server, commonly referred to “Apache”, is an open-source and cross-platform web server application. It is developed and maintained by a group of developers who belong to an open community. As the web server survey shown, in August 2018, Apache services 39% of all active websites. Apache works for web content delivery that can be accessed via internet. It supports many kinds of content such as HTML documents, multimedia, CSS style sheets and client-side scripts. (Apache HTTP Server 2018) As mentioned in the last section, Apache is included in the XAMPP software. Apache will automatically operate when XAMPP is working.

3.4.5 PHP

PHP is the acronym of Hypertext Preprocessor, which is an open source, server-side scripting language and interpreter. PHP code generally is used to develop dynamic and interactive webpage and connections with database, which sometimes are embedded into HTML code. (PHP 2018) PHP is one module included in XAMPP software in this project. Moreover, one php file is created for supporting the child theme which will be introduced in Chapter 5.3.

3.4.6 MySQL

MySQL is an open-source database management system, which is a software application. It originally was developed MySQL AB. In 2009, MySQL became one of the products of Oracle Company. (MySQL 2018) MySQL database is used to store a set of structured data of the website. MySQL can be run on cloud computing platforms such as Microsoft azure mentioned below. Moreover, phpMyAdmin allows administrator to manage MySQL database through web
browser, which is written in PHP. It is used to create a new database for the website and manage users and permissions.

3.4.7 Microsoft Azure - Cloud Environment

Microsoft Azure is a cloud computing platform for building, deploying and managing applications and services. (Microsoft Azure 2018) Azure is applied to provide web host and MySQL in-app services during the website development. The deployment method of using MySQL in-app on the web application refers to the blog: Announcing MySQL in-app for Web Apps (Windows). The author as Laurea student gets the permission from thesis supervise to employ the web app service on Azure. This cloud environment is convenient for the developer to build the website anywhere. Meanwhile, it makes the client company easily to know how the website it is at the moment and give comments timely.

3.4.8 Adobe Photoshop

Adobe Photoshop is a digital graphic editing software, which is most popular graphic editor for designers and graphic artists. The initial version was released on 1990 and Adobe Photoshop CC 2019 is the latest version produced by Adobe System, Inc.. Photoshop is compatible with both Windows and Mac operating systems. (Adobe Photoshop 2018) For web design, Photoshop is the advanced tool for image alteration. It is capable to resize an image, move one element of a picture into another, etc.. (Extropia 2018)

Because the source images provided by client company are not well-prepared that cannot apply to website directly. Most of original images are not available to the website because of the improper image size. Those images have been reedited to a proper format in Photoshop first and later on to be applied on the website.

4 Design Phase

In this part, the author explains how the interface design is and what the functions have that depends on the client’s requirements.

4.1 Requirements Capture and Analysis

According to Waterfall model, the first step of website development involves in the requirements capture and analysis. In this case, interview and benchmarking are used to collect requirements. The author holds a structured interview with the client company via online video meeting to gather materials about the website’s purpose and relevant features. Benchmarking research helps the author and the client company to draw a blueprint on website layouts and contents arrangement.
4.1.1 Interview - client company supervisor

The author holds a video interview with the project supervisor. This interview has insight into the purpose, budget, timeline and tool of the website development. The details of the interview are attached in the appendix section of this report. There is the conclusion of the interview analysis about the project:

a) Purpose: As a business site to display valuable information about the company and products for improving customer service quality; As a new marketing channel to consolidate customer relationships.

b) Budget & Time: Less than 500 RMB [approx. 70 €] as small stipend; Initial deadline is decided to be end of February 2019.

c) CMS: WordPress. First of all, the company doesn’t have any programming skills. Next, the author has learned some basic knowledge and gained experience of WordPress in the web development courses in Laurea. Thus, the author as the only developer of the website, recommended the client company to use WordPress CMS.

4.1.2 Benchmarking – www.aimatech.com

This benchmarking objective is to explore how the similar businesses have designed their websites. Comparing and contrasting those websites’ advantages and disadvantages within the superior industry standards is a necessary step. It provides a specific optimizing guide for this project.

