



LAHDEN AMMATTIKORKEAKOULU
Lahti University of Applied Sciences

A FIRM'S CHOICE FROM DIFFERENT CONTENT MANGEMENT SYSTEMS (CMS)

Case: Joomla and CMSmadeSimple

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Duc Le Hoai

Lahti University of Applied Sciences
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ABSTRACT

Nowadays, a company's website plays an important role in its production and business. It helps promote the products, introduce the company profile and provide information on its activities. As not everybody in a company is an IT expert, a company needs easy-to-use software to help manage and control its website without technical knowledge. One of the solutions is CMS. In this thesis, the author focuses on Joomla and CMSmadeSimple as case study.

This thesis explores the selection process carried out for the adoption of CMS in four companies in Vietnam. It provides an insight into the process, the reasons and the factors that influence the decision.

Qualitative research method is applied to answer the research questions. For data collection, semi-structured interview was used to explore participant's experience. The content analysis of the interview transcripts are used to gather the answers given during the semi-structured interview. The participants' answers are compared to what have been gathered from the literature review.

The results show the selection process taken in each of the companies. It confirmed the factors that are found in the literature concerning the selection of CMS. Moreover, it shows the reasons for the selection of each of the CMS. The results also show some issues in its limitation. Therefore, the author suggests more research to be done for this purpose.

Key words: Content Management System, Open Source, Selection, Content Management System Selection, Joomla, CMSmadeSimple

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LIST OF ABBREVIATIONS

CMS	Content Management System
ECMS	Enterprise Content Management System
CCMS	Component Content Management System
WCMS	Web Content Management System
MCMS	Mobile Content Management System
IT	Information Technology
HTML	Hyper Text Markup Language
SQL	Structured Query Language
OSCMS	Open Source Content Management System
NGO	Non-governmental Organization
PHP	PHP: Hypertext Preprocessor
CMSMS	CMSmadeSimple
SEO	Search Engine Optimization
UI	User Interface
CERN	Conseil Européen pour la Recherche Nucléaire (French) European Laboratory for Particle Physics; Geneva, Switzerland

1 INTRODUCTION

Since its creation in 1990 by a CERN physicist named Tim Berners-Lee (Berners-Lee & Fischetti 1999), the World Wide Web has been playing a growingly important role in people's life. Starting from a file sharing method (CERN 2008), nowadays websites play multiple roles such as an online store (Amazon), a place to share ideas (forum), a place where you can upload your own video and share with everyone (Youtube), a community center (Facebook), and many more. In the field of business, a website helps the company in the promotion of its products, the company's background, and news on the company's activity. As creating a website is technically out of the question for many people, the Content Management System (CMS) comes in to help.

A CMS is a computer program that helps users to publish, edit and modify the content as well as maintenance from a central interface (Boiko 2005; Rockley, Kostur, & Manning 2003; White 2005). One of its features is Web CMS which revolves around contents that are deployed on the Web. This feature allows non-technical users to control and manage a website with ease. While CMS has other features to its name, this thesis will focus on the Web part of this computer program.

The implementing of CMS is similar to that of other information systems and includes these steps: decision making phase, selection phase, development and implementation phase (Tran & Chi-Trung 2011 p. 14). In this thesis, the author mainly focuses on the second phase of the process, which is the selection phase. The decision phase will be analyzed to understand why the company chooses to implement CMS. This research aims to make reader understand how the selection was carried out in some Vietnamese companies, what are the factors involved in the selection process and the reasons for the final decision. The two CMS chosen for the case study are Joomla, because it is pretty famous nowadays and frequently used by the author, and CMSmadeSimple, which might be helpful to see the differences between a popular CMS and a less one.

Chapter 1 covers the background, the goal, the scope and the structure of the thesis. Chapter 2 contains the research design including research questions,

purposes, methodology, strategy, approach, data collection and analysis, validity and reliability. Chapter 3 reviews the literature on the definition of CMS and its classification as well as a brief introduction of Joomla and CMSmadeSimple. Chapter 4, the author introduces the selection process model and factors that influence company's decision on its choice of a CMS. An overview of each case company is given in Chapter 5. Chapter 6 provides an insight into the selection process of companies surveyed. The structure of this part is based on the questions of the studies. The analysis part starts with the CMS selection process in each company, continues with the factors that the company concerns, and ends with the reasons for the final decision. Chapter 7 presents the conclusions including thesis overview, finding from research, the limitations of the thesis and recommendations for future work to be done. The structure of this thesis is summarized in Figure 1.

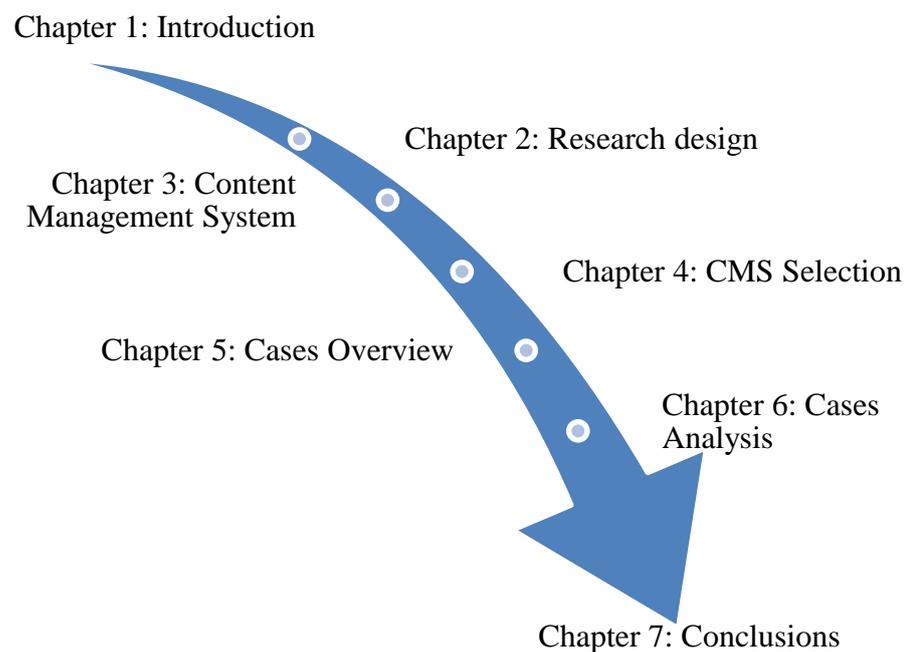


Figure 1: Thesis structure

2 RESEARCH DESIGN

2.1 Research Questions

Defining the research questions is vital to every research as stated by Yin (2003 p. 7). Research questions define the entire research process, guide the arguments and provoke the interest of the viewer. In this thesis, the three main research questions are:

1. How was the selection process carried out?
2. What are the factors that affect the decision of which CMS to be used?
3. Why does company choose to use Joomla/CMSmadeSimple?

2.2 Research Purpose

The research purpose is three folds, namely explanatory, descriptive and exploratory. In this thesis, the research purpose are a mixture of the three mentioned above. On one hand, this enables the author to describe the phenomenon and explain why it happens; on the other hand, the author can also explore the factors that affect and influence that phenomenon. This thesis revolves around the decision of a firm on which CMS to be used for its website. It focuses on not only describing the CMS selection process, but also giving the reasons why a firm choose to use certain CMS, and explore the factors that influence the decision.

2.3 Research Method

There are two main research methods that are used up to date. On one side, The Quantitative research concerns with testing hypotheses, considers cause and effect, and calculates the size of a phenomenon of interest (Johnson & Christensen 2008). The final result of a research is usually in the form of statistical report including both descriptive and inferential statistics. Descriptive method concludes and visualizes data in an informative way while inferential method generalizes about a population based on a sample.

On the other side, the aim of qualitative method is about understanding and interpreting the process that happens beneath a certain event and evaluate the people's perception involved in the event. It involves people's life histories, everyday behavior, words, and images. Personal feelings and experienced are also analyzed (Silverman 2000.) Because of that, the methods such as interview with open-ended questions, observation and document review are used.

This thesis aim, once again, is to research the decision of firm on which CMS to be used for its website; therefore, qualitative approach is the suitable method that can be applied to this thesis. As the qualitative approach used in this thesis explores the phenomena, semi-structured interview was done in order to provide a more complete picture.

2.4 Research Strategy

Robson (2002 p. 178) defines case study as “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence”. The central trend of every types of case study is that it tries to explore a decision or set of decisions: why they were taken, how they were implemented, and with what result (Yin 2003). For that matter, case study is adopted as main strategy in this thesis.

2.5 Research Approach

The concept of CMS and information on Joomla and CMSmadeSimple was studied first in order to get a basic knowledge about each of the CMS. Then, relevant literature on the selection of CMS was studied in order to constructs a framework for the selection phase, including the steps and general factors that affect the process. Then, the question for the interview was designed based on that framework. After that, coding method was used to categorize information extracted from the interviews. And finally, the information was analyzed base on the three main questions to deduce the conclusion.

2.6 Data Collection

In order to research the problem, semi-structured interview with open-ended questions is selected to explore the participants' experience about the CMS selection phase in their company. These interviews help the author to find out the process itself and also the influencing factors.

The model in literature review concerning the typical selection phase of CMS was the foundation to develop the semi-structured interview. The questions were open-ended in order to encourage the participants to define and describe the situation or event that occurred, as well as reveal their attitudes (Silverman 2000; Yin 2003).

