A STUDY OF WEB-DESIGNERS' CRITERIA FOR EFFECTIVE BUSINESS-TO-CONSUMER (B2C) WEBSITES USING THE REPERTORY GRID TECHNIQUE

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ABSTRACT

Organizations are increasingly using websites not only to capture but also to build relationships with their desired markets. A clear understanding of how best to design effective B2C websites (for both e-commerce and e-service) is therefore vital. Despite its importance, 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. The relationships amongst attributes are also explored. Twenty web-designers were interviewed using the Repertory Grid Technique in order to elicit factors that they consider important when designing or developing B2C websites. Using a data reduction approach, the elicited attributes were then classified into 14 meta-categories. These meta-categories were compared to prior research. We found that although several meta-categories have been extensively covered in the literature, little attention have been paid to some meta-categories including 'Establishing Website Identity'; 'Categorization of Information'; 'Presentation of Information'; 'Advertisements, Pop-Ups and Animation"; and "Headlines". The inductive approach also permitted the elicitation of the relationships among these meta-categories, giving us a richer understanding of how different website characteristics influence each other. Implications and future research are discussed.

Keywords: repertory grid technique, websites effectiveness, web-designers

1. Introduction

In recent years, we have witnessed an explosive growth in electronic commerce/service [Cyr et al. 2007] and net-enabled organizations [Straub and Watson 2001]. More firms and start ups are choosing the Web to build brand reputation, to transact with web-users and investors, or for public relations purposes [Subramaniam et al. 2000]. For example, according to Forrester Research [Mulpuru 2008] US online retail reached $175 billion in 2007 and is projected to grow to $335 billion by 2012. An important characteristic of online shopping is that consumers have to base their judgments on product information presented on these websites. As a consequence, website design plays a significant role in affecting consumers' online shopping performance and attitude toward the websites [Palmer 2002]. In particular, the design of websites can influence visitors' decision to purchase and return to the site.

In order to facilitate good web design, there is a need to answer the question: "What factors (constructs) do web-designers consider important when designing effective business-to-consumer (B2C) websites?" In other words, the purposes of this study are to: 1) identify the attributes of effective B2C websites as construed by web-designers, and 2) explore the relationships among these attributes.

This paper focuses on the web-designers' rather than the web-users' perspective. To successfully understand what good web design is about, we argue that there is a need to consider beyond web-users by examining the web-designers' perspective of website effectiveness. Current research on web effectiveness has largely focused on web-

users perspectives [Kumar and Benbasat 2006; Webster and Ahuja 2006]. Users' views have been studied more extensively because serving users' needs is the primary objective of websites [Mithas et al. 2006; Venkatesh and Ramesh 2006]. These works tend to emphasize issues relating to the use and usability of the websites rather than directly on the design factors, and hence are limited as they only provide a user-centric view to improving 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 that have examined the web-designers' perspective [Huizingh 2000; Geissler 2001; Loiacono et al. 2007]. 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, colors, font style and size, mix of text and graphical information and sort, shape, size and placement of links [Huizingh 2000; Geissler 2001]. It can be seen from these criteria that web-designers provided criteria for both the technical aspects of the design of websites as well as those likely to be raised by 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.

Furthermore, prior studies mainly examined how different website characteristics affect website effectiveness [Agarwal and Venkatesh 2002; Venkatesh and Ramesh 2006]. What remains relatively unexplored empirically is how these website characteristics affect one another, and consequently influence the final website effectiveness. Our research therefore also explores the relationships among different website attributes.

This paper also differs from earlier studies that have explored the web-designers' perspective in one important aspect -- it uses an inductive approach, the Repertory Grid Technique (RGT), to elicit a comprehensive set of B2C e-commerce/e-service website effectiveness factors (constructs) based on the experiences of web-designers.

The RGT allows us to generate a large amount of in-depth, qualitative and narrative information relating to the attributes web-designer consider important to effective B2C websites. These data were classified into 14 meta-categories. We compared these meta-categories with factors uncovered from extant literature on the evaluation and effectiveness of B2C websites. The comparison brought to light the factors that web-designers considered important in practice but were not adequately covered in prior research. Based on rich qualitative data, we also explored relationships among these meta-categories, and identified some potential research opportunities.

