Company Web Template System
(CWTS) to enhance the development of SMI Companies' Websites

JUHANA SALIM, ZURAIDAH ABDULLAH AND ONN AZRAAI PUADE
Faculty of Information Science and Technology
Universiti Kebangsaan Malaysia
Bangi, Selangor
MALAYSIA
js@ftsm.ukm.my, za@ftsm.ukm.my

MOHD SHAHIZAN OTHMAN AND LIZAWATI MI YUSUF
Faculty of Computer Science and Information Systems
Universiti Teknologi Malaysia
Skudai, Johor,
MALAYSIA
shahizan@utm.my, lizawati@utm.my

Abstract: - The encouraging Information Communication Technology (ICT) growth in Malaysia has seen drastic increase on the usage of Internet in either businesses or daily lives. Small and Medium Industry (SMI) companies are also not an exception in developing websites to promote their products and services. However, most of these companies do not have staff who has the experience and knowledge in developing websites. More often, this resulted in unattractive and poorly organized websites. The aim of this research is to develop a Company Web Template System (CWTS) to ease the development of SMI companies' websites as this system do not require users to have experience and basic web programming in developing their companies' website. The method undertaken in the development of CWTS initially involved analyzing the features of 24 website of companies in Malaysia and eliciting and mapping ideas from literature and past research in order to identify the following aspects: how to structure a clear and valuable document to readers; structuring techniques and creating clear and intelligent web documents based on hypertext system application; and also designing navigation structure with users' view as the basis. The result of the analysis formed the basis for the development of CWTS. The result from this research has found that the developed system has the potential to expand its functionality not only as a company's website developer but also to serve as a platform for SMI companies to interact and customers to increase their performance and quality. In conclusion, the use of CWTS in developing SMI companies' websites will be able to save website developer's time because CWTS provides various design choices and is easy to use.

Keywords:- *Web template, website organization, company's website.*

1 Introduction

The encouraging Information Communication Technology (ICT) growth in Malaysia has seen drastic increase on the usage of Internet in either businesses or daily lives. Internet can be used for purposes like booking air flight tickets, booking hotel rooms and buying books online. Therefore, when a web developer wants to develop a company's website, the developer must know the principles and effective features in structuring websites. Besides that, the developer has to be able to fulfill customer's requirements such as an easily accessible website, efficiency, usability and others. However, the skills and experience possessed by website developers are different. In line with the current technology growth, there are various ways of product marketing especially through the use of websites. The use of websites has become a trend among companies that are expanding their market to a higher level or to a global stage. Therefore, the appearance of a company's website has to show features which represent the company in the cyber world. The design of a website must be appropriate with the type of business and will not trouble visitors to surf the company's website. This article discusses the development of CWTS to enable SMI companies' develop their websites whereby this system does not require users to have experience and basic web programming.

2   Research Background

Most of the companies today develop websites to promote their products and services online. However, SMI companies faced problems in developing their companies' websites. This is because most of the SMI companies' workers lack of knowledge and experience in website development. Besides that, good knowledge in basic web programming is needed by website developers. According to December (2007), to build quality websites, website developers need to know the following elements:

a. Knowledge about the target audience for the web as well as the actual audience who uses the web.
b. The purpose and scope of the web's existence.
c. A list of objectives and missions which need to be achieved.
d. Information domain, which is a collection of knowledge and information to be included in the websites.
e. Web specifications which explain the limitations and elements in the websites.
f. An attractive web presentation to supply useful information to users.

In Hammerich's and Harrison's (2002) opinions, there are a lot of websites whereby the contents are not properly arranged and unorganized. Therefore, effort is needed to implement a standard in SMI companies' website development so that their websites appear as more professional and commercial in its content and appearance.

3   Website Development and Web Template

Website development is the background functionality programming of a website or the development of external appearance and design which shows a website with features of the company or individual it is representing (Eccher, 2002). Lemay (2000) defines website development as building static HTML pages with text and graphical links. All content and functionalities are coded in each page.

Thus, website developers have to understand a little about website development techniques and artistic aspects, but need not be experts in both. Technical standard today for example, involves building websites which has efficient and scalable dynamic databases. If the website only consists of a white background and black text, the website will not be able to communicate effectively with majority of its users. However, if a website uses the latest graphical design method but contains a static website which is difficult to be updated or does not have extra features to ease users according to their experience, this particular website becomes inflexible and impractical.

