2007

Surfacing Meta-categories of Web-designers' Criteria for B2C Website Evaluation: A Qualitative Study Using the Repertory Grid Technique

Felix B. Tan
Auckland University of Technology, felix.tan@aut.ac.nz

Lai-Lai Tung
Nanyang Technological University, alltung@ntu.edu.sg

Yunv Xu
Nanyang Technological University, xuyu0001@ntu.edu.sg

64. Surfacing Meta-categories of Web-designers' Criteria for B2C Website Evaluation: A Qualitative Study Using the Repertory Grid Technique

Felix B Tan
School of Computing &
Mathematical Sciences
Auckland University of
Technology
felix.tan@aut.ac.nz

Lai-Lai Tung
Nanyang Business School
Nanyang Technological
University
alltung@ntu.edu.sg

Yun Xu
Nanyang Business School
Nanyang Technological
University
xuyu0001@ntu.edu.sg

Abstract

Many businesses today are using the World Wide Web (WWW) to create a compelling presence and this phenomenon is projected to sustain in the near future. Organizations are increasingly using websites not only to capture but also to build relationships with their desired markets. However, research into the effectiveness of B2C websites remains highly fragmented and user-centric, ignoring the views of web-designers. This study therefore aims to investigate what web-designers consider as attributes of "effective" B2C websites. Twenty web-designers were interviewed using Kelly's (1955) Repertory Grid Technique in order to elicit factors that they consider important when designing or developing B2C websites. Using Grounded Theory approach, these elicited data were then classified into 14 meta-categories. The intensive nature of the interviews eventually gave rise to a comprehensive set of factors that broadens the base of existing literature on website effectiveness.

Keywords: Repertory Grid Technique, Effectiveness of websites, Web-designers

Introduction

In recent years, we have witnessed an explosive growth in business to consumer (B2C) electronic commerce (Hoffman et al. 2000) and net-enabled organizations (Straub et al. 2001). The magnitude of this phenomenon, coupled with advantages derived from a website's ability to offer web visitors a unique and satisfying experience through multi-media capabilities (Hoffman et al. 1996), sees the increasing concern of firms over web site design. More firms and start ups are choosing the Web to build a brand reputation, to transact with customers and vendors, or for public relations purposes (Subramaniam et al. 2000). Thus, much attention and resources are channeled towards creating a rewarding experience for any website user. In particular, the design of websites can influence visitors' decision to return to the site. Hence, being able to establish a compelling Web presence and serve visitors well in their purpose have not only become a core competence for the successful early adopters, but also a critical challenge met by many businesses today (Agarwal et al. 2002).

There is some evidence, however, that poor web-design may be turning customers off (Amato-McCoy 1999). In response, organizations have sought to assess their Web presence through evaluation of their websites and identification of potential problems. In this paper, we argue that for organizations to facilitate the evaluation of websites and development of good web-design there is a need to answer the question: "What factors do web-designers consider important when designing or developing effective B2C websites?" Towards this end, this study aims to emerge the criteria to evaluate the effectiveness of B2C websites from the perspective of web-designers.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

This paper focuses on the web-designers' rather than the consumers' perspective. To successfully understand what good web-design is about, we argue that there is a need to examine the web-designers' perspective of website effectiveness, beyond the emphasis on the customers' perspective. Current research on web-design is largely user or customer-oriented (Agarwal et al. 2002; Spink 2002; Whyte et al. 1997). Users' views have been studied more extensively because serving users' needs is the primary objective of websites (Day 1997; Dragulanescu 2002). However, research on customers' perspective focuses on issues related to the use and usability of the websites rather than directly on the design factors, and hence is limited in their applicability to improve web-design. Hence, we argue that the web-designers' perspective is critical in emerging the evaluation criteria to help web-designers in their job.

To date, there is only a handful of studies focusing on web-designers' perspective (Geissler 2001; Huizingh 2000). Some published web-designers' criteria on web effectiveness include richness of information, constant updates, good navigation and interactivity and presentation style such as presenting sufficient information on the homepage to look "balanced", layout, colours, font style and size, mix of text and graphical information and sort, shape, size and placement of links (Geissler 2001; Huizingh 2000). It can be seen from these criteria that web-designers provided criteria for both the technical aspects of the construction of websites as well as those likely to be raised by some users. Thus, the web-designers' perspective are likely to be more holistic covering the designers' viewpoint as well as the designer's perspective of users' needs.