Four companies were selected by the author through a website research. The list of companies was initially drawn and companies contacted for their acceptance. The criteria for selection were the company website's choice of CMS (Joomla or CMSmadeSimple) and the availability of company's own server(s). A company running its website on its own server tends to provide more information than a company using other alternatives (web hosting services etc.).

Each of the four selected companies was afterwards contacted for more information. The criteria for the interviewees were: some experiences in the relevant field such as familiarity with websites using CMS. Interviewees should be part of the IT team responsible for the selection of the CMS. Interviews were conducted via chat messenger, with questions sent beforehand for preparation.

2.7 Data Analysis

The data was analyzed using the coding analysis method. The coding process is to generate categories that contain pointers to the actual data. The process starts by using descriptive coding where phrases, words, and sentences from interview transcripts are labeled using relevant words or phrase (Miles & Huberman 1994.)

The interviews were conducted and transcribed in Vietnamese, then analyzed in English. The contents which were significant were highlighted from the text. Those significant findings were then categorized and listed to discover the reasons

for choosing certain CMS (in this case Joomla or CMSmadeSimple), the selection process and the factors that influenced the decisions.

2.8 Reliability and Validity

Reliability is the extent to which the research findings are consistent over time, which mean that data collection techniques or analysis will produce the same results on different trial. Validity concerns the degree of which the study accurately hit “the bull’s eye” of the research object or on the other hand the research must truly measures that which it was intended to measure (Saunders, Lewis, & Thornhill 2009 p. 157; Yin 2003.) The reliability and validity of this thesis stay at:

- Four Vietnamese companies, which have already implement the CMS for their website using either Joomla or CMSmadeSimple and have an IT Team/Department of their own.
- The interviewees were selected in a manner that they have already had some experience in the field and have made some websites using CMS. They are also part of the IT team that is responsible for the selection of the CMS. Thus, they will provide the needed information for the conducting research.
- The interview questions were made based on the model of CMS selection from literature.

3 CONTENT MANAGEMENT SYSTEM

3.1 Introduction

Nowadays, with the internet playing a more and more important role in everyday life, information is much easier to spread and can replace postal and other services. People can send as many letters as they can simultaneously to many addresses with just a few strokes on a PC. A typical example of the Internet use is a website for a business company.

However, not everyone can be an IT expert who needs a lot of training in such areas as HTML, PHP, JavaScript, MySQL, etc. for the construction of a website. A businessman has no time for that and he or she needs to rely on professional staff.

Still, organizations want to publish and update contents to the web without the need to know about any software than the web browser. Also, individuals want to share ideas, web logs, list of upcoming events and appointments, and their thoughts without bordering with any technical details (Simpson 2005). One of the solutions to satisfy those needs of organization and individuals is Content Management System. So, what is CMS?

“A Content Management System (CMS) can be defined as a database of information and a way to change and display that information, without spending a lot of time dealing with the technical details of presentation” (Simpson 2005).

A Content Management System supports anyone without the knowledge of HTML, PHP, JavaScript and MySQL the ability to manage, update, upload and delete contents from an internet site without the help or advice of a web developer (Robertson 2003).

With the help of a CMS, after a web site was made by a web developer, it is possible for any member of the organization to perform update with ease. This will ensure the work flow of the company, prevent interruption and of course save time and money. For example, let's take company A with the use of CMS and company B with the traditional way of making website. After a while in operation,

both company A and B decided to make a website of their own. They each hired a web developer to develop the website. After some time, the web developers decided to quit the company for a better one. Company A and B still run the website. For company A, instead of hiring a new web developer, can just have any member of the company with the permission to continue updating the information on to the website thanks to the help of CMS. On the other hand, company B can't do anything since none of the employers have the knowledge of managing a website and thus need to hire a new web developer; therefore, the operation of the company will suffer in the meantime. This example shows the advantages of CMS and also explains the tendency of companies to use CMS when developing a new website.

3.2 Definition

A Content Management System is a computer program that enhances the initiation or foundation, formation, manipulation, and elimination of information in the form of images, documents, scripts, and plain text (Mercer 2010).

A CMS consists of two elements: the content management application (CMA) and the content delivery application (CDA). The first one CMA element enables the content manager or author, who may not know HTML, to manage, modify, and remove content from a Web site without the help of a Web expertise. The CDA element uses and compiles that information to update the Web site (Rouse 2011.)

CMS offers organizations and individuals the ability to develop and organize enterprise data for all of the demands regarding the internet such as Internet portals, e-business applications, intranets and extranets (Durham 2004).

Bernard (2010) defines CMS based on two definitions. The first one: "CMS is an application/software that provides capabilities for multiple user with different permission levels to manage (all or a section of) content, data or information of a website project, or internet / intranet application." The second one: "CMS is a web application that provides capabilities for multiple users with different permission levels to manage the content of a webpage without the need to have HTML knowledge."

Bradford Lee (2006 p. 5) describes CMS as a way of managing large numbers of web-based information that are more than coding all of the information into each page in HTML by hand.

Throughout the years since the first Content Management System was announced at the end of 1990s, many authors, individuals and organizations has been trying to define CMS. These definitions represent the opinions and experiences of individuals and organizations from using CMS.

To sum it up, a general definition of CMS is that it is an application/software that is used to manage the content of a website. The managing process is done through a multiple of functionalities and in a manner that provide the user an ease of use. It doesn't require much technical knowledge and enable any organizations or individuals to exploit the potential of website.

3.3 Classification of CMS

Nowadays there are a large number of CMS that are in used. In total, it is up to more than 160 CMS that runs on different kinds of platforms ranging from Java, ASP.NET, Perl, and PHP and so on (Wikipedia, List of Content Management System). These CMS can be categorized based on two different criteria which are either Functionality or License.

3.3.1 By Functionality

Classification by functionality identifies what is the goal of each category of CMS is trying to achieve and which sector and platform is being used. There are three categories of CMS based on functionality.

3.3.1.1 Web CMS

Web CMS (WCMS) is one of the most popular types of CMS that involves the use of Markup languages for publishing, creating, storing and maintaining contents of a website. WCMS allows clients to take control over content, files,

documents, and web hosting plans which are HTML-based depend on the system (Roebuck 2011.)

Most of the people assume that there is only one type of WCMS, but in fact, according to CMSUK (Web CMS), there are three:

- Offline processing systems: systems that process the content before it goes live
- Online processing systems: systems that are based on user-generated content which includes for example, wikis, blog, forum, etc.
- Hybrid systems: a combination of online and offline systems

The main advantage of WCMS is that it is mainly designed for novice or non-technical users. This software is ideal particularly for businesses or organizations whose employees often required working with their websites. This might, to some extent, free the technical staff for other tasks which are cost-effective for business (CMSUK, Web CMS.)

E.g. Joomla, Drupal, Wordpress, CMSmadeSimple, etc.

3.3.1.2 Enterprise CMS

Enterprise CMS (ECMS) is used by organizations for managing, organizing and sharing their large contents. These contents could be images, text, files etc. (Rockley, Kostur, & Manning 2003.)

They are able to handle large amount of content which are directly related to the company, this information consists of the procedures and hierarchy of that company. ECMS uses a variety of tools; this not only includes WCMS but also includes media manager and content organization (CMSUK, Enterprise CMS.)

The aim of the system is to enable the employees to access the company information in a quick manner instead of making them searching through multiple software applications; hence, simplifying business processes which lead to a save of time and money. A factor that is a plus to this kind of CMS is in its ability to

store information until it is no longer necessary or out of date (CMSUK, Enterprise CMS.)

E.g. IBM Lotus, Alfresco, SharePoint, RedDot etc.

3.3.1.3 Mobile CMS

With the recent sudden growth of mobile devices such as smartphones and PDA's in the recent year, there is no surprise that a CMS that is especially made for mobile appears (CMSUK, Mobile CMS).

The original goal was to target the business to consumer (B2C) market with focus on the omnipresence of the mobile phone. The massive demands for these mobile devices and the raise of all types of users led to the rapid development of mobile system to manage content such as ringtones, text messaging, news, games, etc. Later on, this has expanded into new areas such as business to employee (B2E) and business to business (B2B) (CMSUK, Mobile CMS.)

There are many types of Mobile CMS (MCMS), ranging from small one through larger system which is capable of multiple information delivery. Some also exist as a feature or add-ons as part of a larger MCMS. The advantages of this CMS are ease of use, readability and navigation according to the small size of the screens of mobile devices (CMSUK, Mobile CMS.)

E.g. Wap-2-go, Mofuse, Synapsy, etc.

3.3.1.4 Component CMS

Component CMS (CCMS) focus on the creation of document from component parts. This includes graphics, links, a single word or even a complete paragraph of text. These components can be later reused within another document or across multiple documents. This guarantee that content is consistent across the entire document set. Each item of contents has its own life cycle which means that it can be managed individually or as part of a larger set of content (VasontSystem.)

The main advantage of CCMS is that it can reuse the content in multiple documents. Thus, remove the need of endless copy/paste and improve the quality of the document. It can also help to keep a consistent content. Another good advantage is in its capability to use a component in a certain context and then re-use it in a different context. This is really helpful for companies who aim to expand into the international market and need to translate their content into a variety of languages (CMSUK, Component CMS.)

A CCMS can be used as standalone or part of a larger structure such as WCMS or ECMS (CMSUK, Component CMS).