Website template is a pre-designed website or a frame which can be altered according to users' requirements based on the purpose of the websites (Eccher, 2002). By using web template, developers can alter the websites design according to the companies' need.

Besides that, website developers need to know the content of the websites first. The purpose of carrying out content analysis is to identify the topics to be included for the web page being developed. This is important because the content to be included must be parallel with the company's objectives. Therefore, one of the ways to do content analysis is by discussion with all parties involved in the website development and also by doing analysis on professional companies' websites. Thus, the first phase in the development of CWTS involved conducting a research to analyze the contents of 24 companies in Malaysia and to identify the website template types of these companies.

4   Research on the Use of Web Template

Research on the use of website template types was carried out on 24 websites companies in Malaysia's. The research outcome found that there are five types of web templates being used to build websites (refer Fig. 1).
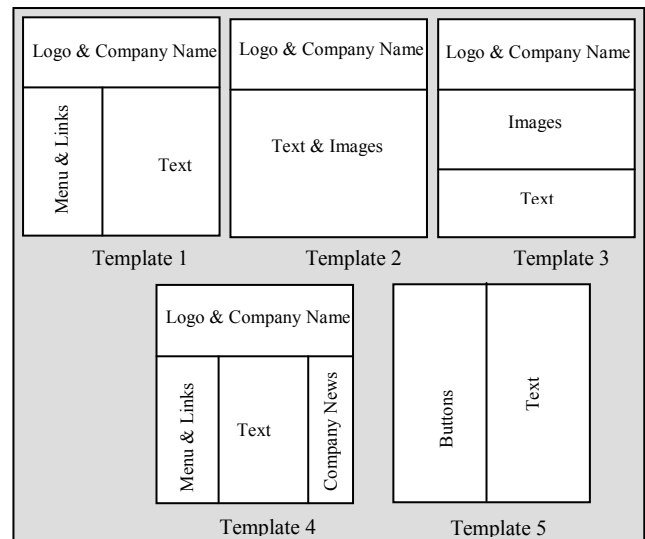

Fig. 1: Web template designs

Out of these five types of web templates, template 1 and template 4 are most frequently used compared to the other templates. This is because the designs of

these two templates are simple, compact and enable altering or adding content to websites. Fig. 2 shows a graph representing the percentage of usage for the five website templates.
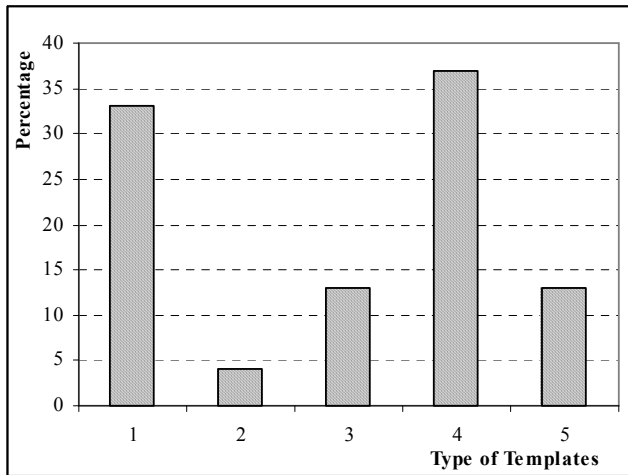

Fig. 2: Percentage of templates usage to build websites

Fig. 3 shows a graph representing the percentage of content from the aspects of company profile, product and services, contact us, job opportunities, news and frequently asked questions. The website content analysis found that companies focus more on company profile, products and services, and contact us. Other content such as job opportunities, news and frequently asked questions only represent less than 20%.
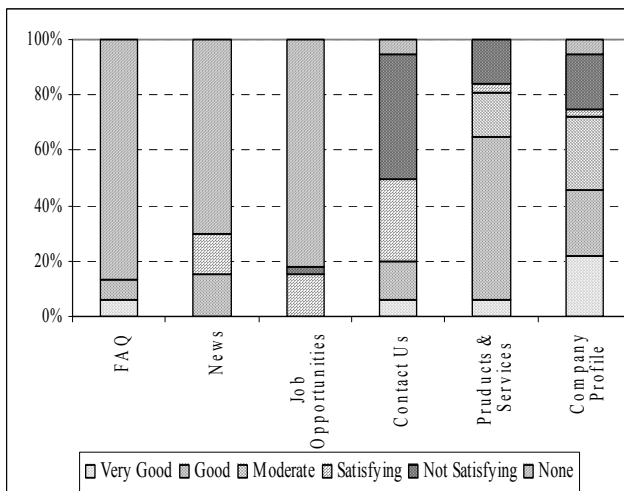