Over and beyond the importance of incorporating the web-designers' viewpoint, this paper is important as it differs from earlier studies from the web-designers' perspective mentioned above (Geissler 2001; Huizingh 2000) in two other ways. First, this paper uses an inductive approach, the Repertory Grid Technique (RGT), to elicit a comprehensive set of B2C e-commerce website evaluation constructs and their definitions based on the experiences of web-designers. We argue that existing research on website effectiveness, from both the customer's and the web-designer's perspectives, is fragmented and there are gaps in the current stream of research. Researchers in this area often focus their studies on selected aspects of web-design which are deemed more important (Aladwani et al. 2002), thereby failing to address website's effectiveness in its entirety. For instance, with the emergence and widespread acceptance of Human-Computer Interaction (HCI) (Hartson 1998), huge emphasis had been placed on studying websites' usability (Cockrell et al. 2002; Hornbaek et al. 2001), thus neglecting other qualities such as visual attractiveness or content. The fragmentation of research can lead to the failure to identify key factors that may be important to web-design.

Second, most website evaluation research methodology is plagued by one other major drawback: that of having pre-determined structures. Examples include the use of pre-structured questionnaires to collect data for analysis (Agosto 2002; Ranganathan et al. 2002; Spink 2002; Teo et al. 1999) and pre-designed or scripted actions that govern the way participants walkthrough a website in a simulated or laboratory environment (Cockrell et al. 2002; Hallahan 2000; Hornbaek et al. 2001). These methods can limit the scope of information obtained as researchers explore specific selected aspects of web-design. To circumvent the problem of using pre-determined structures, the inductive Repertory Grid Technique (RGT) approach is used in this study. Grounded in Kelly's Personal Construct Theory (Kelly 1955), the RGT approach generates a large amount of in-depth, qualitative and narrative information relating to a web-designer's explanation of a construct elicited. Detailed

comments recorded on the constructs provided descriptive support and subsequently are analyzed to identify emerging themes. These common themes derived will represent what web-designers feel contributed to the design of an effective website.

Background and Literature Review
Definition of B2C Websites
B2C websites form the elements for our study (see section 3.2.1). They can be defined as sites on the World Wide Web through which customer can obtain products or service which can be commercial in that a payment is necessary for exchange or non-commercial and can take any form ranging from tangibles such as books to intangibles such as information or know-how. The fundamental characteristics behind a B2C website are its content and design (Huizingh 2000). The content is important in influencing consumer's purchase decision while the design helps to attract and retain his interest at a site (Ranganathan et al. 2002). Therefore, B2C websites essentially seeks to cater to their customers in any way within their abilities that can attract sales. This study focuses on B2C so as to surface factors related to both content and design issues (and not just on one set of issues).

Effectiveness of Websites and Website Evaluation
The international standard ISO defines "quality" as being "*the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs*" (Dragulanescu 2002). Day has defined quality as "*whatever the customer says it is*" (Christie et al. 1997). Web effectiveness must consider who the customer is and his expectation of quality. As mentioned, web effectiveness will only be achieved when customers' needs are satisfied. Effectiveness of B2C website is defined as *the ability of the website to cater to the diverse needs of its target audience such that user satisfaction arises and user loyalty is established*. Evaluation is a complex and judgmental process involving concepts such as quality and accuracy. Evaluation is defined as "*the making of judgments about the value for some purpose of ideas, works, solutions, methods, material, etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical, or satisfying. The judgments may be either determined by the evaluator or those which are given to him*" (Dragulanescu 2002).

Studies in cognitive psychology, meta-cognition and critical thinking have established that evaluative thinking may be influenced by factors such as prior knowledge, format preferences, epistemology, affect and beliefs (Fitzgerald Summer 2000). All these factors can impact the evaluation process and its outcomes. They form the views of the evaluators in a study, governing the width and depth of information collected in the process. As such, web evaluation in our study involves participants giving their opinions on B2C websites and judging them in any aspects that may affect effectiveness of those websites. Past evaluation studies will provide insights to the advancement of research and methodologies adopted in the web-designing field. Furthermore, as participants' judgments can be influenced by the above factors, an effective and efficient knowledge elicitation tool is necessary to tap into the knowledge pool of the participants.

Prior research
A review of the literature reveals the use of several theoretical lenses in prior research into the effectiveness of websites. These lenses have been used to guide researchers in coming up with the evaluation criteria. The first is the Technology Acceptance Model (TAM) (Davis 1989). Studies that use TAM as a framework or guide to website evaluation include Lee and Lee (2003), Koufaris (2002), Schubert and Dettling (2002) and Benbunan-Fich (2001). These

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

studies use the TAM framework to look at factors affecting the usefulness, ease of use, and the final acceptance of websites. The second lens that has been used to examine website evaluation is the Human-computer Interaction (HCI) lens, whereby the notion of usability is a key theme in the HCI literature (Palmer 2002). The theoretical foundation for HCI studies are grounded in psychology and cognitive science. Many studies look at design features that will help improve the usability of websites, including attractiveness and interactivity (Lindgaard et al. 2003; Skadberg et al. 2003), challenge (Venkatesh et al. 2006), entertainment and reliability (McKinney et al. 2002). The third lens put forward integrated frameworks incorporating diverse streams of research and may include some important factors derived from TAM and HCI models. Examples include content and design (Huizingh 2000); technical adequacy, web content, web appearance (Aladwani et al. 2002); system quality, information quality, service quality, perceived ease of use, playfulness, and usefulness (Ahn et al. 2007); information, ease-of-use, entertainment, trust, transaction and consistent image (Kim et al. 2004).