The rest of the paper is organized as follows. First, we review the extant literature and introduce some frameworks that examine web design. Next, we present our research methodology that uses RGT. Further, we analyze the comments of our participants and present our findings. Finally, we conclude with a discussion that summarizes implications. Limitation and Future research are also discussed.

2. Background and Literature Review

2.1. B2C Websites, Evaluation, and Effectiveness

B2C websites are the focus of our study. They can be defined as sites on the World Wide Web through which customer can obtain products or services from B2C companies (not other customers). These websites can be commercial in that a payment is necessary for exchange or non-commercial, and can take any form ranging from tangibles such as computers 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 web-user's purchase decision while the design helps to attract and retain his/her interest at a site [Ranganathan and Ganapathy 2002].

B2C website evaluation can take the form of an external evaluation which pertains to the evaluation of information a third party can get out of a certain website or the impression one gets when visiting the site, or internal evaluation, which is based on the information that may be available only to a site's operator, such as log files or click stream information [Treiblmaier 2007]. This study taps on the designer's cognitive evaluation of B2C websites; that is, their external evaluation of these websites.

Website effectiveness has been widely studied in the extant literature, but there is no general definition because effectiveness assessments depend upon the perspective of the evaluator and the referents used in the comparisons [Welch and Pandey 2007]. "Effectiveness" factors can be user-related, function-related or investor-related. For one, prior research has used many user-focused criteria to evaluate B2C websites, including website usability [Venkatesh and Ramesh 2006; Tung et al. 2009], customer loyalty [Mithas et al. 2006], customer purchase intention [Song and Zahedi 2005], likelihood of return [Palmer 2002], and customer satisfaction [McKinney et al. 2002]. These studies look at website effectiveness from the perspective of whether it meets web-users' needs. Second, function-related criteria, which include architectural quality [Kim et al. 2002] and website quality [Aladwani and Palvia 2002], take the perspective that an effective website is one that is functionally efficient. Finally, investor-related criteria of success includes corporate success [Madeja and Schoder 2003], performance of the website [Huizingh 2002], web

operational effectiveness [Lii et al. 2004], and a measure of whether the website meets the target set up by the investor and can be tangible or intangible.

Studies of IS effectiveness are rooted in those of IS success. Prior literature has indicated that IS effectiveness is a multidimensional construct, and there is no single, over-arching measure of IS effectiveness [DeLone and McLean 1992; Pitt et al. 1995; Grover et al. 1996; Seddon et al. 2002]. As such, we define website effectiveness as a comprehensive indicator of website system quality (e.g. website security and reliability), website content/information quality (e.g. relevance and quality of information), website service quality (e.g. purchase facilitation), website use (e.g. use frequency of online shopping function), web-user satisfaction, individual impact (e.g. intention to purchase or return), and organizational impact (e.g. performance and investor's benefits).

In this study, we asked web-designers to identify important factors when they design or develop websites, without explicitly emphasizing a particular perspective thereby allowing for a more holistic approach.

2.2. Prior Research

To understand the state of the research in this area, and to identify the research gaps that exist in the extant literature, we first extracted relevant studies in this area. Keywords "Website or Web or Site" and "Evaluation or Effectiveness or Usability or Design" were used to search for papers (online database EBSCOhost, ABI and ScienceDirect Online) in major IS and management journals (such as MISQ, ISR, JMIS, AMJ, OS, MS, DATA BASE, Decision Sciences, Decision Support Systems, Information and Management, European Journal of Information Systems, Information Systems Journal, Journal of Strategic Information Systems, International Journal of Human-Computer Interaction, International Journal of Electronic Commerce, Journal of Electronic Commerce Research, and Journal of Electronic Commerce in Organizations). We only focused on these top journals due to huge amount of papers in this field. Further we did backward search using the reference list of some of the key papers. We checked the reference of the papers that had been found based on the keyword search, and identified (based on topic) the papers that we needed to include in our research. A total of 42 empirical papers were found. Our subsequent review of the literature revealed the use of several theoretical lenses in prior research into the effectiveness of websites. These lenses have been used to guide researchers in developing their evaluation criteria.