The client company is qualified the brand dealership to sell Aima’s products in the local areas of Anlu. Consequently, Aima Corporation official website is the benchmark approved by client and author. There are benchmarking details referred to Aima Corporation website. Figure 6 presents the header and navigation section of Aima Corporation website.

![Figure 6: Aima Corporation website](image-url)
- **Colour scheme:** The overall colour utilization depends on three main colours including black, white and pink, which reasonably comply with contrasting colour rule. Aima Corporate website's header and footer cover black background with white font. The body of the site is white background and black font. Moreover, pink is the representative colour of Aima brand that is used to highlight something on the website such as mouseover colour and tagline. The client company and author decide to inherit this colour scheme in the project.

- **Navigation bar:** The navigation menu is a logical site map to lead visitors easily to find what they are looking for on the website. From left to right, each tag in the main navigation menu represents Aima’s philosophy, products, our services, cycling circle and shopping online relatively. The drop-down box correspondingly is filled by sub-categories of each main tag. However, the navigation menu has an apparent design weakness. When the cursor hovers over any option of the primary menu, it displays an entire drop-down menu. When clicking the primary menu option, it doesn’t redirect to a separate page. This is a unfriendly user experience on the website. In this project, the author and client company agree that the primary menu have five primary tabs. The secondary menu displays in the corresponding drop-down box when the mouth hovers over a single primary tab.

- **Shopping cart:** The last tab of menu is a shopping cart. It is not a build-in e-commerce function. It works to redirect visitors to Aima official online store operating in three different e-commerce platforms. After discussing with client company, we decide to remove shopping cart function in the case website. Because our website is to promote products online and attract those online visitors to our physical store.

- **Logo:** The site logo locates in the middle of the site's header with high quality. However, on the left corner of header, there is another logo-sized picture that make some confusing. The client company tailors a new logo shown as Figure 7 that places in the left corner of header.

- **Page composition:** All pages have the same body layouts in this website. As shown on the Figure 6, Header is composed by logo and navigation menu and the footer features search bar, full navigation tabs as well as social media icons. The page body consists of banner slider or image with page title, quality contents as well as a still credent banner. The interface wireframes present the page design for this project in the following Chapter 4.2.
4.1.3 Results of requirement capture and analysis

Figure 8 is the website hierarchy which is approved by client company. It is a clear and straightforward sitemap to guide visitors accurately accessing target contents.

![Website Hierarchy](image)

Figure 8: Website hierarchy

Website Contents Organization:

Company Profile: brand introduction facilitates to consolidate the brand perception in customers mind. The basic information such as location, contact information (e.g. telephone, WeChat etc.) and opening hours helps to enhance the credibility of the company.

Products Information: product categories and descriptions help customers to have a general image and concept on the traits and performance of the product.

Posts: post articles are termed as a marketing channel to promote specific products or release campaign news.

After-sales services: specific warranty terms and conditions make customers know what services they will get after purchase our products. The expressway of repair report will improve the problem-solving efficiency and customer satisfaction.

4.2 Interface Design

User interface is the key factor on user experience satisfaction when they browse a website. It regularly brings an indirect impression on a brand or company. Wireframe is a method to transform abstract idea into visually presentation. Those wireframes are carrier to display the design conception and the layout of website pages. Thus, a well-prepared interface wireframe direct developer to build a website step by step. “Balsamiq Mockups” is an interface mock-up builder application that is applied to draw page wireframes for this project.

The fixed contents of each page are the site header and footer. The header consists of the company logo, company name and a horizontal menu tabs which link with five corresponding
pages. The footer is divided into four columns. The first three columns contain six links with secondary pages and the last column has social media links.

Figure 9 presents the home page. The body contains a set of slide show for popular products and four thimble images linked to posts.

![Slide Show](image)

**Figure 9: Home page**

Figure 10 shows a general page contains body and right-side bar. Each general page has a page title. The page contents are filled by images and texts related to the page subject. In the right-side bar, it contains a search box and three images about the best sold products.
Figure 10: General page

Figure 11 represents the post layout. Post content is in the middle of page without side bar. In the bottom of post, there is a comment box that could collect customer feedback.

Figure 11: Post layout

Figure 12 shows the contact form. This form contains name and email which are the required fields and phone number and message which are optional field.
This chapter focuses on the process to build a website on WordPress. It explains the main steps including downloading and installing WordPress, choosing themes and plugins, creating pages, posts, navigations and features.