The researchers for this study will leverage the results of the prior research above and the analyses of results will be informed by the constructs of these prior researches where appropriate.

Repertory Grid Technique

Kelly (1995) had devised the repertory grid interviewing technique in 1955 to explore personal constructs systems. RGT involves the generation of a list of concepts (*elements*) about things or events to be studied and the forming of attributes (*constructs*) based on the list of concepts (Zhang et al. 2001). The RGT is a flexible, yet systematic methodology that integrates both qualitative and quantitative analysis (Beail 1985; Marsden et al. 2000a) on a given domain of discourse, and it has been widely used in qualitative market research (Marsden et al. 2000a). In IS research, the RGT has been employed to elicit qualities of "excellent" systems analysts (Hunter 1997), investigate project managers' interpretations of the situational factors that are related to the planning and carrying out of systems development projects (Moynihan 1996), examine the skills of successful IT project managers (Napier et al. 2006), while Tan and Gallupe (Tan et al. 2006) used the RGT to explore the cognitive thinking of business and IS executives.

The use of RGT is suitable for research in the area of website evaluation for the following reasons. Firstly, it addresses the criticism that existing theories and methods are deemed unsatisfactory in discovering the nature and form of individual subjectivity (Hirshchman 1986). In particular, the process of meaning construction, the nature of individual and meaning systems and ways of representing these phenomena through naturalistic research strategies will require a method that poses no restrictions to allow maximum response (O'Shaughnessy et al. 1988). As mentioned earlier, RGT is a qualitative approach that aims to accomplish this. Secondly, RGT is a method that avoids the use of *a priori* categories. The technique does not impose pre-determined structures. Instead, the categories emerge from the data through the identification of emerging themes (Hunter et al. 2000; Tan et al. 2002; Whyte et al. 1997). Thirdly, this technique allows participants to express their views in their own words and yet, due to its systematic nature, allows researchers to probe deeper into the responses to derive richer information. This facilitates better understanding of participants' perception and aids in the analysis of data. Lastly, the data obtained from RGT is rich enough to enable a thorough examination of content elicited by each individual's construct system (Dick et al. 2001; Hassenzahl 2000; Hunter et al. 2000).

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Research Methodology
Sampling
The intensive nature of the RGT means that a relatively small sample size of about 15 to 25 subjects is often sufficient in eliciting a comprehensive list of constructs for the purpose of a study (Dunn et al. 1986; Ginsberg 1989; Tan et al. 2002). We took the sample of intended participants, i.e., web-designers, from a listing of 1012 software retailers published in the e-Source Directory (2001) (This is a directory containing vendor listings of services, software and hardware retailers). A modified systematic sampling procedure was applied to the listing, starting with a random record and applying a selection interval of 5. A total of 20 web-designers agreed to participate in this study.

The Repertory Grid Interview Process
Six pilot interviews were conducted with university students with web-design experience. As a result, we were able to standardize the RGT interview process and confirm our procedures for the actual interviews. There are 2 steps to the RGT – element selection, construct elicitation (involving triading and laddering). These steps are discussed next.

Element selection
The first step is the selection of the elements to be included in the study. Elements represent the domain of investigation. The relevant elements for our study are B2C websites. A minimum of six elements is required in order to provide sufficient triads for use in the second step. Based on Nielsen/NetRatings Singapore Internet Audience Activity Report for April 2000 (Osman 2002), the websites included are *Yahoo!, MSN, Singapore Telecom, Pacific Internet, AOL websites* and *Lycos.* One week prior to the interviews, we emailed the participants general details of the interview and requested them to surf the six websites to familiarize themselves with the sites. Just before the start of the interview, we confirmed with the participants that they have surfed the 6 stipulated websites. At the commencement of the interview, an overview of the study was provided to the participant. To reduce interviewer's bias, all instructions were read from prepared notes to ensure that all subjects received the same set of instructions.

Construct elicitation
Construct elicitation aims to identify meanings, in the form of bipolar constructs, that subjects attach to the elements (Dalton et al. 1992; Marsden et al. 2000a). Two interviewing methods, "*triading*" and "*laddering"*, are employed to achieve this. *Triading* (Kelly 1955) involves the participant selecting three elements (websites) at random. The participant is then asked to identify, how two of them are similar and different from the third, in terms of what s/he, as a web-designer, considers important when designing or developing websites. The labels for similarity and difference identified form a bipolar construct eg. good navigation – poor navigation. The "*laddering*" method is then used to educe in-depth explanations of the bipolar construct. For example, the respondent might be asked which pole of the construct they prefer (good or poor navigation), or how and why they think that particular aspect (Marsden et al. 2000b) affects the websites. The elicitation process is then repeated to identify more constructs, until the participant cannot add any new constructs to the ones s/he already named earlier.