The first is the Technology Acceptance Model (TAM) [Davis 1989] and some extended TAM models. 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 studies use the TAM framework to look at factors affecting the usefulness, ease of use, and the final acceptance of websites. Moon and Kim [2001] extended the TAM model by adding a new construct – perceived playfulness. Further, Ahn et al.[2007], Chung and Tan [2004] and Van der Heijden [2003] examined antecedents for this new model. The second lens used to examine website evaluation is that of Human-computer Interaction (HCI), whereby the notion of usability is a key theme [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 interactivity and reliability [McKinney et al. 2002]; purchase facilitation [Song and Zahedi 2005]; flash use [Hong et al. 2004]; recommendations and consumer reviews system [Kumar and Benbasat 2006], and personalized content services [Liang et al. 2006]. The third lens includes integrated frameworks which incorporated 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 and Palvia 2002]; functional and serviceable factor (hygiene) and value-adding factors (motivator) [Zhang and von Dran 2000]; content, ease of use, made-for-the medium, promotion, emotion [Agarwal and Venkatesh 2002; Venkatesh and Ramesh 2006].

In this study, constructs identified in prior research guided the analyses of the results . We summarize the major constructs covered in prior literature in Table 1.

Table 1: Major constructs of website characteristics in past literature

Theory perspective	Major Constructs	Reference
TAM	Ease of use Product Search Mechanisms, Challenges, Visual representation, Customized design, Navigation, Interactivity, Response time, Ease of understanding, Consistent image, Intuitive operations, Usefulness Functional service, Information service, Content, Access Costs, Perceived information quality, Perceived system quality, Perceived service quality, Tailored information, Informational fit-to-task, , On-line completeness Perceived Playfulness Perceived visual attractiveness, Emotional appeal, Visual appeal, Perceived enjoyment,	[Benbunan-Fich 2001], [Moon and Kim 2001], [Koufaris 2002], [van der Heijden 2003], [Lee and Lee 2003], [Shih 2004], [Kim and Stoel 2004], [Loiacono et al. 2007], [Ahn et al. 2007]
HCI	Presentation flaws, Site breadth, Download Delay, Flash use, Information format, Recommendations system, consumer reviews system, Personalized content services, Website Informativeness, Functionality, Structure, Navigation/Organization, Interactivity, Responsiveness, Information/Content, Promotion, Service, External interpersonal sources, Purchase facilitation, Content relevance, Text, Graphic, Website Accessibility	[Palmer 2002], [Hong et al. 2004], [Hong et al. 2005], [Everard and Galletta 2005], [Song and Zahedi 2005], [Tam and Ho 2006], [Webster and Ahuja 2006], [Galletta et al. 2006], [Kumar and Benbasat 2006], [Liang et al. 2006], [Mithas et al. 2006], [Pavlou et al. 2007], [Mu and Galletta 2007], [Holsapple et al. 2005], [Couture et al. 2005], [Qiu and Benbasat 2005], [Ho and Tam 2005], [Ben-Bassat et al. 2006], [Zhang et al. 2005]
Integrated Frameworks	Relevance, Media use, Depth/breadth, Current information, Goals, Structure, Feedback, Promotion, Community, Personalization, Refinement, Challenge, Plot, Character strength, Pace, Design, Appearance, Specific content, Content quality, Technical adequacy, Navigation structure, Playfulness, Information quality, System quality, Service quality, Relevance, Design, Speed, Readability, Progressiveness, Currentness, Sufficiency, Interactivity, Timeliness, Scope, Access, Enjoyment, User empowerment, Visual appearance, Technical support, Organization of information content, Credibility, Impartiality, Reliability, Security, Privacy, Informational Fit-To-Task, Tailored Information, Trust, Response Time, Ease Of Understanding, Intuitive Operations, Visual Appeal, Innovativeness, Emotional Appeal, Consistent Image, On-Line Completeness, Relative Advantage	[Huizingh 2000], [Liu and Arnett 2000], [Zhang and von Dran 2000], [Zhang and von Dran 2001], [Geissler 2001], [Agarwal and Venkatesh 2002], [Aladwani and Palvia 2002], [McKinney et al. 2002], [Ranganathan and Ganapathy 2002], [Robbins and Stylianou 2003], [Venkatesh and Ramesh 2006], [De Wulf et al. 2006], [Fang and Holsapple 2007], [Loiacono et al. 2007] , [Shergill and Chen 2005], [Hornbat 2006], [Mao et al. 2005]

Notes: This is a representative list that may not include all related research

2.3. Eliciting Web-designers' Constructs and the Repertory Grid Technique

Kelly [1955] devised the RGT to explore personal construct 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 and Chignell 2001]. Table 2 presents the definitions and examples of the technical terms used in this research.