5.1 Local Environment Establishment

Establishing a development environment is the necessary preparatory work for WordPress installation. The basic request to use WordPress is to learn how to set up a local environment. Once the local environment is configured successfully, you can develop a website on your localhost that is totally free of cost.

The first step is to download XAPMM from official website and install it. And then we can find and launch XAMPP Control Panel and run “Apache” and “MySQL” by click “Start” button as shown in the Figure 13:
However, Azure web hosting is used in this project. Firstly, my client company is a Chinese company. They can access and check how the website develops remotely and give some feedbacks timely. In the meanwhile, Azure provides services to my school Laurea and my thesis supervisor agrees to help me to create a source group for this project.

5.2 WordPress Installation

First, the WordPress can be downloaded from WordPress.org. Then, the zip file is extracted and rename the file name to “anluaima”. The file has to be moved into the directory “xampp/htdocs”.

The next stage is to create a database used to store website’s data and add users to manage the database in phpMyAdmin. The following step is to enter “localhost/phpMyAdmin” in the browser’s address bar and access the database panel. Then, creating a new single database and user named “anluaima”. Figure 14 shows the database with a user created for this project.
Figure 14: Database

It then turns to install WordPress for the website. Entering the address “localhost/anluaima” in browser that lead to configure WordPress. The configuration process contains language setting, database setting and admin information setting that is shown in the below Figure 15:

Figure 15: WordPress Installation
After those steps, WordPress installation is completely done.

5.3 Theme Installation and Configuration

WordPress has a robust template processor that particularly presents in the theme's functionality. WordPress.org has an abundant themes’ resource library where collect thousands of free and rechargeable themes.

A WordPress theme contains indispensable template files. When those files run together, it produces a graphical interface that means all changes made on the website are visible synchronously on browser. The benefit of using theme is that users can customize the website’s appearance rapidly. (codex.wordpress.org 2018, Using Themes)

In this case, the prior consideration is to find a theme that can satisfy our layout needs. Particularly, the home page equips with a slide carousel. For saving time, the author firstly uses the key word “business” to shrink the theme’s searching range. In the narrowed options, the author tries several themes and filters out two candidates of themes. Consequently, the theme “Ample” is approved by the client supervisor to apply on this website.

Besides, a child theme is created to support the website development. The child theme is highly recommended to be used when the theme’s files need to be modified. Those modifications won’t lost when the parent theme updates to a new version. Another reason to use child theme in this case is that some layout setting cannot achieve via management interface.

The method of creating a child theme correctly for this website is introduced below. The first step is to create a new folder named “Ample-child1” in the directory “anluaima/wp-content/themes”. In the new folder, we create other two files named “style.css” and “functions.php”.

The contents of the “style.css” file (Figure 16):

```css
/* Theme Name: Ample-child1
Theme URI: http://example.com/
Description: Child theme for the ample create by hilda
Author: hilda
Author URI: http://example.com/about/
Template: ample
Version: 0.1.0
*/
@import url("../ample/style.css");
```

Figure 16: Child theme CSS setting

The contents of the “functions.php” file (Figure 17):
When above steps are finished, it is time to back to website’s dashboard and go to “Appearance - Themes”. Click “activate” button of the newly child theme “Ample-child1”. Now, the website theme is installed completely.

5.4 Website Customization

In the management interface panel (“Appearance - Customize” in dashboard), it contains some default options to change the appearance of website. Those options are embedded into the themes template files. Thus, it can only control limited features in free theme version. Figure 18 presents customize management fields, including what features can be directly changed via the dashboard.
In this project, free theme version could achieve most customized needs. For instance, there are 4 images that compose the slide show. Some other changes contain: logo image, header text colour and background colour, and the colour of links and buttons.

There is another approach to customize the website that is to create personal CSS code. This approach mostly is used under the situations when either the customized dashboard does not have the option, or the required option is only available in the pro version theme.