To conclude the interview, participants were requested to fill up a demographic sheet and indicate their relevant expertise as web-designers.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Analysis of Data

Using RGT, participants were generally given vast freedom in determining the perceived similarities and differences within each triad, and providing personal interpretations pertaining to the constructs elicited (Hunter et al. 2000). This section describes how we analyzed and classified our rich findings into common themes. A walkthrough using examples from our data will be presented. We used a three-layer classification scheme to categorize the data collected, namely **construct class, conceptualization** and **meta-category**, The interpretations and labels we assigned to each of these layers were informed by literature on website evaluation. In order to facilitate classification of the constructs into conceptualizations, we grouped the constructs into classes. Conceptualizations were formed from the construct classes. Both poles of the constructs were used to define the conceptualizations, hence reflecting construct bipolarity (Dick et al. 2001). Meta-categories of conceptualizations were derived using the grounded theory approach (Strauss 1987).

Results and Analysis

Eleven males and nine female web-designers participated in this study. They were mostly between 21-30 years of age and had more than 2 years experience in web-design. On average, all participants surf the Internet several times a day for up to 5 hours each time.

The twenty participants provided 152 constructs. These constructs were then grouped into 56 construct classes. Forty-six conceptualizations were obtained from these construct classes and fourteen meta-categories were derived using grounded theory approach. Table 1 presents a sample of the 14 meta-categories, their underlying conceptualizations, construct classes and a sample of the constructs that make up the categories.

Table 1: Sample Meta-categories, Conceptualizations and Construct Classes

Meta-Category	Conceptualization	Construct Class	Construct Example
Content/ Information	Scope of Information	Wide variety / General Information	- wide variety of content to attract larger audience
		Specific Information	- information based on user interests
		Specific Corporate Information	- provides information on company and products for corporate website (target specific audience)
	Quality of Information	Breadth and Depth of Information	- should not have so much variety that quality of information suffers (too broad but no quality)
Updates	Information / content / feature update	Frequency of updates	- frequent updates makes website more user-friendly, attract users to visit more frequently
		Characteristics to facilitate frequent updates	- use of pre-defined design that allows frequent updates, changing content only for each update
	Design update	Up-to-date design	- use of new, up-to-date design, graphics always changing

The 14 meta-categories and their definitions are presented in Table 2.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Table 2: Definitions of the Meta-Categories

Category	Definition
Content/ Information	Mainly the scope (wide or specific) and quality of information
Updates	Design considerations with respect to websites that require updating
Navigation	The features used in designing the site that facilitates transition from page to page
Categorisation of Information	Refers to ways of grouping information on the pages in order to facilitate reading
Downloading Time	Factors in designing that impacts speed of downloading
Graphics Usage	Refers to the purpose for which they are used and extent of usage, including the quality of graphics and how they are being organised
Text Usage	Relates to the purpose of using a text-based interface
Visual Appearance	How the website looks and the impact it effects
Layout/ Space Usage	How web space is utilised to present the features and functions across the pages within the website
Presentation of information	Concerns the implications of using colours, fonts and display styles to present information
Colour use	Concerns the usage and choice of colours used
Headlines	Covers the objective and extent of headline usage
Advertisements/ Pop-ups/ Animation	The purpose and extent of usage of such features
Establishing Website's Identity	Various methods designers use to portray its unique image

Discussion

Content/ Information (Scope and Quality)

Our study found that the scope and quality of content are among important factors influencing users' perceived usefulness. Participants indicate that it is essential for websites to provide wide variety of information to attract audience. At the same time, participants agree that content should not be too vast in variety or it loses its quality – suggesting that a delicate balance needs to be achieved in terms of scope and quality. The findings are consistent with prior research on content issues (Hallahan 2000); (Dragulanescu 2002).

Updates

Ensuring updated information on a website is crucial to effective web-design, enhancing perceived usefulness and reliability (Lee et al. 2003) and leading to behavioral intention to make future visits (Whyte et al. 1997). Dragulanescu (2002) supports that timeliness of website reviews and constant updates enhance the quality of websites. Prior research also reveals users' preference for frequent updates of information. Similarly, our study on the designer's perspective finds that frequent updates of information enhances user friendliness, hence attracts users and encourages revisits. Our participants further suggest using pre-defined design templates and small logos as ways to facilitate constant updates.

