

USER PARTICIPATION IN WEBSITE DEVELOPMENT

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ABSTRACT

This paper discusses a research project that focused on the development of a new methodology for creating effective websites for marketing purposes. After reviewing the existing methodologies, it was noted that some key aspects were missing, including user participation and "real interaction" (i.e. monitoring of user interaction with a prototype site). This situation will lead to user frustration with the website. A study was carried out to examine various methodologies from different disciplines to select the strongest aspects to be combined into a new participative methodology for developing websites. This new methodology was assessed by interview and questionnaires. This paper will discuss how user participation is considered an important aspect in website development and the relevant results from the Interview and questionnaire phases of the research.

KEYWORDS

Website Development, User Participation, Methodologies.

1. INTRODUCTION

The Internet is a network of thousands of computer systems utilizing a common set of technical protocols to create a worldwide communication medium. The Internet will have an estimated population of "over 1.5 billion users by the end of 2011" (ClickZ, 2007). The Internet provides numerous benefits to consumers in relation to access to information, entertainment, e-business and marketing.

This paper reports on a research project to develop a new methodology for developing websites for marketing purposes that meet the requirements of users. Thesedays, businesses are using the Internet as a tool to develop new and enhanced aspects of business including vendor contact, provision of information, recruitment, customer service, entertainment, and of course marketing and promotion. Ellsworth and Ellsworth (1997, p. 51-52) declared that marketing on the WWW must "take place in reaction to interest from customers and other site visitors". Therefore, the marketing website must "first attract customers to the page by providing services and information that will be useful to the users". Successful marketing on the World Wide Web relies on careful use of appropriate methodologies to create an effective website, with expenditure of minimum time and money.

However, most existing methodologies address specific aspects such as page design, typography, graphics and multimedia, while missing some approaches such as user participation and "real interaction" (i.e. usability evaluation using a prototype). These latter approaches are important in website design especially from the marketing perspective. User participation will allow the users to play a role in the design and evaluation stages and have a better understanding of the system.

The research focused on investigating and developing a new methodology for designing a simple and friendly website, which meets user and designer needs simultaneously. The researcher evaluated the new methodology with the assistance of companies which are dealing with website design in Western Australia. This paper examines how user participation is an essential aspect in the website development process and analyzes the research outcomes from the interview and questionnaires phases, focusing on user participation aspects.

2. BACKGROUND

Participation is “*A process in which two or more parties influence each other in making plans, policies or decisions, it is restricted to decisions that have future effects on all those making the decisions or on those represented by them*” (Mumford 1995, p. 12). User participation in the development process can be defined as the “*extent to which the user engages in systems analysis activities such as project definition and logical design decisions*” (Doll et al. 1989, p. 1155), and to determine “*information requirements by encouraging users and other to indicate what they do and what information they need to do it*” (Hepworth et al., 1992, p. 122). Furthermore, user participation is defined as the “*behaviors, assignments, and activities that users or their representatives perform during the information system development*” (Hartwick et al. 1994, p. 441). A high level of user participation is likely to enhance user “ownership” of, and identification with, the resulting system – in this sense “*‘user involvement’ refers to the set of all such user subjective attitudes toward, or psychological identifications with, information systems and their development*” (Kappelman 1995, p. 70).

Research has shown that user participation in system design will greatly assist in producing a successful system. It results in less time in the implementation and testing stages as users are more knowledgeable about the system. Research and experience have shown that to run a successful application development process without any frustrations and dissatisfaction, the designer needs to involve the users and set clear objectives. This will help the designer incorporate the views of users in all of the following development methodology stages: planning, design, implementation and testing.

This paper distinguishes between two types of users: end-users (internal to the client organization) and client-customer users (external). End-users (Internal) are the real users in the client organization, who test and evaluate the website and use it to respond to the client-customer’s queries. The client-customer users (external) are those who interact with the website to accomplish their goals such as purchasing goods or services from the client organization. It is important to understand the needs, desires and characteristics of both types of users. To date, most designers of websites have “*assumed that their users had the same background and expectations that they did*”; therefore, “*the more you know about your users and their work, the more likely it is that you will develop a usable and successful website*” (McCracken et al. 2004, p. 37).

3. NEW WEBSITE DEVELOPMENT METHODOLOGY

In order for websites to be widely accepted and used effectively, they need to be well designed. To achieve this, designers and users need to use a specific methodology to produce the website. A methodology “*should tell us what steps to take, in what order and how to perform those steps but, most importantly, the reasons, ‘why’ those steps should be taken, in that particular order*” (Jayaratna, 1994, p. 242). Each methodology should have a set of stages and steps. ‘Stage’ is a “*convenient breakdown of the totality of the information systems life cycle activity*”, while ‘step’ is “*the smallest part of a design process*” (Olle et al. 1998, p. 21). Each stage consists of a set of steps. The sequence of the stages may not always be fixed. In some projects, iteration between stages will occur and this may have a different impact on the methodology as an iteration may “*take different forms and thus impact differently on what one can do with a methodology*” (Olle et al. 1998, p. 30).