E.g. SDL Trisoft, IXIASOFT DITA CMS, Vasont, XDocs, DITA Exchange, etc.

3.3.2 By License

Classification by license identifies if the CMS in question is free of use or not. There are two categories of CMS based on license.

3.3.2.1 Commercial CMS

Commercial or proprietary CMS is a type of CMS that is owned by someone and you need the permission or license in order to use it. In most case, even with the license, the license holders may still be forbidden to duplicate the CMS or make alternations to the application unless a more expensive license, e.g. “developers” are purchased (Wolfe 2010.)

E.g. SiteCore, EpiServe, Ektron, Alterion, Amaxus, etc.

3.3.2.2 Open Source CMS

Open Source literarily means source code availability. Making source codes available means the public could contribute to a software completion thus making software open to community of developers who could share their knowledge and could also customize the software to suit their needs (Wikipedia, Open-source Software.)

OSCMS means a CMS that has the criteria of an open source. That is, OSCMS is a CMS that has its source code available for use or alternation by users or other developer community, as they like.

E.g. WordPress, Joomla, Drupal, Mambo, Plone, CMSmadeSimple, etc.

3.4 Joomla

3.4.1 Introduction

Joomla is an award-winning content management system with a powerful extension system used for developing different application on the web (Rahmel, Beginning Joomla! 2009). The name Joomla comes from a Swahili word '*jumla*' which means "as a whole" or "altogether". When an extension was installed in Joomla, it blends in with the rest of the site; all the extensions truly appear "as a whole, altogether" (LeBlanc 2007). Joomla is one of the biggest three CMS that are used nowadays alongside with Drupal and WordPress. The selection of Joomla was prompted by the author's experiences with this software during Practical training and working with a project.

Joomla was the result of a team working on Mambo software on August, 2005 (Kennard 2007). Mambo software is a product of Miro International Pvt. Ltd. Developers of Mambo felt that Miro International was violating some of the open source values and therefore decided to start their own open source development software called Joomla. The development team then also created a forum named OpenSourceMatters.org to share information with everyone interested in that matter (Wikipedia, Joomla.)

The official web page for Joomla where you can find more information and download for usage is www.joomla.org. Joomla, as mention above in the classification of CMS, is a WCMS, which mean it is used to build small as well as large web sites; it offers a wide range of functionalities and extensions. Joomla has been adopted internationally by web developers for building corporate web sites, corporate intranets and extranets, news publishing, ecommerce, and NGO web sites (Rahmel, Beginning Joomla! 2009).

At the moment, Joomla offers two version of its software: the first one is version 2.5.x which is recommended for most users and will be supported till 2014; the second one is version 3.0.x which is for experienced users and developers, it has more cutting edge features (Joomla, Download). In mid-2007, the numbers of downloads of the Joomla system had surpassed 2.5 million (Rahmel D. 2007). And in the early record as of March 2012, Joomla has been downloaded over 30 million times. Over 10,000 free as well as commercial extensions are available for download. It is estimated to be the second most used CMS on the internet after WordPress (Wikipedia, Joomla.)

Joomla Content Management System is licensed under an Open Source Software license, the General Public License (GNU). What this mean is that, you can build a CMS website for an organization with Joomla without worrying about license fee. Since Joomla is free, you get access to its source code and you can make any changes as much as you want. Furthermore, you can make contribution to the Joomla community and you could also get some help when needed.

PHP, SQL, MySQL, HTML, and CSS together make up Joomla. It also includes JavaScript language for extension. It is cross- platform software which means it can run on different platforms such as Windows, Mac OS X and Linux.

3.4.2 Technical Requirements

It is important to get to know the technologies that are involved in Joomla, this will let us know what are the things needed before developing a Joomla site.

Since Joomla is cross-platform software, operating system is not to be considered when starting to build a site with Joomla. The technologies that need to be considered when getting started with Joomla are: Web server, Database and Language interpreter.

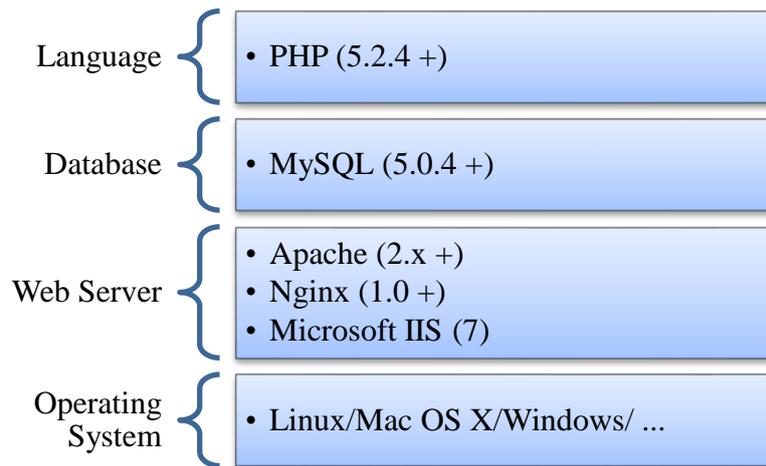


Figure 2: Joomla 2.5.x Technical Requirements (Joomla, Technical Requirements)

As shown in Figure 2, after operating system, web server is the next element to be considered. Basically, Joomla can work on every web server that support PHP language since Joomla is built based on PHP. The three web server that works with Joomla is Apache, Nginx and Microsoft IIS. The recommended one for Joomla at the moment is Apache since it is now the most popular and has the most support from the community.

The next technology that is needed for getting started with Joomla is the database. MySQL is the only choice for Joomla 2.5.x version. MySQL is a popular open source database engine that works with all platforms, though each platform has its unique installation guide.

The last technology is PHP interpreter. PHP is the language of Joomla; it has Object Oriented Design (OOD) framework. It is used with many open source software on the web. The two CMS that are used in this thesis are both PHP based CMS.

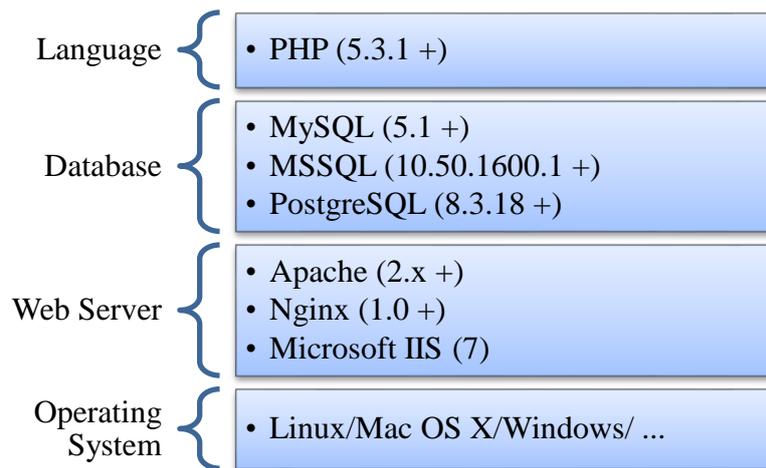


Figure 3: Joomla 3.x Technical Requirements (Joomla, Technical Requirements)

From Figure 3 we can see that the technical requirements for Joomla version 3.x are basically the same for language interpreter, web server and operating system; the only different is the version.

But on top of that, Joomla 3.x offers a wider range of the use of database. Not only MySQL but also MSSQL and PostgreSQL are possible choices for this version. Despite that, MySQL is still a prefer choice for users.

3.5 CMSmadeSimple

3.5.1 Introduction

The name CMSmadeSimple comes from the idea of making the CMS as easy to use, easy to administrate and easy to implement as possible for the users (Dunwoodie 2009). CMSMS is not that big of a software compare to the three kings of CMS: WordPress, Drupal and Joomla. The usage of CMSMS is 0.1% and a market share of 0.2% compare to a usage of 2.7% and a market share of 8.6% by Joomla, the other CMS that are used in this thesis (W3Techs 2013). But still, it was CMSMS that won the Open Source CMS award in 2010 (Packtpub 2010). In this thesis, CMSMS was selected besides Joomla because the author wants to see the differences between a widely used CMS and a less commonly used one.

The official web page for CMSMS where you can find more information and download for usage is <http://www.cmsmadesimple.org>. CMSMS, as mentioned above in the classification of CMS, is a WCMS, which means it is used to build small as well as large web sites; it offers a wide range of functionalities and extensions.

Ever since it first released in 2004, CMSMS has gone through many different versions, especially in version 1.6 when it had a major rework and in version 1.10 when a large change in performance improvements and modules was made. The current stable release for CMSmadeSimple that can be downloaded and used is version 1.11.4. CMSMS has an estimated download of 500 per day since it released in 2004. And in 2007, it is recorded that there was around 750,000 times that CMSMS was downloaded for use (Spick 2009).

CMSMS Content Management System is licensed under an Open Source Software license, the General Public License (GNU). What this means is that, you can build a CMS website for an organization with CMSMS without worrying about license fees. Since CMSMS is free, you get access to its source code and you can make any changes as much as you want. Furthermore, in the CMSMS website, there is a section named CMSMS Forge where as a user you can download modules, report bugs, add feature requests and download translations; as a developer you can submit your project regarding modules and tags.

PHP, MySQL, HTML, and CSS together make up CMSmadeSimple, the same as Joomla. It is also cross-platform software which means it can run on different platforms such as Windows, Mac OS X and Linux.