Navigation

Quality web-designs should allow users to experience smooth and efficient navigation through valid and relevant links (Cox et al. 2002) and have appropriate degree of control and flexibility on the ways of accessing the web-pages on a site (Whyte et al. 1997). Our

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

participants mention that websites with superior navigation functions are perceived as being user-friendly. Cox and Dale (2002) contend that one-third of users utilize the "Search" function to navigate within a site before resorting to links and menu as it allows greater coverage of the site. Likewise, our findings reveal that the coverage and quality of the search feature are important elements in web-design. Minimal steps required to complete a task can also be programmed to enhance ease of use (Scapin et al. 1997). Good use of navigation functions enables users to surf around effortlessly, thus contributing to website effectiveness.

Categorisation of information

Both Scapin and Bastien (1997) and our findings agree that users tend to understand the relationships between topics better if different formats and location (columns and frames) are used to illustrate the similarities and differences. With regards to format, color-differentiated segments used for various aspects of a page can provide clearer distinction between data fields and labels, as well as enable easy reading. As for location, participants reflect that clearly defined sections make searching for information easy. Segregation by content nature also appears an efficient way to organize information. Participants suggest that using hierarchical structures with the different layers of in-depth information or linear structures with the various content topics can do this. Participants also provide specific ways of linear classification: by regions, products or business functions. Prior research has not highlighted such specific findings on information categorization.

Downloading time

Holt (2000) and our findings recognize the importance of websites' downloading time in order to retain users. Delays in searching or in loading web-pages may turn the consumers away to other sites that have faster download and display times (Ranganathan et al. 2002; Shneiderman 1998). Features such as graphics, animation and text links affect the page response time. In particular, participants provide precise suggestions to avoid slow response (eg. reduce graphic use or use simple text links).

Graphic and text usage

Many participants consider text and graphic usage crucial in web-design. Quality, organization, extent of use and functional use of graphics and text are essential in reducing confusion and portraying the website image. For instance, quality refers to graphically well-defined, sharp images and icons that tend to catch users' attention more. Organization pertains to the extent of tidiness in terms of graphics arrangement. Excessive use of graphics was mentioned to be distracting; similarly, too much text can create difficulty in information searching. Prior literature has paid little attention to the appropriate deployment of graphic and text; yet many participants suggest this is important in web-designing to enhance the quality of websites.

Visual appearance and Layout/Space Usage

Participants mention that the overall appearance of websites is another significant element in web-design. The image projected to users will be influenced by the different aspects of web-design and determine whether the user would revisit the site. Many participants prefer the site to be simple and clean, as a neat website allows users to surf efficiently for the information they want, enabling them to focus better, thus enhancing perceived playfulness. Most participants also notice the standard of the design, whether it is done professionally or amateurishly. This dimension is not identified in prior research despite being an aspect frequently suggested by our participants.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Consistency in layout (Scapin et al. 1997) is important in web-designing as it helps strengthen users' impression of the site. A consistent layout across pages enables ease of navigation when surfing through the pages (Constantine et al. 1999) and reduces search time considerably. Similarly, our participants suggest that consistent presentation (layout, organization, colour and navigation menu) throughout the whole website portrays a strong design concept and creates a deeper impression on users as they surf compared to inconsistent sites.

Participants also suggest ways to maintain consistency including the use of uniform organization, colors, font size and the way information is presented. Additionally, we find that the positioning of prominent features would reflect the main focus and purpose of the website, enabling users to recognize the website better. Good usage of web space to position features is another key quality of an efficient layout. Participants mention that users can focus better on a website's features if appropriate amounts of white space are used thereby inducing perceived playfulness.

Presentation of Information and Colour Use

Scapin and Bastien (1997) states that legibility (distinct characteristics that stimulate reading of the information contents, which includes character brightness, contrast between the letter and the background, font size, inter-word spacing, line spacing, paragraph spacing, line length, etc) is one crucial aspect in web-designs. Having superior presentation styles can also facilitate the interpretation of the information (Huizingh 2000).

Correspondingly, our findings show that presentation of information critically impacts web-design. Participants indicate that effective contrasts between the text and background such as having color text against white background, improves readability. Font sizes should also be appropriately-sized to cater for the target groups of users, e.g., the elderly might not be comfortable with reading small fonts. Additionally, display of information should not be too cramped such that it results in users losing interest in the website. Information presented at one glance makes reading easier. Designs that cater to all screen resolutions are also mentioned as a way to facilitate navigation where minimal scrolling is required.

Visual representation (eg. color, image, video and texture) improves attractiveness and proved to enhance ease of use most among other variables (Lee et al. 2003). Our participants mention the choice of colors as another important design factor. Simple combinations of colours will be pleasing to the eye whereas glaring colors cause visual discomfort. Users' perceived enjoyment during the interaction is thus enhanced with proper color use. Consistent colors should be used to reduce distraction as well as portray the website image. Colors can also be used to attract attention and emphasize different headings. The various ways on color use to improve the quality of websites have been lacking in prior researches. Our findings have extended our current knowledge on color use.