In the research study, various types of models and methodologies were analyzed, including: lifecycle models; IS development methodologies; methodologies with explicit human factors aspects; websites methodologies; marketing methodologies; and additional detailed techniques such as task analysis and detailed website design and implementation. There are numerous similarities in respect to the stages between methodologies for developing information systems, websites, or marketing strategies; however, integrating stages from information systems methodologies into website and marketing methodologies is very beneficial in order to develop websites that are more effective and efficient. Human factors experts should be involved in these methodologies to make sure that transaction processes, tracking, maintenance and updating of the website meet the users’ requirements.

Firstly, the researcher reviewed the methodologies to identify two aspects: 1) the stages needed for the system development process; and 2) the extent of application of four key principles (user participation, usability, iteration, real interaction (*i.e. monitoring of user interaction with a prototype site*)). These four key principles are considered the main foundation for this research so as to produce websites with high usability.

Secondly, the stages of information systems development methodologies were analyzed to identify the strongest stage in each methodology. Thirdly, for the website and marketing methodologies, the researcher checked the availability of techniques covering the four key principles in these methodologies; listed the extra stages to be added to the new methodology; and identified the strongest stage in each methodology. Finally, additional detailed techniques of task analysis and website design and implementation (navigation design, promotion and staff training) were added. A new methodology was assembled from the most suitable parts of the methodologies examined.

4. RESEARCH METHODOLOGY

The first step in this study was to define the purpose, and this was achieved by using an explanatory method, seeking to discover "*Why things are the way they are*" (Neuman 2000, p. 22). The explanatory step was examined in the research by exploring various methodologies for website design to identify the reasons why many users are frustrated and confused when working with websites. From this information, a New Participative Methodology for Developing Websites from the Marketing Perspective was developed. This methodology will help the designers and users to fill the gaps in the current methodologies and to avoid the frustration currently experienced by website users.

A qualitative approach (Myers 1997, p. 241) was used in this research (i.e. interviews and questionnaires), as this allowed the researcher to collect a wide range of information from the industry. Interviews were utilized in this research to: identify the type of methodology(s) that is utilized by the industry in Western Australia to develop a website; obtain expert feedback on the prototype new methodology; and generate the questionnaire for the second phase of this research.

The second approach used in this research was an on-line questionnaire, which was developed from the interview data. The purpose of using the questionnaire approach in this research was: to evaluate the "practicality" and "benefits" of adopting the proposed new methodology in the website industry in Western Australia; to consider the various requirements for promotion and adoption of the methodology; and to evaluate whether it is possible to achieve effective user participation in website design, via the new methodology.

5. INTERVIEW PHASE

The researcher interviewed representatives of nine companies in Western Australian asking the interviewees questions concerning their methodology, tools and techniques for developing a website. The set of interview questions also covered each of the four key principles for this research. From the interviews, the researcher observed that most of the industry methodologies are based on experience and knowledge derived from past projects, rather than on academic theory perspectives.

The researcher provided details of the prototype new methodology and discussed it in detail with the interviewees. The interviewees raised questions concerning the prototyping, testing, evaluation, implementation and maintenance stages, and about tools to encourage user feedback. From the interviews, the researcher derived several conclusions concerning the four key principles for this research and the various stages of the proposed new methodology. There is not sufficient space in this paper to discuss all aspects of the interviews; hence, the remainder of this paper concentrates on discussion of user participation aspects.

Most of the interviewees agreed that user participation is an important aspect in the development process. In some companies, users do participate from the beginning to the end of the development process, while other companies allow the users to participate in some stages only, and the rest of the companies do not believe that user participation will provide any benefits to the development process. Comments from the interviewees regarding user participation are summarized in Table 1. Company representatives stated that the reason for user participation is to ensure that the system is successful, efficient and effective and to "*reduce the time in the implementation and testing stages*" (Company D). Furthermore, user participation in the design process is important to "*make sure they are happy and to ensure the goals are met*" (Company E).

There are also potential difficulties that can arise from user participation. Table 1 indicates that Company A limited user participation to top management to "*reduce the conflicts*"; and Company C suggested that top

management plays *“a good role in the website design, since they have the authority to involve the users from their company in the website design and this is dependent on the budget”*. However, Company D stated, *“user participation in the development process will produce different ideas and it will be very hard for designers to make decisions for the website”*. Company E indicated, *“We prefer between two to four persons only, no more, since each one will have different ideas and suggestions. Different ideas and suggestions from the users will make it very hard to compose a decision and the most important will take more time to develop a website”*.