3.5.2 Technical Requirements

It is known that CMSMS doesn't make a choice of operating systems, because it will run on all operating systems and browsers that exist. So just like Joomla, the technologies that need to be considered when getting started with CMSMS are: Web server, Database and Language interpreter.

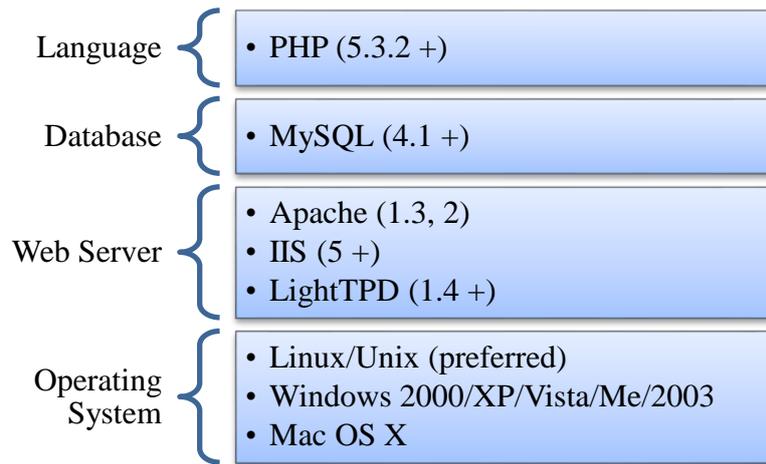


Figure 4: CMSMS 1.11.4. Technical Requirements (CMSmadeSimple)

As shown in Figure 4, after operating system, web server is the next element to be considered. Basically, like Joomla, CMSMS can work on every web server that support PHP language since CMSMS is built based on PHP. The two web server that works with CMSMS is Apache, IIS and LightTPD. The recommended one for CMSMS at the moment is Apache since it is now the most popular and has the most support from the community. IIS is not recommended and the support may be dropped in the future.

The next technology that is needed for starting a website with CMSMS is the database. MySQL is the only choice for CMSMS.

The last technology is PHP interpreter. PHP is the language of CMSMS, just like Joomla.

3.6 Comparisons

This section takes the two previous mentioned CMS to compare via the comparison Table 1 below in order to see the differences.

Table 1: Comparison between Joomla and CMSMS

	<i>Joomla</i>	<i>CMSmadeSimple</i>
Ease of use	<p>Easy to install and use</p> <p>Easy to customize: no programming experience required</p>	<p>An ‘out of the box’ package which can be used by non-technical users</p>
Advantages	<p>Easy to maintain</p> <p>Has a community which can provide support</p> <p>SEO friendly</p> <p>Can run a website with multiple languages</p> <p>Remote access and control via web browser</p> <p>Fully extendable, e.g. plugins, extensions.</p>	<p>User friendly</p> <p>Start out as a basic system which can be extended if needed (more simple to use than Joomla)</p> <p>Has a community which can provide support</p> <p>Customizable templates</p> <p>Can be expanded, e.g. add-ons</p> <p>SEO friendly</p>
Disadvantages	<p>Not a good choice for small websites</p> <p>Limited number of templates (users has to create their own or purchase one)</p> <p>Not a good use for community website</p> <p>May be hard to get started with (for some users)</p>	<p>Require web browser for editing</p> <p>Heavy drain on resources and memory</p> <p>Not fit for multi-lingual environment</p>

	<p>Sites are built with many navigation level which led to confusion</p> <p>Heavy usage on servers</p>	
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4 CMS SELECTION

4.1 Selection Process

The adoption of new software is not only the acceptance of the software itself, but to put the software into actual work. In another words, the adoption should include initiation, selection, development and implementation phase (Tran & Chi-Trung 2011 p. 14). In this thesis, it is focus on the second phase of the process, the selection phase.

With the increased in number of software vendors to choose from and intense pressure to keep up with the technologies, software selection has become a crucial factor to corporate success and at the same time difficult to perform. Studies in the recent year points out that nearly two-thirds of all enterprises fail to meet their stated objectives (Capterra 2001). It is because of the failure in analysis and evaluation during the selection process. That is why it is important to figure out the steps that are needed to be taken in order to select the appropriate software.

The objectives to be accomplished with the selection process are: define the business requirements, identify a list of vendor that provide the possible solutions, define the requirement for the new solution, compare the solution between vendors and identify the best possible solution that meet the organization needs (Carpp 2009.)

The process includes a variety of steps to be carried out including planning, requirements, research, demos, decision and negotiation. Each step has multiple detailed processes to ensure necessary information is obtained. They can be tailored, modified to meet the needs and requirements. The last step ‘negotiation’, which concerns the price when purchasing the software, is not to be considered in the context of this thesis since the software in question is Open Source software. The following diagram is put together by the knowledge gain from the literature review (Bandor 2006; Carpp 2009; Castro & Alves 2013; Ncube & Maiden 1999.)

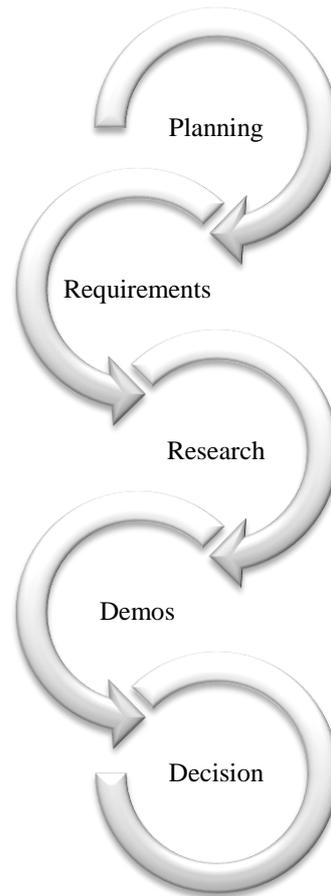


Figure 5: The selection process (adapted from literature)

Descriptions for each step in Figure 5 are as follow:

Step 1: Planning

This step addresses the need to thoroughly examine the company and its reason for pursuing new software solutions. It creates the foundation for software selection by determining the company objective and redefining business processes. It also involves creating the project plan and team.

Step 2: Requirements

To successfully evaluate and select a software application, the company must firstly identify the functionality that they are looking for in a product. This step identifies the overall business purpose of the software, including a detailed listing of functional factors and the technology requirements for the software.

Step 3: Research

After the requirements documents have been created, the company now must search for software vendors. The key in this step is to search for the vendors that satisfy most of the listed requirements that are listed in the previous steps. This process starts with a long list of software vendors and then eliminates inappropriate vendors to get a short list of suitable solutions.

Step 4: Demos

When the company has a short list of vendors, it is time to evaluate the closest matches to the situation through a demo process. This means that the software must be able to handle the specific requirements of the company.

Step 5: Decision

Now that the company has gathered all of the needed information, it is time to make the final due diligence and gather the additional information needed to make a final decision.

4.2 Factors influencing the selection of CMS

The question to which CMS to use is a hard one to answer since there is a vast range of software to choose from which all do the same thing. The CMS have moved from being just about managing content to a multi-channel system with a high level of functionality.

The main important point of a CMS is ease of use and the ability to be used by the people who are not knowledgeable about technology. A CMS is considered to be good if it can be used by a team of people who do not have any programming skills or technical experiences.

The factors that are the most influencing when selecting a CMS according to many sources (Bly & Zucker 2010; Boag 2009; CMSUK, Choosing a CMS; Noupe 2009; Ross 2011) are presented in Table 2:

Table 2: Factors influencing the selection of CMS

<i>Factors</i>	<i>Explanation</i>
Ease of use	The software can be used by anyone with or without the technological knowledge
Flexibility	The CMS must be customizable according to the need of the users. In other words, the templates can be change to a desired styles
Extensibility	This is the ability to install extra features into the website by the means of plug-ins, extensions ...
Content editor	The CMS should contains WYSIWYG (What You See Is What You Get) editor which enables the user to create or edit the content without having to touch the code
Usage and accessibility	The CMS should be able to provide the access for visitors, authors, editors, designers and developers to complete desires tasks

<i>Factors</i>	<i>Explanation</i>
Optimized for performance	The CMS must connect instantly to the servers and pages must load as quickly as possible
Security	The website must be protected against attack, viruses, etc. This includes security monitoring, maintenance and log in and password features
Standards compliant	The CMS must adhere to current website standards, e.g. W3C
Documentation	The documentation is designed to help the users with using a CMS and should be supported by the community
Community	The CMS in question must have a good community in order to provide help and further development for the CMS as well as to answer any question that the users may have

5 CASES OVERVIEW

5.1 Software Company S

Software Company S is a joint stock company that was established in the year of 2006. It was one of the pioneers in the field of *Point-of-sale* service (it is the place where customer makes a payment to a merchant in exchange for goods and services). In the early year, it established itself as a retailer for Partech and Pixelpoint in Vietnam with customers such as KFC and Segrafredo. With its success, the company decided to form partnership with a Korean company to diversify its product. This led to an increase in customers such as the International Airport Tan Son Nhat, the Coffee Bean, Tea Leaf, etc.

Recognizing the need to spread the news of its product throughout Vietnam, Company S decided to implement a website. This emerged from an idea of the Marketing Director, and later on decided as a corporate work between the Marketing Department and the IT Department. The Marketing Department will be in charge of updating content and information, while the IT Department is involved in the selection and evaluation of the technology as well as installing the CMS. The aim of the project is to create three websites which are a corporate site, a micro site and a community site. In this thesis, the author only presented the selection process that was made by the IT Department.