Headlines, Advertisements, Pop-ups and Animation

Our participants contend that taglines, together with graphics and links, cue users on what to expect when he activates a hyperlink. This reduces confusion and attracts users' attention, resulting in greater tendency for users to click on the links. Headlines also make navigation on the sites easier when users know where to find the information that they want more efficiently.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Our participants also suggest constructs relating to the use and purpose behind using pop-ups, flash, applets or banners. Specifically, while such media are more attention grabbing, participants point out that excessive use of them can be distracting and will create lost traffic, which translates into reduced behavioral intention and user satisfaction. This echoes Sutcliffe (2001)'s claim that having too many animated banners compete with one another makes the site annoying. Therefore appropriate use of advertisements has an effect of users' perceived enjoyment of the site. Although the negative impact of excessive advertisements on users' acceptance of the site is not commonly found in prior research, web-designers in our study have indicated that it does affect users' satisfaction with the site.

Establishing Website's Identity

All our participants raise the importance of establishing corporate identity through a website. Various responses highlight the use of visual characteristics like corporate colours or logos to portray a unique image. Moreover, maintaining consistency of subsequent web pages within the site and with respect to other promotional media aids in projecting a close-knit corporate image. This dimension has not been covered in any prior research, but yet, it proves to be an important consideration in web-design among our participants.

Limitation and Future Research

Our study is however limited in a number of ways. First of all, we have defined B2C sites broadly and the selection of 6 B2C sites on the part of just one participant is not meant to be representative of all B2C sites. However, collectively, with 20 web designers covering 6 B2C sites each, we believe that our paper have covered a representative sample of B2C sites. Secondly, as we only interviewed 20 web-designers, our findings cannot be generalized to the larger population. Although the intensive nature of the RGT only requires a small sample of participants, future research could validate our findings further through quantitative research techniques using a more representative sample.

Third, in coming up with our meta-categories, the researchers were careful to ensure that their definitions and subsequent explanations are clear. However, some categories which we have classified as separate meta-categories may be discussed together in this paper if existing research discusses them jointly rather than individually. One example is "graphic and text usage" in the discussion section. In this case, this paper argues that web designers differentiated between the two meta-categories, while the existing literature does not.

In this study, we translated web-designers' practice into the set of criteria they consider when evaluating websites. The application of the RGT yielded rich and relevant qualitative data from the interviews. The findings of this study (i.e. meta-categories, conceptualizations and construct classes) represent a comprehensive list of important considerations web-designers should take into account when designing and developing B2C websites.

Following this, further research can include the validation of the relative importance of the constructs that has surfaced in this study. A future extension of this study can apply the RGT in a similar investigation exploring the constructs users apply when they evaluate websites. Additionally, future research can consider a longitudinal approach so as to observe the evolving effective web site design over time.

Finally, Yen (2007) commented that there is a lack of discussion on the "balance between the designer's expectation and the user's desire". Future research can focus on matching what the

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

web-designers can provide through their designs and what web users want and so as to uncover any discrepancies between the two.

Conclusion

Tying the above results back to our literature review and research objectives, we conclude that, first, web-designers' viewpoint are in line with TAM and HCI theory in general. For example, web-designers suggest that frequent update of information enhances user friendliness, hence attracts users and encourages revisits (**usefulness**), clearly defined sections and superior navigation functions make browsing and searching easy (**ease of use**), and delays in searching or in loading web-pages may turn the consumers away to other sites

Second, web-designers do consider the requirement of both customers and website owners. E.g. web-designers indicate that it is essential for websites to provide wide variety of information to attract audience. At the same time, they agree that content should not be too vast in variety or it loses its quality – suggesting that a delicate balance needs to be achieved in terms of scope and quality. Similarly, they indicated that the appropriate use of advertisements has an effect on website income and users' perceived enjoyment of the site.

Third, web-designers provide technological details to improve quality of website. E.g. they indicate that effective contrasts between the text and background such as having color text against white background, improves readability. Font sizes should also be appropriately-sized to cater for the target groups of users. Additionally, display of information should not be too cramped such that it results in users losing interest in the website. Information presented at one glance makes reading easier. Designs that cater to all screen resolutions are also mentioned as a way to facilitate navigation where minimal scrolling is required.

To conclude, from the above findings, we have shown that using the RGT has indeed elicited more in-depth and specific design factors that address our research objective.

References

E-Source Directory, (1st ed.) Kompass South East Asia Ltd, 2001.

Agarwal, R., and Venkatesh, V. "Assessing a Firm's Web Presence: A Heuristic Evaluation Procedure for the Measurement of Usability," *Information Systems Research* (13:2), June 2002, pp 168-186.

Agosto, D.E. "A model of young people's decision-making in using the Web," *Library & Information Science Research* (24) 2002, pp 311-341.

Ahn, T., Ryu, S., and Han, I. "The impact of Web quality and playfulness on user acceptance of online retailing," *Information & Management* (In Press, Accepted Manuscript) 2007.