Table 2: The RGT major terms and explanations

Terms	Definition	Application in our study
Element	A thing or event that is focused on when inviting a person to think about a situation. They can be people, situations or even events, which allow the constructs to be expressed.	The websites that the interviewees are to evaluate.
Triading	Generating three elements at a time for the purpose of eliciting constructs.	Randomly generate three websites for comparison and evaluation.
Construct	It is an adjective to describe any similarity we have noted between elements that makes them different from other elements.	The description(s) of the websites given by the interviewees. E.g. colorful words
Laddering	A questioning technique about meanings to give greater understanding to what is being said. This allows the analyst to compare data more accurately. Questions like 'What?' and 'How?' are asked.	E.g.: 'What do you mean by user friendly?' 'How are the presentations different?'

The RGT is a flexible, yet systematic methodology that integrates both qualitative and quantitative analysis [Beail 1985; Marsden and Littler 2000] on a given domain of discourse, and it has been widely used in qualitative market research [Marsden and Littler 2000]. 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. 2009], while Tan and Gallupe [2006] used the RGT to explore the cognitive thinking of business and IS executives.

The RGT is used for two reasons. First, at the conceptual level, we argue that existing research on website effectiveness, from both the web-user'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 and Palvia 2002]. For instance, with the emergence and widespread acceptance of Human-Computer Interaction (HCI) [Hartson 1998], huge emphasis has been placed on studying websites' usability [Hornbaek and Frokjaer 2001]. Second, at the methods level, most website evaluation/effectiveness research methodology use pre-determined structures. Examples include the use of pre-structured questionnaires to collect data for analysis [Teo et al. 1999; Agosto 2002; Ranganathan and Ganapathy 2002; Spink 2002] and pre-designed or scripted actions that govern the way participants walkthrough a website in a simulated or laboratory environment [Hallahan 2000; Hornbaek and Frokjaer 2001]. These methods can limit the scope of information obtained as researchers explore specific selected aspects of web design.

3. Research Methodology

3.1. 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 and Hunter 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 [Singapore] (This is a directory containing vendor listings of services, software and hardware retailers). As this directory consists of software companies that provide both traditional and online business solutions for e-commerce/e-service capabilities, potential respondents would be more easily located.

Sorting the list alphabetically , we then applied a modified systematic sampling procedure for sample selection. This involved starting with one randomly selected record and subsequently using a predetermined selection interval (in our case, 5s) to identify every 'nth' record to form the sample. The first round yielded only 10 confirmed participants. In this round, we started with the fifth record in the list producing 202 records upon application of the selection interval.

As the number of respondents fell short of the targeted 25, a second round of sampling was carried out. This time round, we started at the second record and applied a selection interval of five on the same retailer listing so as to maintain a certain level of consistency. We obtained 203 companies and proceeded to contact them by phone. We were able to confirm another 10 participants from the second round of sampling, making up a total of 20.

3.2. The Repertory Grid Interview Process

There are two steps to the RGT approach in this study – element selection and 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 e-commerce or e-service websites. A minimum of six elements is required in order to provide sufficient triads for use in the second step [Tan and Hunter 2002]. The websites included are Yahoo!, MSN, Singapore Telecom, Pacific Internet, AOL websites and Lycos. These websites were chosen because they were among the top ten most popular B2C websites based on Nielsen/NetRatings Singapore Internet audience activity report for April 2000 [Osman 2002]. As these sites draw large audience, our respondents were deemed to have the minimal knowledge of them required to provide insight for our study.

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 had surfed the six websites stipulated. Respondents also had an option to browse unscripted, the websites for up to 10 minutes at their own workstations before the interview commenced if they wished to do so. 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 the factors (i.e. constructs) and their underlying meanings [Dalton and Dunnett 1992; Marsden and Littler 2000]. Two interviewing methods, "triading" and "laddering", were employed to achieve this.