5.2 Retail Company O

Established in 2010, Retail Company O belongs to a bigger Company K. It was run with the idea of searching for excellent sources of goods and provides them to the customers; good management and reduce the prices for customers; and creates a bridge between domestic customers and the foreign suppliers. It is now in partnership with WBrands, GTMan from Indonesia, Salangane's nest producer Khanh Hoa, Headphone producer 3H, and S-jewelry Cam Thach.

With being formed in the recent year, along with the experienced staffs from company K, even at the beginning, Company O has already mark website as one of its main marketing sources. The project was first initiated by the CEO of the

company, and then decided to be a joint effort between the Marketing staffs and the IT staffs with the Marketing staffs providing the requirements and contents and the IT staffs in charge of selecting the CMS and installing the software. The goal of the project is to create a website that are used to promote products, act as an online shop and also provide information for distributors.

5.3 Agriculture Company T

Agriculture Company T's business are producing and providing flour for instant noodle manufacturer and bread production facilities; producing and providing aquatic food and farm food. Ever since its establishment back in 2005 up until now, Company T has becomes more and more well-known in its field of production with many famous partners such as Vifon, Gomex, Acecook Vietnam, Uni-President, etc.

The company had been running for around 5 years until it decided to implement a website. During that time the CEO didn't feel that it is important to have a website at all, since the business was still proceeding smoothly. But then, one day, when surfing the internet, the CEO realized that his competitors are expanding their field of marketing on to the web. Realizing the need for one, the CEO decided that it's time to make the move. The aim of the website is for advertising the products, introduce the company and providing information regarding the distribution channel.

5.4 Construction Company H

The International D Company had been operating in Vietnam for five years, their major businesses are trading, service and real estate consulting, in order to adapt to extend business and with joint venture with P Construction – the leading construction in Taiwan, they established Construction Company H. The company was started in 2010 and has already become one of the leading asset management, real estate consulting firm in Vietnam. Their strategy partners include China Petroleum Corporation, North American Construction Company and Deutsche Bank.

As being a company that is originally from a company that has many years of experience in the foreign market as well as in Vietnam, Company H knows that in an internet-based society like today, website is needed if they want to get the attention from customers. The responsibility for creating the website fell on the hand of the IT team. Just like the cases before, the IT team also working closely with the Marketing Department to ensure that the final solution will satisfy the requirements the most. The aim for the project is to create a website that will provide information for customers and companies that want to work with Company H.

6 CASES ANALYSIS

In this chapter, the author examine in detail each of the company's selection process of CMS to obtain a thorough understanding of how the selection and evaluation happened, the reasons that was made for the selection and the factors that the company consider when choosing a CMS.

6.1 CMS Selection Process

6.1.1 Software Company S

As mentioned before, the need for online marketing is the main factor that leads to the implementation of the website. Right when the company established back in 2006, this idea had started to blossom in the mind of the Marketing Director. After a discussion with his staff, he proposed the idea to the CEO of the company for approval. Then the implementation of the website was started.

The Marketing Department then contacts the IT Department to ask for its help for the website. The IT Department is in charge of the product of the company but its Director has also experienced in the field of website before. He has made two websites using Joomla to sells products when he was a retailer for an oversea clothing company.

I was happy when the Marketing Department shares the idea with us. I think in this kind of business, website is a vital factor in introducing our products to the market.

(IT Director)

After discussing with the staffs, the IT Director then formed a team of four persons with him as the supervisor to proceed with selecting the CMS that are suitable for their business and later on installing the CMS.

I believe with my experience with website before, we can choose a vendor that benefits us the most.

(IT Director)

The real selection process started out briefly after that. The team conducted an online search for any companies doing similar business to see how their website look like and operate. Then, the team worked with the Marketing Department to identify the functionalities that they wished to have in the website. Important issues included how the site be updated, what is the website structure and its usability on different devices. The next step was to find out as many CMS as possible for the long list vendors. This list included .Net Nuke, Java Liferay Portal, Drupal, WordPress, Magento and Joomla. After considering different aspects and functionalities, the short list of vendors was reduced to only Joomla and Drupal. To choose between these two CMS, the team had a trial run with both of them on a local server and made an evaluation using a score table. When all of the information was gathered, the team decided to select the software which got the highest scores and provided the best solution for the project: Joomla.

We were happy with the decision that was made. Joomla is very simple and easy to use. We have run the website from 2006 until now without any problem. Furthermore, we also change the interface in a yearly basic without any difficulties.

(IT Director)

A summary of Software Company S selection process is presented in Figure 6:

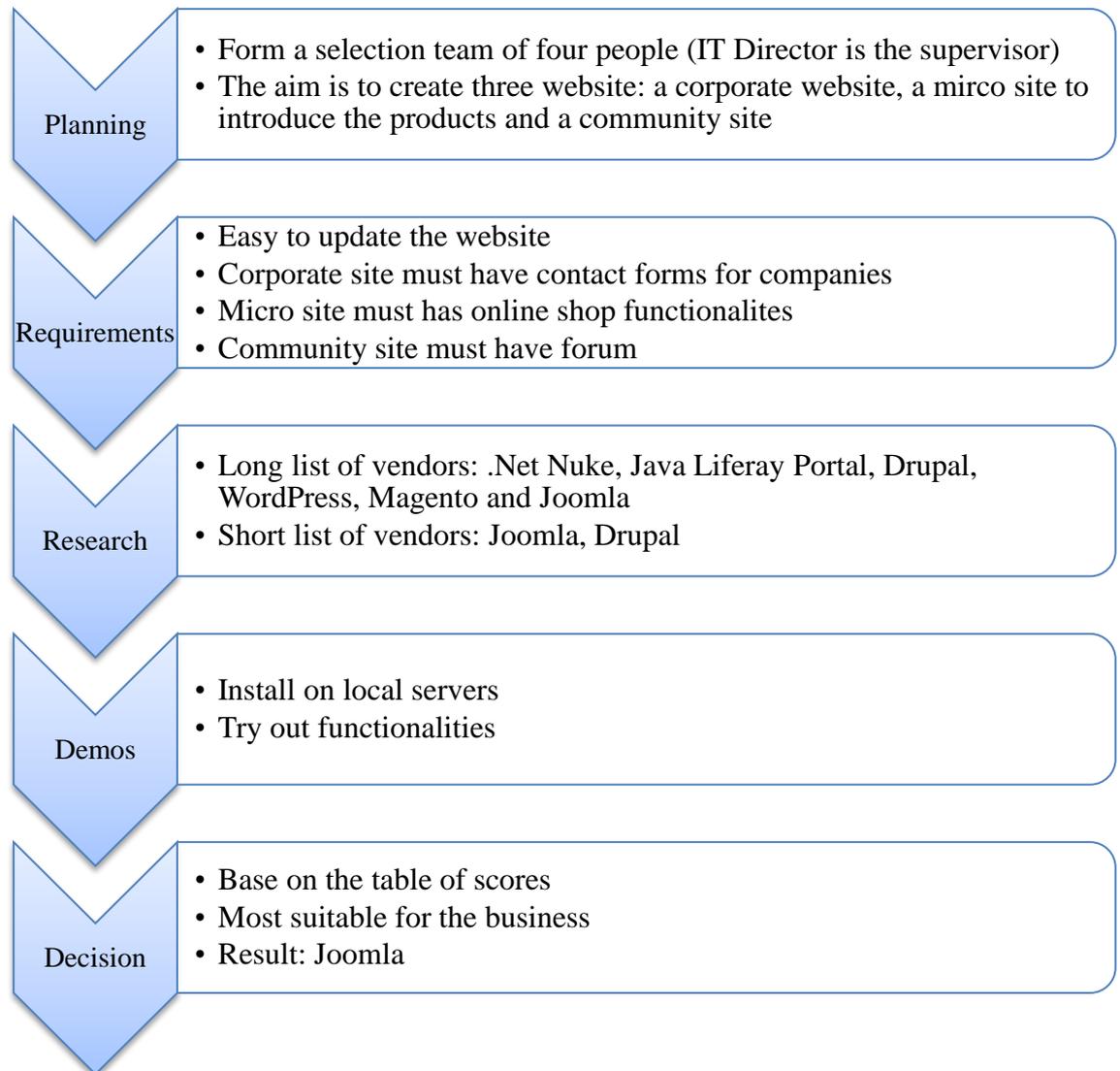


Figure 6: Software Company S Selection Process

6.1.2 Retail Company O

The staffs from Company O had already have experienced in this process once in their main Company K and they know that in this kind of business, website is the most important part in promoting products for customers. The plan of establishing Company O had already contained the requirement of a website of its own.

The project was started from the CEO of the company as mentioned before, he ask both the Marketing staffs and the IT staffs to work together to create the most suitable website for their line of business. The main person in charge of the

project is the Website Specialist of the company. Being graduated from a university in Singapore, he has started analyzing and making website for companies using CMS for three years.

I feel pretty confident in this project, since this is my specialist after all. At the beginning, I have already imagined what are the steps that going to be done in this project.

(Website Specialist)

After discussing within the company, he decided to form a team of three people, two from the IT staffs with him as being one, and one from the Marketing staffs to involve in the selection process.

I think having a person from the Marketing staff will add a valuable resource to when we select a CMS. After all, those Marketing staffs will be the one that actually use the software, we IT staffs will just be in charge of the technical part.