Fig. 3: percentage of website content

4.1 Results on the Analysis of Companies Websites

From the analysis mentioned above, several important aspects has been identified as important elements and has to be given attention in developing templates to ease the building of companies websites

professionally. This article then presents the analysis result which was used as basic guidance in developing templates for easy development of companies' websites.

4.1.1   Analysis of Website Content and Scope

An important point about what is supposed to be included in a company's website depends on the analysis of content and scope. The purpose of content analysis is to identify the content needed and the existing content found in other related websites. This stage of analysis is useful to determine the content structure of the upcoming website.

Another type of analysis needed is scope analysis which can help to identify how deep a developer wants to elaborate the topics chosen for a website. One important point in the analysis phase is to determine the website content because the content to be included has to be parallel with the development objective.

What is to be included in a company's website is actually the content. Website content can consist of text, graphics, interactive media, database, forms and others. A variety of information type, fiction, image, graphics, programs, diagrams, games, drawings and others are content. What type of content can be included in a company's website? To answer that question, the following is a list of content type which is suitable for a company's website.

- **Company profile**
  Spreading information about a company can be done effectively through website. Among the information which can be given are the company backgrounds, activities, other basic information like location and branches, product demonstration, products/services management page, trading opportunities, jobs and workers to be contacted by those interested, FAQ, bulletin and ordering information.
- **Online Selling (*e-shopper*)**
  Besides spreading a company's information, a company's website can be developed to enable users to shop for daily households through WWW access. A company's website can provide a list of products supported by the products' pictures and process, so users are able to make choices in online ordering. By marketing products online, all information especially concerning pricing can be done easily and more efficiently. Order forms.

4.2 Website Structuring

A developed website or document should have a clear structure and properly arranged ideas. This section elaborates how clear and useful web documents can be built to support users with the best information possible. In developing web documents, we actually use hypermedia techniques or approaches that require clear thinking and good structures.

3

4.2.1 The Need of Clearness in Web Structures

Website development actually involves hypertext system application. In a hypertext system, information may be linked to other information. This enables ideas to be connected beneficially. However, an author without experience is often attracted to create disorganized connections whereby readers will get lost quickly. To create web documents based on good quality hypertext, a clear structure has to be put into the information and made evident to users.

4.2.2 Hierarchy

The most common form of structure is hierarchy. In a hierarchical organization, readers will be able to know their position in the structure. Readers can make choices either to explore upward for more general information or downward for more specific information. If a developer creates links to the highest level that is the main topic, readers can return to the known position faster and easier. In a hierarchy, the home page gives an overall view to the content inside its websites/web documents. . The home page also lines the relations to specific websites under the structured hierarchy.

4.2.3 Linear Structure

A method which can be used to organize web documents is the linear or series organization. This method is similar to the way printed documents are organized. In a linear structure, every page will follow one another as shown in Fig. 4. The links on the one page join the page exactly the same way as how it is arranged.
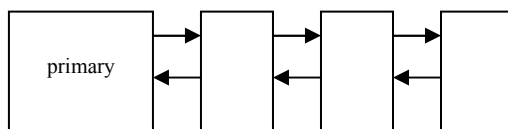

Fig. 4: Linear structure

This structure eases exploration and context comprehension because users are not given many choices to explore to a different document. However, rigid structure will limit users' exploration and also the web author's idea presentation.

4.2.4 Combination of Linear and Hierarchical Structure

A method of web document content organization that is frequently used is the combination of linear and hierarchical structure. This type of organization is often seen in structured documents but with linear characteristics, such as Frequently Asked Questions (FAQ) segments in most of the websites. This combination is effective if readers are given the position sign. Readers get lost in direction easily when moving from one hierarchy to another hierarchy.