Aladwani, A.M., and Palvia, P.C. "Developing and validating an instrument for measuring user-perceived web quality," *Information & Management* (39:6), 2002/5 2002, pp 467-476.

Amato-McCoy, D.M. "Simplify on-line commerce, Gartnet Group speakers usrge," in: *RT: Technol Mag Retail Exec*, 1999.

Beail, N. "An Introduction to Repertory Grid Technique," in: *Repertory grid technique and personal constructs : applications in clinical & educational settings,* N. Beail (ed.), Brookline Books, Cambridge, MA, 1985.

Benbunan-Fich, R. "Using Protocal Analysis to Evaluate the usability of a commercial website," *Information & Management* (39) 2001, pp 151-163.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Christie, D.F.M., and Menmur, J.G. "The Repertory Grid as a Tool for Reflection in the Professional Development of Practitioners," *Teacher Development* (1:2) 1997, pp 205-218.

Cockrell, B.J., and Jayne, E.A. "How Do I Find an Article? Insights from a Web Usability Study," *The Journal of Academic Librarianship* (28:3), May 2002 2002, pp 122-132.

Constantine, L.L., and Lockwood, L.A.O. *Software for Use*, New York, 1999.

Cox, J., and Dale, B.G. "Key quality factors in Web site design and use: an examination," *International Journal of Quality & Reliability Management* (19:7) 2002, pp 862-888.

Dalton, P., and Dunnett, G. *A Psychology for Living*, Chichester, 1992.

Davis, F. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly* (13) 1989, pp 319-339.

Day, A. "A model for monitoring website effectiveness," *Internet Research : Electronic Networking Applications and Policy* (7:2) 1997, pp 109-115.

Dick, P., and Jankowicz, D. "A social constructionist account of police culture and its influence on the representation and progression of female officers," *Policing, An International Journal of Police Strategies & Management* (24:2) 2001, pp 181-199.

Dragulanescu, N.-G. "Website Quality Evaluations: Criteria and Tools," *International Information & Library Review* (24) 2002, pp 247-254.

Dunn, W.N., Cahill, A.G., Dukes, M.J., and Gomsberg, A. "The policy grid: A cognitive methodology for assessing policy dynamics," in: *Policy Analysis: Perspectives, Concepts, and Methods,* W.N. Dunn (ed.), JAI Press, Greenwich, CT, 1986, pp. 355-375.

Fitzgerald, M.A. "The cognitive process of information evaluation in doctoral students: A collective case study," *Journal of Education for Library and Information Science* (41:3) Summer 2000, pp 170-186.

Geissler, G.L. "Building customer relationships online: the Web site designers' perspective," *Journal of Consumer Marketing* (18:6) 2001, pp 488-502.

Ginsberg, A. "Construing the business portfolio: A cognitive model of diversification," *Journal of Management Studies* (26:4) 1989, pp 417-438.

Hallahan, K. "Improving public relations web sites through usability research," *Public Relations Review* (27) 2000, pp 223-239.

Hartson, H.R. "Human- Computer Interaction: Interdisciplinary roots and trends," *Journal of Systems and Software* (43:2), November 1998, pp 103-118.

Hassenzahl, M. "Capturing Design Space From A User Perspective: The Repertory Grid Technique Revisited," *International Journal of Human -Computer Interaction* (12:3/4) 2000, p 441.

Hirshchman, E.C. "Humanistic inquiry in marketing research: philosophy, method, and criteria," *Journal of Marketing Research Society* (23) 1986, pp 237-249.

Hoffman, D.L., and Novak, T.P. "Marketing in Hyper-Media Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing* (60) 1996, pp 50-68.

Hoffman, D.L., and Novak, T.P. "How to Acquire Customer on the Web," *Harvard Business Review* (78) 2000, pp 179-184.

Holt, M. "Strategy: Ten steps toward a better Web site design," in: *Bangkok Post*, 2000.

Hornbaek, K., and Frokjaer, E. "Reading of Electronic Documents: The Usability of Linear, Fisheye, and Overview+Detail Interfaces," *Human-Computer Interaction* (3:1) 2001, pp 293-300.

Huizingh, E. "The Content and Design of Websites: An Empirical study," *Information & Management* (37:3) 2000, pp 123-134.

Hunter, M.G. "The Use of RepGrids to Gather Interview Data About Information Systems Analysts," *Information Systems Journal* (7) 1997, pp 67-81.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Hunter, M.G., and Beck, J.E. "Using Repertory Grids to Conduct Cross-Cultural Information Systems Research," *Information Systems Research* (11:1), March 2000, pp 93-101.

Kelly, G.A. *The Psychology of Personal Constructs* New York: Norton, 1955.

Kim, S., and Stoel, L. "Dimensional hierarchy of retail website quality," *Information & Management* (41:5) 2004, pp 619-633.

Koufaris, M. "Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior," *Information Systems Research* (13:2), June 2002, pp 205-223.