Table 1 indicates that three aspects affect user participation in the development process: the project site, the nature of the client, and most importantly, the budget. The budget is a critical aspect of the development process since *“not many clients want us to involve them in day-to-day development, since that will cost them a lot”* (Company B). These three aspects are considered to be the main reasons for limiting user participation in the development process.

On the other hand, currently most companies in Western Australian are encouraging their clients to involve not only the top management in the development process, but also the users who are interacting with the website. For example, company E indicated, *“Top management will be involved in the design process from the beginning to the end, to allow them to check the entire website systematically to reduce duplication”*. Company F stated, *“We need to coach our clients to teach them the benefits behind customer involvement in the development process and provide the best solution, and we need to collect as much information as possible to reduce the time taken in the other stages. Now it is very hard to do that, since it is limited only to the client sector, and this is very expensive if we need an approach involving the customers”*.

Nevertheless, this research indicated that user participation is essential in the development process to allow the end-users (internal to the client organization) and client-customers users (external) to learn more about the website before releasing it. Customer F stated, *“I agree with you that we need two types of users to evaluate and test the website, but that depends on the clients”*. In addition, Company C indicated, *“Audience plays a major role in the website design; (however), most of the websites are worthless because there is no communication between the users and the designers”*.

6. QUESTIONNAIRE PHASE

Designing the questionnaire involved interpretation of the interview data and analysis in the context of the major and minor research questions. The questionnaire had to receive the approval of the Ethics committee at the University before sending it to the industry participants and IS Professionals. The method for phase two of this research consisted of the steps summarized in Figure 1. The questionnaire was divided into seven parts as each part discussed one key principle for this research: User Participation; Real Interaction; Usability and HCI; Iteration; New Methodology for Developing Websites; General Questions; and Background Information.

Table 1. User Participation Perspective in Development Process

Company Name	User Participation Perspective
Company A	<ul style="list-style-type: none"> ○ We prefer to deal with the top management in order to reduce the conflicts. ○ Every project has different requirements so user participation is depending on project type, budget, time and experience. We can involve two types of users those who are working with the website and those who interact with the website.
Company B	<ul style="list-style-type: none"> ○ Not many clients want us to involve them in day-to-day development, since that will cost them a lot.
Company C	<ul style="list-style-type: none"> ○ Top management plays a good role in the website design, since they have the authority to involve the users from their company in the website design and this is dependent on the budget.
Company D	<ol style="list-style-type: none"> 1. Why we need to involve the user: <ul style="list-style-type: none"> ○ Less time in implementation and testing stages 2. The disadvantage of involving the user: <ul style="list-style-type: none"> ○ Different people with different ideas ○ Very hard to make decisions
Company E	<ul style="list-style-type: none"> ○ Top management will be involved in the design process from the beginning to the end, to allow them to check the entire website systematically to reduce duplication. ○ If the management is asking to get more users to test the website, we prefer between two to four persons only, no more, since each one will have different ideas and suggestions. Different ideas and suggestions from the users will make it very hard to arrive at a decision and, most importantly, will take more time to develop a website. ○ User participation in the design process is to make sure they are happy and to ensure the goals are met.
Company F	<ul style="list-style-type: none"> ○ Depends on the project, client and budget. ○ We still encourage our clients to involve specific types of users from various levels, but it is still very hard to achieve this.
Company G	<ul style="list-style-type: none"> ○ Two types of users are involved in the design process (end-users and clients) as each type has different requirements and needs, therefore, we need to involve them to ensure their needs are met during the design process. ○ Two types of user participation are users depending on the site and the project, and this participation can be from the beginning to the end of the design process, or can be in various levels in the design process.
Company H	<ul style="list-style-type: none"> ○ Two or three types of users are available and that depends on the project budget
Company I	<ul style="list-style-type: none"> ○ We involve two types of users, who will be using the website, in addition to the company users.