4.2.5 Network Structure

Network structure or also known as cobweb or web, is a set of documents that has little or no actual overall structure. Hypertext needs to be built with clearly seen hierarchies and organized connections.

4.3 Structuring of Web Navigation

Organization of a web document is needed to smooth the navigation process and enable better presentation of information. Websites building structures can become the basis because this way will avoid users from getting lost in the digital world.

The navigation mechanism design is inclusive of designing the navigation structure based on users' view, considering relevant links and choosing a suitable indexing approach to search information. In getting users' view, it is important to identify how readers will access information and to consider opinions from other readers before structuring a web document to ease exploration later.

4.3.1 Navigation System

The navigation system changes from one website to another and it is not easy for web users to understand this system. The navigation system is divided into three parts which are: simple text system, image navigation system: buttons and icons and frame set system. A good approach to help users understand and use the navigation system of a website is by providing descriptions and links. When giving descriptions to form website or web document exploration, a developer must make sure that it is done clearly and comprehensively.

4.3.2 Effective Navigation System Design

In designing the navigation system for web documents or websites, there are a lot of features that need to be emphasized so that users can do the exploration of web documents more effectively. Martin (1990) has explained several features that need attention in structuring the navigation system. To strengthen the understanding about the aspect of effective and accurate navigation, web style guide (http://www.webstyleguide.com/interface/user centred.html) provides a lot of clear examples as

guidance in designing navigation. Features to structure an effective navigation system have been identified as follows:

a. Documents must show clear structures. The displayed structure should be arranged hierarchically. Conceptually, there must be cross relation between hierarchy and other aspects.

b. Structure using diagrams. Representation of structure in diagrams enables users to have an overall vie about the content of a website. The connections among the content included can be seen more easily.

c. Return button. A good navigation design should provide users with the choice of returning to the main page after going through several given links. This can be done by pressing the 'back' button or using the mouse to return to the main page instantly.

d. Provide two or more hierarchies. Two or more hierarchies should exist in designing a web document navigation system. For example, one hierarchy based on the content page and another hierarchy based on users' problems, issues and concepts.

4.3.3 Types of Links

There are two types of links that are applicable to aid a useful navigation: clear navigation link and unclear navigation link. Clear navigation link shows directions which can be taken at the end of a web document or website by providing links such as forward, back, up and return to main page. These links are normally displayed using the icons.

Unclear navigation link is different from clear navigation link whereby, although text is used to show links, it does not represent the navigation between several pages clearly. The menu connectors give an accurate example of links using menu. Unclear navigation link can also make use of the content or structure page which shows the overall of web documents.

5.4 Summary of Analysis on the Elements Used in Designing, Organizing and Structuring Websites

The techniques explained to organize web information and structure clear ideas and effective navigation through hypertext system can be used as guidance in the development of CWTS. Navigation can be simplified by developing clear and logical structure where readers will be able to comprehend easily and by providing guidance represented by buttons and organized information.

6   Development of SMI Companies' Website Template

The development of CWTS is a web-based system using Apache web server. The programming languages involved are JavaScript, HTML, PHP and SQL. This system is divided into two parts where one is for website developers and the other is for the system administrators. The workflow of SMI companies' website template development is shown in Fig. 5.

The steps to building a website are as follows:

a. The main users of this system are website developers and system administrators. Website developers will choose a suitable template for the website under development. All information about this template is stored in the database.

b. After the user has chosen the desired template, user will be prompt to select the web background color, font type, layout type, buttons, menu, images and others.

c. After that, the user will insert the appropriate information about the website such as the website title, subjects, menu information, buttons, content and others.

d. The website template will generate the latest design based on the chosen template and the information inserted by the user. The generated website will then be displayed.

e. If the information and design require changes, the user can make the alterations and step b will be carried out.