Triading [Kelly 1955] involves the participant selecting three elements (websites) at random and differentiating them in terms of what the participant considers as effective website design. Instead of the participant manually selecting three elements (the triad set), we used a software tool called Enquire Within to randomly generate the triad set. The participant was then asked to identify, how two of them were similar and yet different from the third, in terms of what s/he, as a web-designer, considered important when designing or developing websites. The labels for the identified construct and its contrast form a bi-polar e.g. good navigation – poor navigation.

The "laddering" method is then used to elaborate on the elicited construct. A series of general probing questions (that is, how, what and why) were employed in the laddering process. For example, the respondent might be asked which pole of the construct they prefer (e.g. good or poor navigation), or how and why they think that particular aspect affects the websites. We, as interviewers, were cautious not to ask misleading questions to affect the interviewee's views and responses. All elicited constructs and their underlying meanings were keyed into the EW software in this step. 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. All participants finished the interview. On average, each participant spent forty minutes in "triading" and "laddering" process.

To conclude the interview, participants were requested to fill up a demographic sheet and indicate their relevant expertise as web-designers. Six pilot interviews were conducted with university students with web design experience. Feedback from these pilot interviews ensured that the actual interviews can be conducted smoothly and consistently.

3.3. Analysis of Data

Eleven males and nine female web-designers participated in this study. Their jobs were related to web-design, but only half of them indicated their job designations as "Web-designer/Developer/Specialist". Others indicated positions such as Media Designer, Art Designer and Software Engineer. All the designers are based in Singapore. They were mostly between 21-30 years of age and had more than two years experience in web design. On average, all participants surf the Internet several times a day for up to five hours each time. 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 and Beck 2000]. The twenty participants provided 382 comments. This section describes how we analyzed our rich findings to generate the meta-categories. A walkthrough using examples from our data will be presented. We used a three-layer classification scheme to categorize the data collected, namely class, conceptualization and meta-category, The interpretations and labels we assigned to each of these layers were informed by literature on website evaluation/effectiveness.

In order to facilitate classification of the comments, two coders first read all comments and then analyzed the comments to derive any common themes individually. To identify the inter-coder reliability, Cohen's kappa coefficient was calculated to present the agreement between two coders. Cohen's kappa coefficient is a statistical measure of inter-rater agreement for qualitative (categorical) items. It is generally thought to be a more robust

measure than simple percent agreement calculation since it takes into account the agreement occurring by chance. The equation for Cohen's kappa coefficient is: [Pr(a) - Pr(e)]/ [1 - Pr(e)]. where Pr(a) is the relative observed agreement among raters, and Pr(e) is the hypothetical probability of chance agreement, using the observed data to calculate the probabilities of each observer randomly saying each category. A kappa reliability of 71.8% showed substantial agreement between two coders [Landis and Koch 1977]. After two coders finished their own coding, they discussed and came to an agreement on all classifications. Grounded Theory was not directly employed in this paper. In particular, we adopted a data reduction approach that involves a close and repeated reading of personal comments elicited for effective categorization [Miles and Huberman 1994; Bacon and Fitzgerald 2001]. An intensive comparison process is required to compare each comment with every other, identifying similarities or differences and deriving a meaningful definition ultimately. Bacon and Fitzgerald [2001] summarized this approach as follows:

1. Categorization of occurrences/incidents/examples with common characteristics, and coding as many categories as possible,
2. Identification of the attributes of each category through constant comparison between occurrences and categories, so as to consolidate the categories,
3. Reduction of the number of categories to a minimal set, through parsimony, and
4. Use of a framework to generate a systematic, substantive theory that suggests a plausible representation of the data and overall subject studied.

To illustrate our analysis process, we use comments obtained from three respondents. An example of our analysis is provided in Appendix A.

4. Findings

Based on the same method, the comments were then grouped into 56 classes. Forty-six conceptualizations were obtained from these classes and fourteen meta-categories were derived. Appendix B presents a list of the 14 meta-categories, their underlying conceptualizations, classes and a sample of the comments that make up the meta-categories.