Fortunately, in this case, the additional CSS can be added directly in the Customize panel. Figure 19 shows the additional CSS codes to make some changes on the website.

```
.header{
    background-color: #000000;
}

.main-head-wrap{
    padding-bottom: 5px;
    padding-top: 25px;
    margin: 0px;
}

#header-logo-image{
    margin:0px;
    padding-left: 10px;
}

#site-title{
    font-weight: bold;
}

#site-description{
    color: #ff5498;
    font-size: 18px;
    font-weight: 500;
    font-style: italic;
}

.main-navigation a{
    color: #ffffff;
    font-weight: bold;
}

.fs.search-top{
    display: none;
}

.header-post-title-class{
    font-size: 30px;
    padding-bottom: 0;
    color: #ff5498;
    font-style: italic;
}

.header-post-title-container{
    background-color: #4d6de;
}

.slide-prev, .slide-next a{
    background-color: #dbdad4;
}

.slide-prev,
.slide-next{
    opacity: 0.2;
    background-color: #80abc8;
}

.wp-image-261,
.wp-image-260{
    float: left;
}

.bx-wraper{
    margin: 0px;
}
```

Figure 19: Additional CSS code
The changes of the website contain: change the colour including header background, site description, main-navigation, header post title and slide box wrapper, etc.; change some font properties and box model properties; remove the search button from navigation bar. The part of visual effect happen on the website shown as following Figure 20 and Figure 21:

![Figure 20: Website look before customized](image)

![Figure 21: Website look after customized](image)

5.5 Plugins Utilization

Plugin is a convenient and powerful tool when develop website on WordPress. As WordPress.org (2018 https://codex.wordpress.org/Plugins) introduced, Plugins carry extended functionality that naturally exists in WordPress to customize website’s special features. Website developers are relieved from the heavy load of coding. To enhance the website features and development efficiency, the author applies two main plugins in this website.

5.5.1 Contact Form 7

Contact Form 7 is the oldest and free WordPress plugin, which supports to manage multiple contact forms. It is convenient to create a contact form with simply HTML language and custom mail and message contents. The usage is to paste corresponding shortcode to page or post content field. (Contact Form 7 plugins.wordpress.org 2018)

There are two contact forms created for this project. One is to provide customers a dedicated channel to report repair. The aim is to improve service performance when the store’s phone is no answer during the non-business hour. The other contact form is to collect visitors’ feedback about the case company.

5.5.2 Elementor Page Builder

Elementor Page Builder is a front-end page designer with advanced capabilities. The drop and drag function speed the steps up when developer struggle with how to arrange the ratios of
each section. The feature of visual design provides a live editing process to be shown on the page synchronously. In advance, the user-friendly and unique function is that the styling elements such as box shadows, hover effects, animations and etc. can be achieved without coding. (Elementor Page Builder.plugins.wordpress.org 2018)

It is highly recommended to apply when developers would like to have an easy-managed type-setting on the contents of pages or posts. Particularly, the author takes the future website maintenance into account. It makes the website management easier even though the client company doesn't have technical stuffs.

5.6 Contents Composition

The website contents including images and texts are provided by the client company. The author task is to arrange the prepared contents in this website. There are 11 pages created for this website according to client’s requirements. It includes 5 parent pages and 6 sub-pages. Moreover, home page is a static page and posts are settled in blog page. Figure 22 is the menu structure which presents the page arrangement in this website.

![Menu structure](image)

Figure 22: Menu structure

- Home Page layout consists of header, slide section, portfolio section, featured posts section and footer. Figure 23 is the whole home page layout. Home page equips with the business template that is a build-in theme function. This business template supports to custom widgets such as portfolio and featured posts widgets used in this website.
Figure 23: Home page layout

Portfolio widget is used below slider show in the home page, which is set to link with newest posts in a specific category.

Featured posts widget is used above footer in the home page, which shows the recent posts with excerpt.

• General pages layout consists of header, body section, right-side bar and footer.

• Posts pages layout consists of header, content centred without sider bar, comment field and footer.

5.7 Website Features

• Shop Location: The shop location is marked in the following Figure 24 with yellow star. This location doesn’t support the geolocation. Because of the restriction of Google map in China, this website cannot be embedded with a real-time location map. Moreover, this
website mainly serves local residents. The client company agrees to show the shop location in a static map with some highly recognizable landmarks.