(Website Specialist)

After the team has formed, they worked together to figure out the functionalities of the website that the company needs. It must mainly provide the main functionalities as an online shop (displaying prices, product information, and payment gate, as well as a page for potential distributors). The process of figuring out these requirements was carried out smoothly and fast without the need to contact the Marketing Department since one team member was a Marketing staff. After the requirements were met, the two IT staffs started looking for potential CMS that can be used. They initially considered SEOTOASTER, Joomla, WordPress, Drupal CMSMS, VamCart and osCmax. Afterwards, they reduced the number of options based on the capability of each, and the final three are Drupal, CMSMS and Joomla. To select the best one from the three, the IT staffs used each of them separately on demo pages for evaluation of the final products. After careful considerations, the team picked Joomla as the most suitable solution for the company.

Actually all of the last three CMS was great, even Drupal or CMSMS might be better since they are easier to use, but the staffs from our company is more familiar with Joomla since they used them quite a lot in the big company. After three years of using it, we don't have any regret at all

(Website Specialist)

A summary of Retail Company O selection process is presented in Figure 7:

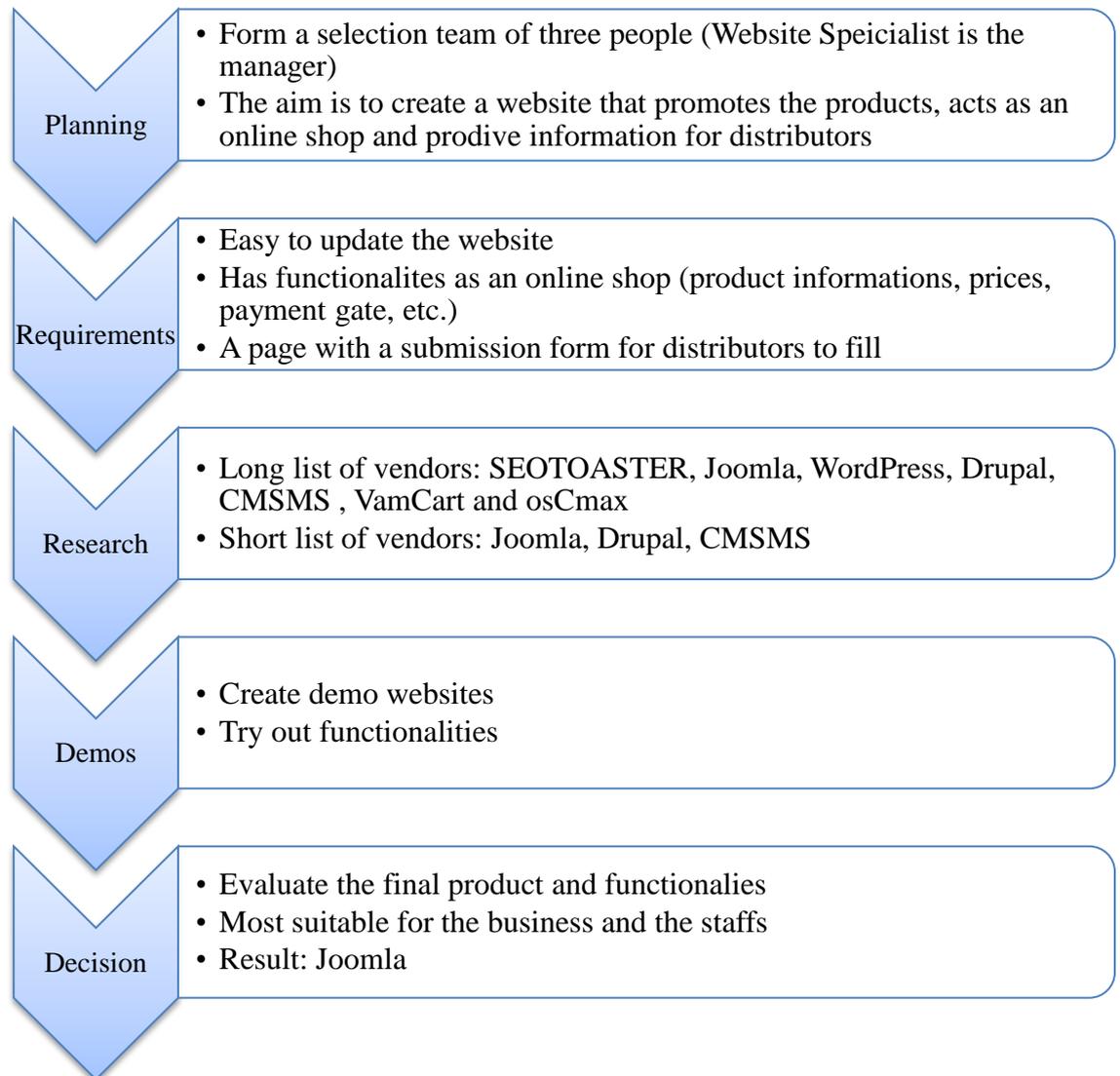


Figure 7: Retail Company O Selection Process

6.1.3 Agriculture Company T

After seeing his competitors getting websites, the CEO felt really motivated in making one. He consulted a friend of his which is an IT Specialist to get an idea of how the website will help his business and then decided that his company should have one.

He handed the project to the IT Department of his company. The IT Department appointed an IT staff that has been experienced with making website to be in charge of the project. This man has been working as a freelancer in making website before for various small companies. The author will refer him as the Project Manager from this point on

I am glad that the CEO decided to implement a website. Actually, I was just about to propose the idea of a website to the IT Director when the news came. I believe with this decision, the sales of the company would rise significantly

(Project Manager)

The Project Manager formed a team of four persons that is in charge of selecting the CMS for the company's website. The team also contacted the Marketing Department regarding the information about the usage of the website and how it should work.

The requirements for the company website were identified after a week of joint work between the team and the Marketing Department: the site should display the company profile and products with regular updates. It should also contain a place for potential distributors. After that, the search began for suitable CMS vendors. The long list of vendors initially including Concrete5, WordPress, CMSMS, .Net Nuke, Java Liferay Portal and Drupal was reduced to a short list of three with .Net Nuke, CMSMS and WordPress. Each team member was asked by the Project Manager to test and evaluate separately the 3 selected software before selection was made. Finally, CMSMS was selected for the company website.

The website has been in operation for three years and we have yet to see any problem with it. Our website is quite small and doesn't contain much information so I think CMSMS suites us nicely.

(Project Manager)

A summary of Agriculture Company T selection process is presented in Figure 8:

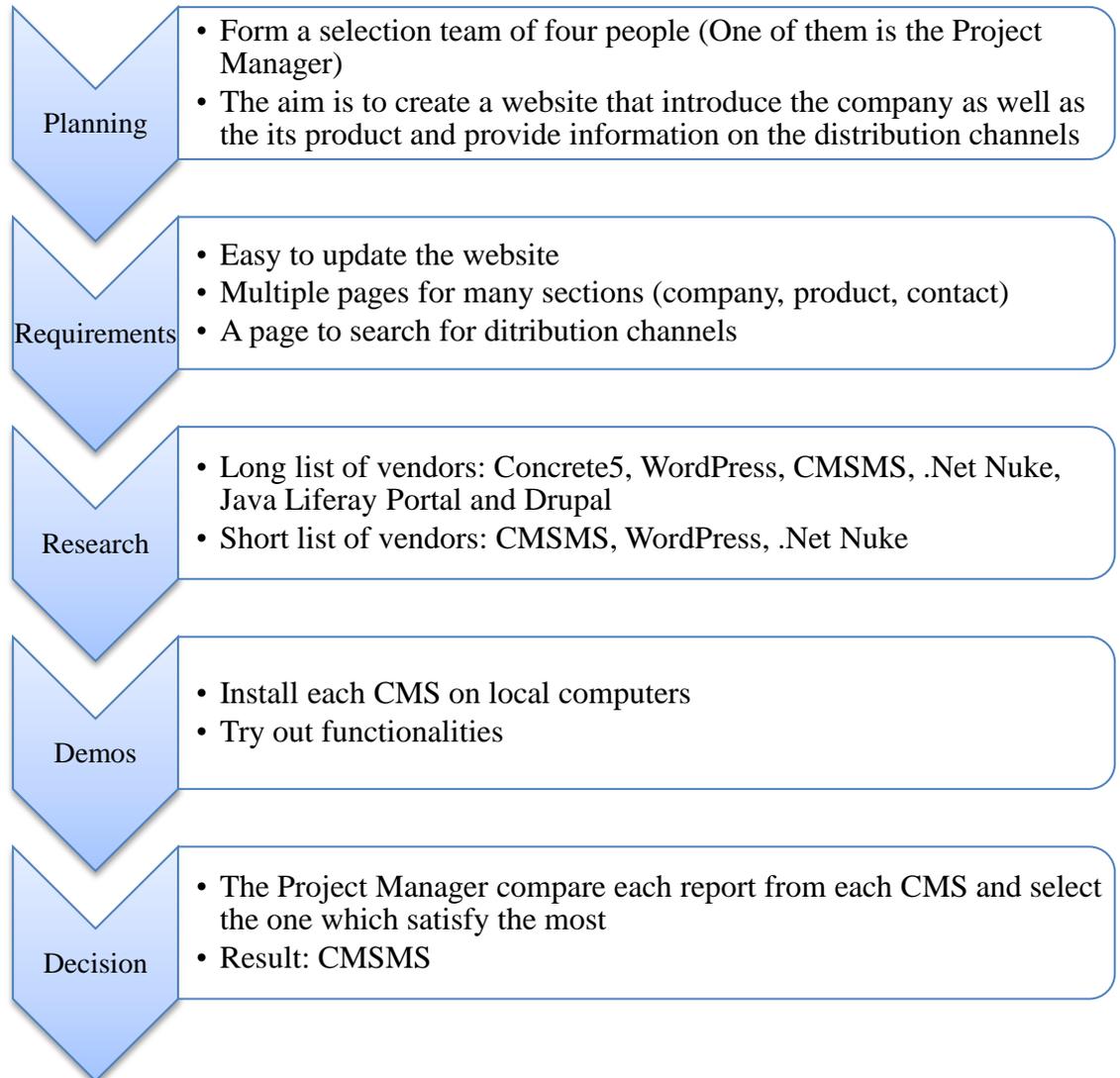


Figure 8: Agricultue Company T Selection Process

6.1.4 Construction Company H

Despite having a vision of making a website at the beginning, Company H didn't start the process right away. This came from the fact that they didn't have an IT team in their company when it was established and the reason that they want to develop the website in-house. After one year, the need for managing files, network and security in the company increased and the IT team was formed.