We also tabulated the number of comments against the meta-categories to indicate the relative frequency of the comments as identified by the designers. For each meta-category, we looked at the sub-categories as well as the associated comments and provided a brief definition of the meta-category. Table 3 presents the 14 meta-categories, their definitions, and the number of comments in each category. The result shows that "Navigation" and "Content/ Information" are two meta-categories our participants consider relatively more important (covering over 25% of comments elicited) based on how frequently the comments emerged. Other important meta-categories (covering more than the next 50%) clearly indicated the designer's perspective because these meta-categories include design details such as "Categorization of information", "Color usage", "Layout/ space usage", "Graphics usage", "Establishing website's identity" and "Presentation of information." In the discussion section below, we will discuss each meta-category in more detail.

5. Discussion

In this study, we have translated web-designers' practice into the set of criteria they considered important when designing websites. The application of the RGT yielded rich and relevant qualitative data from the interviews. Detailed comments provided descriptive support and subsequently were analyzed to identify the emerging meta-categories. The findings of this study as presented above represented a comprehensive list of important considerations web-designers should take into account when designing and developing B2C websites.

Table 3: Definitions of the Meta-Categories

Category	Definition	No. of comments
Navigation	The features used in designing the site that facilitates transition from page to page	52
Content/ Information	Mainly the scope and quality of information	49
Categorization of Information	Refers to ways of grouping information on the pages in order to facilitate reading	38
Color usage	Concerns the usage and choice of colors used	37
Layout/ Space Usage	How web space is utilized to present the features and functions across the pages within the website	36
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 organized	33
Establishing Website's Identity	Various methods web-designers use to portray its unique image	32
Presentation of information	Concerns the implications of using colors, fonts and display styles to present information	23
Visual Appearance	How the website looks and the impact it effects	19
Updates	Design considerations with respect to websites update	16
Advertisements/ Pop-ups/ Animation	The purpose and extent of usage of such features	15
Text Usage	Relates to the purpose of using a text-based interface	14
Downloading Time	Factors in designing that impacts speed of downloading	9
Headlines	Covers the objective and extent of headline usage	9

To further our discussion of each meta-category and to relate the results of our study to the extant literature, we sorted existing research that we have reviewed into each of the 14 meta-categories and summarized the results in Table 4. We will first discuss the meta-categories that appear to be "under-presented" in terms of previous research in order to highlight research opportunities in these research areas. These "under-presented" meta-categories include: "Establishing website's identity", "categorization of information", "presentation of information", "advertisements, pop-ups, and animation" and "headlines". The discussion and comparison with prior literature will highlight the factors that web-designers considered in practice but were not adequately covered in prior research. For the discussion of meta-categories that are "well-represented in the literature", please refer to Appendix C.

Finally, we end the discussion with an exploration of relationships amongst these meta-categories as brought out by the comments of the designers. Based on rich qualitative data, we highlight the relationships among these meta-categories, and identify some potential research opportunities.

Table 4: Comparison between our Meta-Categories and previous research framework

Our Category	Previous research framework
Navigation	[Huizingh 2000], [Robbins and Stylianou 2003], [Zhang and von Dran 2000], [Zhang and von Dran 2001], [Aladwani and Palvia 2002], [De Wulf et al. 2006], [Ranganathan and Ganapathy 2002], [Palmer 2002], [Agarwal and Venkatesh 2002]
Content/ Information	[Huizingh 2000], [Robbins and Stylianou 2003], [Liu and Arnett 2000] [Geissler 2001], [Zhang and von Dran 2000], [Zhang and von Dran 2001], [De Wulf et al. 2006], [Aladwani and Palvia 2002], [Ranganathan and Ganapathy 2002], [Kim and Stoel 2004], [Mithas et al. 2006], [Palmer 2002], [Agarwal and Venkatesh 2002]
Categorization of Information	[Huizingh 2000]
Color usage	[Huizingh 2000], [Aladwani and Palvia 2002], [De Wulf et al. 2006], [Robbins and Stylianou 2003], Agarwal and Venkatesh [2002]
Layout/ Space Usage	[Geissler 2001], [Zhang and von Dran 2000], [Zhang and von Dran 2001], [De Wulf et al. 2006], [Mithas et al. 2006], [Agarwal and Venkatesh 2002]
Graphics Usage	[Huizingh 2000], [Robbins and Stylianou 2003], [Zhang and von Dran 2000] [Zhang and von Dran 2001], [Aladwani and Palvia 2002], [De Wulf et al. 2006], [Kim and Stoel 2004], [Agarwal and Venkatesh 2002]
Establishing Website's Identity	[Loiacono et al. 2007], [Micha et al. 2005].
Presentation of information	[Huizingh 2000], [Robbins and Stylianou 2003]
Visual Appearance	[Zhang and von Dran 2000], [Zhang and von Dran 2001], [Aladwani and Palvia 2002], [De Wulf et al. 2006]
Updates	[Zhang and von Dran 2000], [Zhang and von Dran 2001], [De Wulf et al. 2006], [Robbins and Stylianou 2003], [Liu and Arnett 2000]
Advertisements/ Pop-ups/ Animation	[Huizingh 2000], [Robbins and Stylianou 2003], [Agarwal and Venkatesh 2002], [Hong et al. 2004],
Text Usage	[Huizingh 2000], [Robbins and Stylianou 2003], [Aladwani and Palvia 2002], [De Wulf et al. 2006], [Agarwal and Venkatesh 2002]
Downloading Time	[Geissler 2001], [Robbins and Stylianou 2003], [De Wulf et al. 2006], [Kim and Stoel 2004], [Palmer 2002]
Headlines	[Liang et al. 2006]