Figure 24: Shop location

- **WeChat QR code**

Under the Chinese market, the WeChat is the most popular mobile communication application. Currently, people are willing to get in touch with business via WeChat rather than phone call. Thus, the client company has own WeChat account. When customers scan the QR code, they can find and add the shop’s WeChat into contacts list. Customers could leave messages if they have any questions during the non-business hours of the physical shop. Thus, this can improve the customer service quality for the local shop. The QR code shown as Figure 25 is placed in the side bar of every general page as well as the contact us page.

Figure 25: WeChat QR code

6 Testing and Evaluation

6.1 Testing

The testing of the project website focuses on the functionality and usability aspects. Test is processed under the Azure’s web hosting environment.
6.1.1 Functional Testing

The compatibility and basic functions of the website are taking into consideration. The compatibility refers to two main aspects. First one concerns the website is compatible to cross browsers. This website is tested in different browsers that are popular used in China including Explorer 10 and 11, Chrome, 360 browser, QQ browser. The website processes in those browsers with a good running. The other is to test whether the website could adapt to different mobile phones. The client company tests the website in some different mobile phones such as Huawei, iPhone, Samsung, OPPO, Vivo that are the most common used by Chinese. The performance on those mobile phones was great. The WordPress Theme supports mobile responsive features, so that the website runs smoothly on mobile phones even though we don’t develop a separate mobile version.

Referred to functional test, the main idea is to guarantee that the website displays the right content when visitors click on the elements. There is an error message that the website host doesn’t support the mail() function when testing the contact form. This problem has been fixed by installing the plugin WP SMTP. Another unfriendly presentation of the website is found when the website runs on the screen width over 1400px. Because the background of portfolio is set as cover, the background image is out of portfolio division. The additional CSS code restricts the max-width to 1400px matched with slider presentation.

6.1.2 Usability testing

The survey of usability testing is conducted in the format of online questionnaire. The prior idea is to have comments about the interface design, content, and features of the project website. The target audiences are case company’s existing and potential customer. This survey spreads to those target audiences through case company’s WeChat account. The online questionnaire form is attached in the appendix section of this report.

There are totally 22 respondents. The interface design and functions of the website received high scores and most positive reviews according to the survey results. Figure 26 shows the results of what aspects of the website the respondents like. Most people reflect positive views on the layout and colour scheme, but the content and features of the website need to be improved.
Moreover, some advice was collected from open questions. Someone mentioned that the website’s address makes misunderstanding. This problem will be solved when the case company buy their own domain name. Another suggestion refers to upload more details of product descriptions. This resolution needs more materials provided by the case company. Overall, the usability of the website has reached to case company’s expectation.

6.2 Evaluation

From the beginning stage of requirements research to the testing of the website, the client company is highly encouraged to participate every details of the whole development process, even though this is a remote project. The aim of the project is to develop a corporate website for the electronic bicycle shop, which contains product and shop information. The website is a new marketing channel to publish posts for promoting products. Additionally, the repairer report form is created to improve the customer service quality. The author believes that the new website has achieved the project’s aim. Thus, it is a successful project.

As the client company planed, the website will be released in the beginning of March 2019. Hence, the website just runs on Azure web server until this report finished. Under the circumstance, the client company is satisfied with the outcome of the project. The core factor is that WordPress CMS is easy to master on the website content updates. The author just took a video call to instruct the client supervisor Madam Ma to create a post on the website. She believes it is not difficult to handle the website. In addition, she thinks the color scheme of the website is highly matched with the Aima Corporation, which could promote the shop’s picture and perception in local area. The client company agrees that the website is delivered in the file package format. Meanwhile, the author will keep in touch with case company when they need help to launch the website and learn how to manage the website with WordPress CMS.

Figure 26: Survey result

<table>
<thead>
<tr>
<th>What aspects of the website do you like?</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>9</td>
</tr>
<tr>
<td>Layout</td>
<td>17</td>
</tr>
<tr>
<td>Colour Scheme</td>
<td>13</td>
</tr>
<tr>
<td>Features</td>
<td>10</td>
</tr>
</tbody>
</table>
7 Conclusion

The primary purpose of the project is to develop a corporate website for Anlu Aima EBS, which should be easy to manage without IT technical skills. This project is completed successfully in 4 months that appreciates the fully supports and corporation of the client company. The client company participates in every detail discussion including requirements exploration, function identification, layout customization, and website testing in different devices and usability survey collection. In addition, the client company provides the website contents such as articles, images, product description and new logo and so on. Ultimately, the client company received a demo website. They can update the content and make simple functional changes through WordPress Dashboard, which don’t need input any programming codes.