Lee, K.C., and Lee, S. "A Cognitive Map Simulation Approach to Adjusting the Design Factors of The Electronic Commerce Web Sites," *Expert Systems with Applications* (24) 2003, pp 1-11.

Lindgaard, G., and Dudek, C. "What is this evasive beast we call user satisfaction?," *Interacting with Computers* (15) 2003, pp 429-452.

Marsden, D., and Littler, D. "Exploring consumer product construct systems with the repertory grid technique," *Qualitative Market Research* (3:3) 2000a, pp 127-143.

Marsden, D., and Littler, D. "Repertory grid technique - An interpretive research framework," *European Journal of Marketing* (34:7) 2000b, pp 816-834.

McKinney, V., Kanghyun, Y., and Zahedi, F.M. "The measurement of web-customer satisfaction: An expectation and disconfirmation approach," *Information Systems Research* (13:3) 2002, pp 296-315.

Moynihan, T. "An Inventory of Personal Constructs for Information Systems Project Risk Researchers," *Journal of Information Technology* (11) 1996, pp 359-371.

Napier, N.P., Keil, M., and Tan, F.B. "The Skills of Successful IT Project Managers: An Exploratory Study Using the Repertory Grid Technique," Proceedings of the 2006 Academy of Management Conference, Atlanta, Georgia, 2006.

O'Shaughnessy, J., and Holbrook, M.B. "Understanding consumer behaviour: the linguistic turn in marketing research," *Journal of Marketing Research Society* (30:2) 1988, pp 197-223.

Osman, H. "Insight with President of AC Nielson's E-Ratings.com --William Pulver," channelnewsasia.com, 2002.

Palmer, J.W. "Web Site Usability, Design, and Performance Metrics," *Information Systems Research* (13:2), June 2002 2002, pp 151-167.

Ranganathan, C., and Ganapathy, S. "Key dimensions of business-to-consumer websites," *Information & Management* (39) 2002, pp 457-465.

Scapin, D.L.S., and Bastien, J.M.C. "Ergonomic criteria for evaluating the ergonomic quality of interactive systems," *Behaviour & Information Technology* (16:4/5) 1997, pp 220-231.

Schubert, P., and Dettling, W. "Extended Web Assessment Model (EWAM) - Evaluation of E-Commerce Applications From the Customer's Viewpoint," HICSS-35, Hawaii, 2002.

Shneiderman, B. *Designing the User Interface: Strategies for Effective Human-Computer Interaction* Addison-Wesley, 1998.

Skadberg, Y.X., and Kimmel, J.R. "Visitors' flow experience while browsing a Web site: its measurement, contributing factors and consequences," *Computers in Human Behavior*), article in press 2003.

Spink, A. "A user-centred approach to evaluating human interaction with Web search engines: an exploratory study," *Information Processing and Management* (38) 2002, pp 401-426.

Straub, D., and Watson, R. "Transformational Issues in Researching IS and Net-Enabled Organisations," *Information Systems Research* (12) 2001, pp 337-345.

Strauss, A.L. *Qualitative Analysis for Social Scientists* Cambridge University Press, New York, 1987.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6

Subramaniam, C., Shaw, M.J., and Gardner, D.M. "Product Marketing and Channel Management in Electronic Commerce," *Information Systems Frontiers* (1) 2000, pp 363-379.

Sutcliffe, A. "Heuristic Evaluation of Website's Attractiveness and Usability," *Lecture Notes in Computer Science* (2220) 2001, pp 183-198.

Tan, F.B., and Gallupe, R.B. "Aligning Business and Information Systems Thinking: A Cognitive Approach," *IEEE Transactions on Engineering Management* (53:2), May 2006, pp 223-237.

Tan, F.B., and Hunter, M.G. "The Repertory Grid Technique: A Method for the Study of Cognition in Information Systems," *MIS Quarterly* (26:1) 2002, pp 39-57.

Teo, T., Lim, V., and Lai, R. "Intrinsic and Extrinsic motivation in Internet Usage," *Omega* (27) 1999, pp 25-37.

Venkatesh, V., and Ramesh, V. "Web and wireless site usability: Understanding differences and modeling use," *MIS Quarterly* (30:1) 2006, pp 181-205.

Whyte, G., Bytheway, A., and Edwards, C. "Understanding user perceptions of information systems success," *Journal of Strategic Information Systems* (6) 1997, pp 35-68.

Yen, B.P.C. "The design and evaluation of accessibility on web navigation," *Decision Support Systems* (42) 2007, pp 2219-2235.

Zhang, X., and Chignell, M. "Assessment of the Effects of User Characteristics on Mental Models of Information Retrieval Systems," *Journal of the American Society for Information Science and Technology* (52:6), 459 2001, p 445.

Customer 5/19/07 11:51 PM
Deleted: 6

JT 11/15/06 12:58 AM
Inserted: 6