The website project initiated right after that, the Director of the company appointed the IT team in charge of the whole process. The one responsible for the

project is the IT Manager. Despite being in the business for five years, for this particular field, he only has experience in creating private website for friend, thus doesn't have much knowledge regarding making website for a company.

I only had a vague vision of what we are going to do. Actually I didn't really feel that confident if we select a CMS that really fits the business.

(IT Manager)

The IT Manager formed a team of six persons with him as the one that manage the whole selection process. The team also worked together with representative members from the Marketing Department.

The team tried to figure the functionalities that the studied website can provide to the company. They included the ability to display all relevant information to the satisfaction of the customers, to provide regular updates about the company and the market and a contact form. The functionalities identified in this process did not fully meet the needs of the Marketing Department as stated by the IT Manager. The Marketing Department needed a CMS that can keep an increasing amount of files/pages on the server and that allows the templates to be changed frequently later on, these two factors didn't really made it to the top consideration of the requirements. Having identified the requirements, the team started its search for vendors that satisfy their needs. In the case of this company, only a short list of vendors was drawn. The CMS vendors in the short list are: CMSMS, WordPress and Concrete5. After that, the team was divided in three groups to evaluate each of the short-listed CMS. They installed the CMS on their computer and created a demo website. After evaluating and comparing the results from every team, the IT Manager finally chose CMSMS for their website.

The CMS worked pretty nicely for a year, but when more and more pages, pictures and files was put on the site, the site starting to slow down, it takes like 5 seconds to load the page. In addition, when the Marketing Department asked to change the template, we found it difficult to find one that is suitable since the templates are so limited for this CMS. I think that in the future, we might have to switch to another CMS.

(IT Manager)

A summary of Construction Company H selection process is presented in Figure 9:

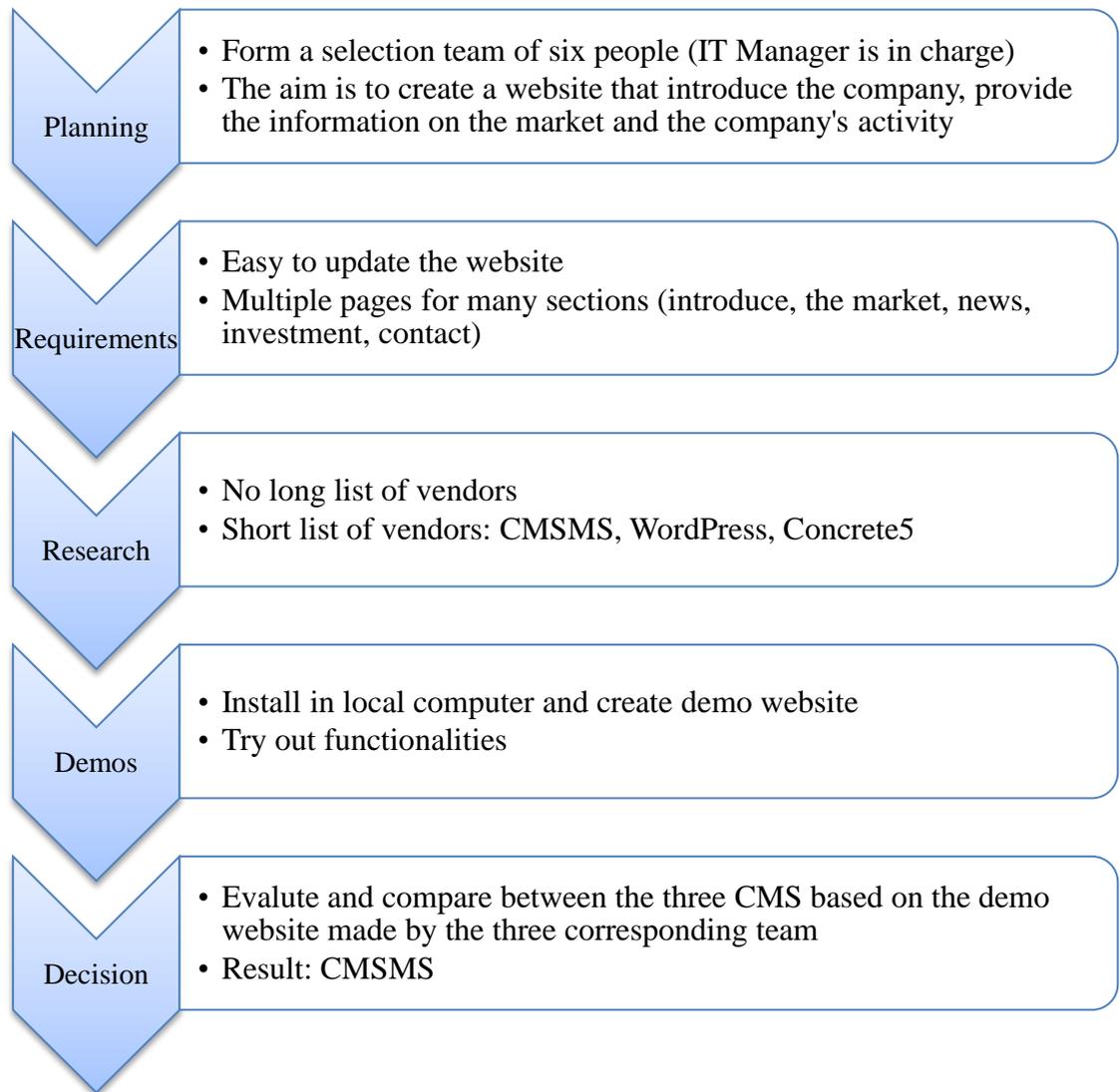


Figure 9: Construction Company H Selection Process

6.1.5 Summary

This part presents briefly each company and their adopted CMS for the website. The information is presented in Table 3:

Table 3: List of companies and their adopted CMS

COMPANY	CMS
Software Company S	Joomla
Retail Company O	Joomla
Agriculture Company T	CMSMS
Construction Company H	CMSMS

6.2 Factors influencing the decision

This part takes into consideration the factors that surrounding the decision of a CMS for the case companies.

6.2.1 Ease of use

This is the most important factor to be considered in a CMS selection. Since the software shall be used by both technical and non-technical staff, it must be easy to use. This factor has been considered in this thesis by all researched companies where responsibility for website operations is personnel from the Marketing Department.

6.2.2 Flexibility

The flexibility of CMS means that templates from the software can easily be changed from a wide range of choice. This factor depends on how popular the CMS in question is. The more popular the CMS, the more likely a designer is willing to spend time creating a template for it. Taking Joomla and CMSMS into consideration, we can clearly see that Joomla is likely to have more sources of template. The difference can also be seen in the case companies. For two users of Joomla, namely Company S and O, flexibility was considered a factor for CMS selection. Company S wants to change the template on a yearly basis, while Company O wants different looks for its website on different occasions. For

Company T and H, they initially didn't consider changing the template of their website and therefore flexibility was not in their list of consideration. Joomla is a good solution for Company S and O and CMSMS is a satisfactory solution for Company T and H.

6.2.3 Extensibility

This is also a factor that all of the companies considered. No company wants its website to look similar to others on the internet; a company website must be different and unique. Extensibility is the factor that helps solve this problem. The CMS must be rich in components and is ready for adds-on. There also should be a variety of extensions and add-ons to be used when needed. This is true especially for Company S which plans to include e-commerce, forum, blog and newsletters in its website in the future.

6.2.4 Security

Security is important now that websites are exposed to the Internet where risks from virus and hackers are high. The CMS must have a system to prevent the website from being attacked by outsiders; it also needs an access control by permission. Three of the four researched companies considered security an important factor when choosing a CMS, only Company T didn't give any attention to this factor. This could be because of the lack of experience in website construction from Company T.

6.2.5 Usage and accessibility

When visiting a website, the visitors want to have a clear vision of what the site is about and how they can quickly access the information they need. For the website content makers, they expect to get their desired functionalities and information for their tasks. For website administrators, they need to easily control other users' access rights. Perhaps for these reasons, all companies have paid special attention to usage and accessibility, and considered carefully this factor for CMS selection.