From this project, I personally learnt a lot of technical knowledge and practical experience on the website development. Although I have learned the basic knowledge about using WordPress from school’s lecture, in the practical development process, some specific problems cannot find the solution from school learn. I have to search a vast number of materials to figure out a suitable solution that improve my problem-solving competence. For instance, I got the situation that the database connection has error that makes the website cannot run. For addressing this issue, I need to identify the possible causes of the problem and have many times attempts until the problem is addressed. Finally, I find that the reason of database error is the database host filled with wrong address. When it is revised, the website runs well. Besides that, I got useful skills of editing images with Adobe Photoshop. Furthermore, during the project, except the professional skills, my communication, cooperation and negotiation competences have an excellent improvement that is beneficial to my future career development.
References


Haas, Nick. 2011. What is a wireframe? 7 reasons why wireframing is important in web design.


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Appendix 1: Interview

Interview Questions & Answers

NB: This interview is conducted by WeChat Video Call. The whole communication language is Chinese between the author and the company supervisor. The following text is the interview content translated into English version.

Q1: Why do you want a new website?
A: We want to have our own website to show our product and service information. Because nowadays many people much more like to search relevant information before they come to a real store. If our shop could have an official business website, it would become a competitive edge in the local market. Moreover, the website could become our new marketing channel for our real store. For example, if we have any campaign or new arrivals, we could use our website to post blog or send invitation letter to our customers.

Q2: Who is your target audience?
A: Firstly, our main audience would be our existing customers. We will promote our website to them. Based on existing customers, they could spread our website to their friends if they would like to buy an electrical bicycle. Next, we could let customers who visit our real shop follow our website. In addition, we will post our website link to social networks like Wechat, QQ, or Baidu Tieba and so on.

Q3: What do you want people to do on your website?
A: People could get some basic information about our company history, brand story and recent news. They can find useful information about our products and services such as contact info, address, after-sale services and so on. For our existing customer, we would like to provide higher-quality service on replying the maintenance report immediately.

Q4: What’s your budget for this project?
A: We actually don’t have too much budget on this project. Because you (the student) asked for a thesis project and said you will help us build our website for free. Thus, I suppose our budget is not more than 500RMB for the project.

Q5: When do you want to launch the website?
A: Well. For our company, I think it is not an urgent project. So, we will may consider launching the website after Spring Festival of 2019. (Normally in the end of February 2019)

Q6: Do you have your own domain name and web hosting?
A: No, neither of them. Because we don’t have any existing website before, this is a totally new website. I think we can consider those two things after the website completed.

Q7: Do you prefer any content management system (CMS) to use, or would you need my suggestion on the proper CMS?
A: No, I don’t have any experience or knowledge about the CMS you mentioned. If you could, we hope you can provide some suggestion for us to choose a proper one.

Q8: What similar websites do you like and what is it you like about the website?
A: Yes, there is one that is the official website of Aima Corporation. The address is: https://www.aimatech.com/. I personally would like to follow the entire style of the website and get something special design for our own website. Because our shop could be regarded as a branch of Aima Corporation on Anlu district. Thus, it will be better to build our website based on the characters of Aima Corporation.

Q9: Would you like to be an e-commerce website?
A: No, we don’t need e-commerce service on our website. Because the electrical bicycle is not suitable for long-distance delivery. Moreover, people need to have a trial on store before they decide to buy one.

Q10: What contents or features would you like to have on the website?
A: We would like to display our basic information about our product, after-sales services, location and contact info. Then, we would like to have a board for our marketing feed. For example, having a dynamic news updating area for our campaigns and other relative news. What’s more that we would like to receive the maintenance report synchronously in our email.