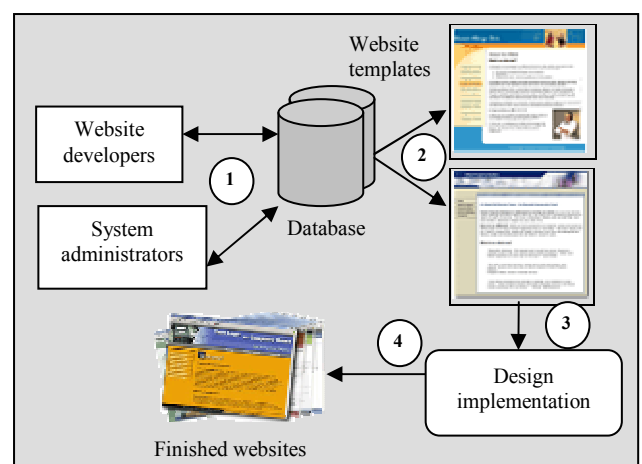f. The website is ready to be used.

Fig. 5: Work flow

The CWTS hierarchical module comprises of six modules altogether. Website developers have granted permission to access four modules which are the registration module, company information entry module, template selection module and

maintenance module. On the other hand, system administrators can access the maintenance module, report generation module and administration module where these modules are more closely related to organizing data and maintaining the system.

7 CWTS Development Research Results

The effectiveness test of CWTS usage has been carried out on 16 SMI companies and the companies' categories are shown in Table 1. The result of this effectiveness test has found that the website developers for these 16 SMI companies preferred template type 3 and type 5 (refer Fig. 1). Besides that, this test also found that information about company profiles and products and type of template used have the highest percentage compared to other information. This means when users use CWTS, they will attend more to the three main information compared to others. Fig. 6 shows a graph representing the percentage of information most frequently given by SMI website developers when using CWTS.
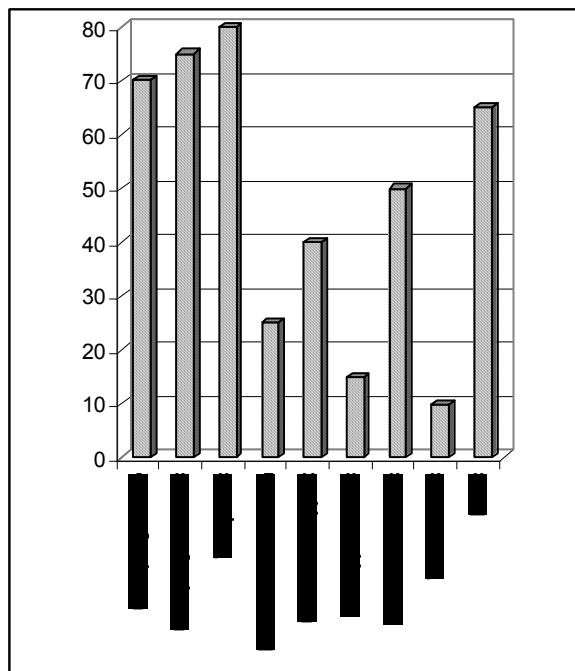

Fig. 6: Percentage of information most frequent given by SMI website developers when using CWTS

Table 1: Company Categories

Company Category	Number of Companies
Jewels and watches	1
Books and comics	1
Electric and electronics	1
Cameras and video cameras	1
Car and transportation	1
Health and beauty	2
Computers and software	4
Food and beverages	1
Clothes and accessories	1
Housing and properties	1
Art, antics and collections	1
Telecommunications	1

8 Conclusion

In conclusion, the evaluation on the usage of CWTS by the SMI companies' website developers showed the development process of websites as quicker and easier even though website developers do not have experience and basic web programming. Hence, the use of CWTS provides an alternative to the current available website development methods. The developed system has the potential to expand its functionality not only as a company's website developer but also to serve as a platform for SMI companies to interact and customers to increase their performance and quality.

References:
[1] December, John., "Developing Information Content for the World Wide Web" (online) http://www.december.com/web/develop/overview.html on 6th October 2007.
[2] Eccher, C., "Professional Web Design: Techniques & Templates", Charles River Media, Massachusetts, 2002
[3] Hammerich, I., and Harrison, C., "Developing Online Content: The Principles of Writing and Editing for the Web", John Wiley & Sons Inc., USA. 2002
[4] Lemay, L., "Sams Teach Yourself Web Publishing with HTML 4 in 21 Days Professional Reference Edition", Second Edition, SAMS, Indiana, USA. 2000
[5] WebNation. Web Page Pricing. (online) http://www.webnation.com/village/prices.htm on 8th November 2004.