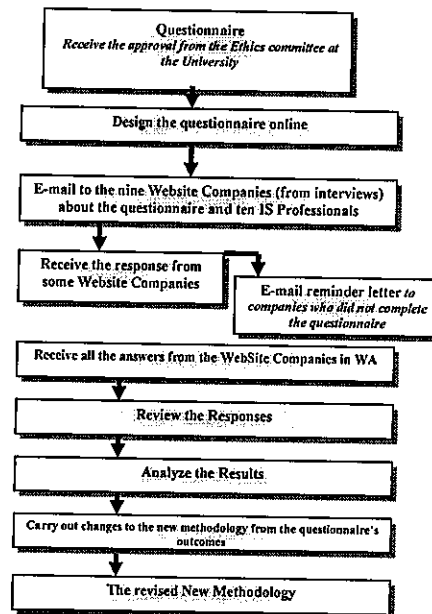


Figure 1. Summary of Questionnaire Phase

A Likert five-point scale was used in each part of the on-line questionnaire to “*examine how strongly subjects agree or disagree with statements*” (Sekaran 2003, p.197). Besides using the Likert five-point scale for this questionnaire, the researcher provided a section for participants to write down other comments regarding each part. The 16 participants who completed the questionnaire were drawn (in equal numbers) from the website companies who participated in the interview phase and IS professionals (to obtain the IS perspective regarding the new methodology, since most of the industry participants had degrees in multimedia and communication technology, but few had an academic background in Information Systems). Each participant received (via e-mail) a PDF file containing information about the new methodology so that the participant could assess the new methodology.

The presentation of the mean result in Table 2 indicates that most of the industry participants and IS Professionals agreed that user participation is a significant aspect of the website development process. Of the sixteen responses from the industry participants and IS Professionals, 94% disagree that only the top management should take part in the website development process to reduce conflicts and 81% disagree that only the end-user should participate in evaluations during the website development process. Company E commented, “*Only the top management should take part in the website development. They should/will have the ultimate decision making capacity but it's also worthwhile to have a trusted, experienced end-user involved from the beginning as top management seem generally not as well connected to the 'grass-roots' as the end-users*”.

A total of 94% of the industry participants and IS Professionals agree that both end-users and client-customer users should take part in the website development process. In addition, 75% of the industry participants and IS professionals disagree that the two types of users should participate only in the early stages, and 62.5% disagree that they should participate only in the last stages of the website development process. These results support an active role for both user types in the whole website development process with 50% agreeing that both users should take part in the website development process from the beginning to the last stage.

Additionally, 87.5% of participants agree that the level of user participation in the website development process depends on the type of website and project budget. In addition, 63% agree that user participation in the website development process will reduce the time in various stages such as testing, evaluation, implementation and training. Lastly, 56% disagree that more than four users participating in the website

development process will produce too many different ideas and suggestions and it will be very hard for the designers to make a decision. This is weak support for involvement of more than four users.

Table 2. Questionnaire Part One – User Participation Responses (*Mean Response = X*)

Please indicate your level of agreement with each statement:	Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)
<i>That only the top management should take part in the website development process to reduce conflicts.</i>		X			
<i>That only end-user should participate in evaluations during the website development process.</i>		X			
<i>That both types of users, "end-users and client-customers", should participate in the website development process.</i>				X	
<i>That both types of users, "end-users and client-customers", should participate from the beginning to the last stage in the website development process.</i>			X		
<i>That both types of users, "end-users and client-customers", should participate only in early stages in the website development process.</i>		X			
<i>That both types of users "end-users and client-customers" should participate only at the last stages in the website development process.</i>		X			
<i>That user participation in the website development process will reduce the time in various stages such as in the testing, evaluation, implementation and training.</i>			X		
<i>That the level of user participation in the website development process depends on the type of website and project budget.</i>				X	
<i>That more than four users participating in the website development process will produce too many different ideas and suggestions and it will be very hard for the designers to make a decision.</i>			X		

The mean presentation in Table 2 indicates that most of industry's participants and IS Professionals agreed that the website development process will benefit from users' (end-users and client-customers) participation. Company H stated, "Ideally, all websites will have a comprehensive iterative design cycle involving both what I call experts who have an understanding of heuristics (perhaps your "end-users") and client-customers, perhaps using cheaply built prototypes in the early stages of the development cycle. However, if one of my clients wants a limited functionality website, they are more likely to want to pay for our knowledge of heuristics rather than spend money on user-testing".

Furthermore, IS Professional 5 affirmed, "... External users should participate at appropriate points in the life-cycle. They should be involved in evaluating and refining the visual prototype in the early phases of the project. After the prototype is refined during the requirements definition phase, external users should participate in validating functionality. The external users should then participate in pilot roll-out at the beginning of deployment".

7. CONCLUSION

This research focused on the development of a new methodology for developing websites for marketing purposes, which was derived from studying various methodologies from the Information Systems development; human factors aspects; website and marketing methodologies. To assess the new methodology the researcher used two phases' - interviews and a questionnaire. The responses from the two phases supported the structure and style of the new methodology. In this paper, the importance of user participation

was discussed. The outcomes from two research phases indicated that both types of users (end-users and client-customers) should take part in the whole website development process.

This research identified the need for further research, including the development of a website describing the new methodology. This website will incorporate a software tool to facilitate selection of particular stages, steps and techniques from the integrated methodology to produce a tailored methodology for any specific project, thereby implementing the concept of "contingency" (Turk, 2001).

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