Q11: Who will provide content for the new website?
A: We could provide our product information and relevant images and videos, etc. to you. We hope you can create some examples on our site first, and then you can teach us how to edit them even though you will not provide further services for us after you finish your thesis project.
Appendix 2: Usability Testing Survey

Usability Testing Survey
(网站性能测试调查)
Online Survey & Questionnaire

Dear customers,

Good day! For improving the customer satisfaction, Anji Aima Electrical Bicycle Shop decided to build a corporate website. The under-construction website (https://anjiainema.azurewebsites.net/wordpress) is in the testing phase. Through this brief survey, your answers will be helpful in enhancing our services and meeting your needs. Your response will only be used for survey purposes. Thank you very much for your time and suggestions!

Please visit our website before completing the questionnaire. Thank you.
在开始填写问卷之前，请先浏览我们的网站。谢谢！
https://anjiainema.azurewebsites.net/wordpress

1. What is your age?
您的年龄是？

☐ Under 18 years old (18岁以下)
☐ 18-29 years old (18-29岁)
☐ 30-45 years old (30-45岁)
☐ Over 45 years old (45岁以上)

2. What is your profession?
您的职业是？

☐ Administrator 企业管理者
☐ Clerk 普通职员（如销售人员/工人等）
☐ Civil Servant 公务员
☐ Student 学生
☐ Professional 专业人员（如医生/律师/文体/记者/老师等）
☐ Freelance 自由职业者
☐ Other (please specify) 其他________


3. This website is visually appealing.*

這個網站的視覺設計效果如何？

Strongly disagree (非常不同意) 0 1 2 3 4 Strongly agree (非常同意)

4. The overall navigation of the website is easy to understand.*

這個網站的整體導航是否容易理解？

Strongly disagree (非常不同意) 0 1 2 3 4 Strongly agree (非常同意)

5. The individual page is well-designed.*

頁面設計是否精美？

Strongly disagree (非常不同意) 0 1 2 3 4 Strongly agree (非常同意)

6. Content classification used in this website is clear.*

網站內容分類是否清晰？

Strongly disagree (非常不同意) 0 1 2 3 4 Strongly agree (非常同意)

7. It is easy to find what you are looking for on our website.*

容易在網站找到你需要的資料嗎？

Strongly disagree (非常不同意) 0 1 2 3 4 Strongly agree (非常同意)

9. What changes or additional features would you suggest for our website?

你認為網站需要改進或加入哪些功能？

10. Do you have other comments about how we can improve our website?

你還有其他意見或建議嗎？
Appendix 3: Instruction of website content update for client company (用户使用指南)

Login 登录地址: sihandemo.azurewebsites.net/wordpress/wp-admin

Enter user ID and password to access the dashboard.

输入用户名和密码进入内容管理后台

Add new user (添加新用户)

Go to “Users - Add new”. Fill the user form and choose an appropriate role. Then, click button “Add new user”.

点击“用户-添加用户”，填写用户相关信息并为新用户选择合适的角色。点击“添加用户”按钮完成新用户创建。

Existing users’ profile can be accessed and edited under the “Users” directory.

进入“用户”目录，可查询或编辑已存在的用户档案。

Add new posts/pages (添加新文章/页面)

Go to “Posts/pages - Add new”. Click Elementor Editor to switch into Elementor Editor dashboard. Click “+” button to add new section and choose an expected section structure. Then, fill the prepared contents such as texts and images. Finally, press “Publish” to release new posts/pages.

点击“文章/页面-新建文章/页面”，点击 Elementor 编辑器跳转至 Elementor 控制盘。点击“+”按钮添加新段并选择段的结构。添加准备好的内容，例如文字或图片。最后，点击“发布”按钮发表新文章或页面。

Existing posts/pages can be accessed and edited under the “posts/pages” directory.

进入“文章/页面”目录，可查询或编辑已存在的文章或页面。

Add new media (添加新媒体库)

Go to “Media - Add new”. Upload prepared media files.

点击“媒体-添加”，上传多媒体文件。

Existing medias can be accessed and edited under the “Media” directory.
Comments Management (评论管理)

Go to “Comments”. All comments display under the “Comments” directory. Users who is authorized the relevant right can decide to approve or delete comments shown on website.

点击“评论”。网站所有评论将会显示在“评论”目录下。授予相关权限的用户可以决定评论是否显示在网站上或被删除。