6.2.6 Community

Community plays a very important role especially when a company doesn't know in which way its website should develop. CMS enables the creation of community that can provide supports, documents and guidelines for tasks that the company can't do because of the lack of knowledge. A website using CMS can request developers for the add-ons, extensions and components that it needs. The size of the community is dependent on the popularity of the CMS per se. For Company S and O, they considered community an important factor and took it into consideration. They want to further expand the website in the future. For Company T and H, this factor didn't seem to cross their mind, probably because they didn't have a future plan for their websites at the time of the decision.

6.2.7 Optimized for performance

CMS is expected to allow a fast access to the server and the web pages should load as quickly as practicable. Most companies don't care much about this factor. For them, as long as the website can be found online, that's enough. This is the case for Company O, T and H. The reason for Company O is because they only focus on the regions in Vietnam, so they don't care if the access from the other countries is slow. For Company T, they only provide products for local companies so as long as the local companies can see the site, it is fine. The reason is true for Company H whose manager in charge of the project lacks experiences in the field. Company S, on the other hand, plans to expand their market to the outside world, put this factor on their consideration list.

6.2.8 Versioning

Versioning is the ability to reverse a page to the previous condition. This is not really that important as was provided by the case company, since most of them always have a backup of their site. The only company which mentioned this factor is Company O. This stems from their experience with the previous website project.

6.3 Reasons for selection

6.3.1 Software Company S

In the case of Software Company S, the main reason for the selection of Joomla is because that CMS is very popular nowadays (it is one of the three kings of CMS as mentioned before); hence, it is relatively easy to find developer and the software will keep updating to keep up with the technology. It has a big community which will provide a big help when it comes to the components and extensions. This, as was told by the IT Director, is the factor that will help the company in expanding the website in the early future. Last but not least, it is really fast to get access to the site, for that reason, it will provide better user experience, good for using pictures and can be easily accessed widely, not only in Vietnam but overseas as well.

6.3.2 Retail Company O

The foremost reason for Retail Company O to use Joomla is that its staffs have previous experience in using the software before. According to the Website Specialist, it is more likely for them to choose something that they know rather than try out something new. In addition, Joomla has a very big community that can provide help for the company in maintaining, updating and extending the website. Moreover, its collection of functionalities is very wide; it can cover many aspects of a website that the company is looking for.

6.3.3 Agriculture Company T

Keeping in my mind the website for the company doesn't have to be complex, Company T decided to use CMSMS because of its simplicity and it doesn't have lots of unused applications. Unlike Joomla, which also aims at developers as well as normal users, CMSMS only has enough functionality to support a website. Moreover, the editor of this CMS is really handy and easy to use which doesn't bring any difficulties for non-technical users.

6.3.4 Construction Company H

The first reason that Company H decide to use CMSMS is that it really simple to use. Of course every CMS has to be simple for non-technical users, but CMSMS really does stand true for its name. It doesn't require much time to set up and the Marketing Department of the company can be able to use it after a few hours of practice. The second reason is that it is considered to be a very secure CMS, which will lift some of the weight off the IT team. Last but not least, its WYSIWYG editor is really nice and clear. It does not have many problems when copy paste from a word file and is easy to edit.

7 CONCLUSIONS

7.1 Thesis Overview

Chapter 1 presents the background of the thesis which points out the importance of website and CMS in supporting a company's business as well as the users of the website itself. This thesis was conducted in order to provide the reader a thorough understanding about the selection process that was carried out as part of the CMS adoption process in four Vietnamese companies.

Chapter 2 revolves around the research design of the thesis and the data collection and analysis methods. The purposes of this thesis are to describe the selection process of CMS within a company, explain the reasons for the final results, and discover the factors that the company take into consideration when choosing a CMS. The qualitative approach was used in the case of this thesis with semi-structured interview for the data collection. The reason for qualitative research is to understand a complex phenomenon such as the CMS selection process.

Chapter 3 is a literature review of CMS, its definitions, its type and a brief introduction of Joomla and CMSMS, two CMS covered by this thesis.

Chapter 4 provides the selection process model which is adapted from the literature review and the factors that are taken into consideration when choosing a CMS.

For Chapter 5, an overview of each of the case company was provided. Chapter 6 goes into details the CMS selection process for each of the case company. The structure for this part is based on the main questions of this study. This chapter starts with the CMS selection process of each company, then the factors that each company concerns when choosing a CMS, and ended with the reasons for the selection.

7.2 Results

7.2.1 RQ1: How was the selection process carried out?

As presented in the fourth chapter, the selection process of a new CMS goes through 5 stages which are: Planning, Requirements, Research, Demos and Decision.

In the planning phase, the selection team was set up which contains mostly the staffs from the IT Department. In the case of S, T and H, only the IT personnel were chosen for the team. In the case of O, one person from the Marketing Department was chosen to take part in the process.

The requirement phase came in the wake of the planning phase. In the case of S, T and H, the team needed to make many contacts with the Marketing Department and this took much time. In the case of O, having a Marketing staff helped reduce the time needed for contacts between the two Departments. This influenced not only implementation time but also the final results as seen in the case of H. The lack of understanding between the two Departments might lead to a final decision that did not satisfy the needs of the Marketing Department.

In the research phase, the companies started to search for as many CMS vendors as possible which can satisfy most of the needs from the requirements. In the case of S, an additional process was created, that is finding websites doing similar business for references. For S, T, and O, their teams initially drew a long list of vendors and reduced them to the short list after evaluation. In the case of H, no long list of vendors was made; this would surely affect the final decision since they didn't have wider choices like S, T and O.

In the demo phase, all researched companies conducted tests and trial runs for their CMS in the short list of vendors. They installed the CMS on their local computers and then made a demo website for each CMS. After that they evaluate the results and made reports.

In the last phase, the team leader evaluated reports made for each of the CMS. In case of S, a score board was used, resulting in a much better comparisons between

CMS than just other reports (without a score board). The decisions taken by S, T and H were based on the CMS that mostly satisfy their business needs, while in the case of O, the past experience of company staff in previous CMS was taken into consideration.

7.2.2 RQ2: What are the factors that affect the decision of which CMS to be used?

Research findings show that companies care most about a) The ease of use b) The extensibility and c) The usage of the CMS.

One thing that keeps returning in this thesis is that CMS is mostly meant for non-technical people and this is also the first thing that every company in the research was looking for in a CMS that they want to apply. Despite the existence and work of the IT Department/Team, the frequent user of the software is the Marketing Department. This is probably the reason why the ease of use of a CMS is that important.

The second factor is extensibility. As every company wants to differentiate its website from the rest, this won't be the case if the chosen CMS doesn't support this functionality (luckily most CMS support extensions). So, the more options for components, add-ons, etc. the more likely the CMS shall be accepted by the company.

The last factor is the usage, apart from being easy to be used by the Marketing Department; the CMS must allow the users of the website to complete their desired tasks.

In the case of S and O, they were concerned about the flexibility of the CMS that would help them to change the website looks from time to time. The next factor is security, which was taken into consideration by H, S and O. They wanted different accesses for different people depending on their roles and virus protection for the website. They also deemed the community an important factor for getting more help from software developers.

In the case of S, the company wanted the CMS to run fast so that it can be accessed from various places. In the case of O, the company wanted a CMS with an ability to recover the previous version of a page so that they could correct the mistakes they made faster.

7.2.3 RQ3: Why does company choose to use Joomla/CMSmadeSimple?

Joomla: In the cases of Company S and O, it was first of all due to the popularity of Joomla, which encourage developers to continue updating the software to keep up with the technology. It is also easy to find developers to help with extensions and components. Secondly, Joomla has a very big community who contribute to exploiting its usage and providing help and extensions for future plan of the company. In the particular case of S, the CMS allows a very fast access to the site, which enables the company to expand their market both locally and internationally. For O, the CMS has sufficient functionality to the satisfaction of the company.

CMSMS: T and H companies selected this CMS because it is very simple to use, it doesn't take much time to actually operate the site, and it doesn't have many unused functionalities in the package like other CMS. This allows a fast construction of the company website, an obvious advantage compared with other complicated CMS. In addition, the editor of this software is much clearer and more easy to use than other CMS. The use of the editor has been smooth, showing exactly what it is supposed to be when input texts and pictures.

7.3 Limitations and Future work

This thesis has two limitations, both referring to the small size of the research involved. First, only four companies from Vietnam were covered by the study therefore, the findings might not be appropriate for all of the companies outside Vietnam. Second, only two CMS were considered, this small sample size cannot represent all of the available CMS. However, the selection process and analysis of the factors affecting the choice of CMS in four Vietnamese companies indicate similarity to the previous studies.

This study on the CMS selection process within some Vietnamese companies may lay the ground work for further and bigger research, which may involve more numbers of companies as well as CMS. Moreover, the selection process might be in a slightly different structure compare to the model described in this thesis depending on the types of company to be involved. More study on this would be a good idea.

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APPENDICES

APPENDIX 1

Semi-structured interview questions:

Participant's name:

Position:

The chosen software:

Questions:

Who initiated or proposed the idea to adopt CMS for your organization?

What were the reasons?

Who were involved in the selection process?

What are the steps taken in your selection process? (Brief descriptions)

What are the factors that you take into consideration when choosing a CMS?

What were the reasons for choosing Joomla/CMSmadeSimple?

Do you feel it was a good decision? Why?