Notes: This is a representative list that may not include all related research

5.1. Research Gap -- Meta-categories under-represented in prior research

Establishing Website's Identity

Our participants raised the importance of promoting corporate identity through a website. Various responses highlighted the use of visual characteristics like corporate colors or logos to portray a unique image. For example, a respondent stated:

"Use of logo to portray corporate identity and image of website (e.g. Lycos: a dog to give impression that company and website is fun and daring; MSN: a butterfly to portray company and website as more corporate and graceful)"

Moreover, our participants highlighted that maintaining consistency of subsequent web pages within the site and with respect to other promotional media aids in projecting a close-knit corporate image. Another respondent argued:

"Similar design and layout throughout the pages creates a strong identity with the users. Synchronizing website with other forms of corporate media or ads creates identity, very captivating."

According to our literature review, this dimension has only been examined in one information systems (IS) paper [Loiacono et al. 2007]. Going beyond the IS discipline, we were only able to find one study in tourism suggesting that websites of tourist destinations should have their own identity [Micha et al. 2005]. However, despite

the lack of literature covering the area of promoting corporate identity through a website, this meta-category proved to be an important consideration in web design among our participants as they provided 32 comments about promoting corporate identity through a website.

Categorization of Information

Having superior presentation styles can facilitate the interpretation of the information [Huizingh 2000]. Hong et al. [2005], for instance, found that when there was a match between the information format and the shopping task, web-users could search the information space more efficiently and have better recall of product information. Specifically, the list format better supported browsing tasks, and the matrix format facilitated searching tasks.

Our participants mentioned that they tended to understand the relationships between topics better if different formats and location (columns and frames) were 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. For example, a respondent stated:

"Having columnar layout allows easy grouping of information, and using header bands (i.e. Colored bands on headlines/taglines; highlight headlines/taglines with colors) make categories more prominent."

As for "location", participants reflected that clearly defined sections make searching for information easy. Segregation by nature of content also appeared an efficient way to organize information. Participants suggested that using hierarchical structures with the different layers of in-depth information or linear structures with the various content topics could do this. Participants also provided specific ways of linear classification: by regions, products or business functions. Prior research has seldom highlighted such specific findings on information categorization.

Presentation of Information

Scapin and Bastien [1997] stated that legibility (distinct characteristics that stimulate reading of the information contents, which included character brightness, contrast between the letter and the background, font size, inter-word spacing, line spacing, paragraph spacing, line length, etc) was one crucial aspect in web design.

Our findings also showed that presentation of information critically impacts web design. Participants indicated that effective contrasts between the text and background such as having color text against white background, improves readability. For example, a respondent suggested:

"Should not have text falling on solid color background as this will cause text to be harder to read. With white background, the texts and graphics stand out and blend in more easily to allow people to see clearly."

Additionally, display of information should not be too cramped such that users lose interest in the website. Geissler [2001] indicated web-designers frequently commented that online web-users were impatient, they suggested the homepage should be "clean", "clear", "relatively simple", "fast-loading", and recommended limiting the size of the homepage to one page or screen. Our participants also found that information presented at one glance made reading easier. Designs that catered to all screen resolutions were also mentioned as a way to facilitate navigation where minimal scrolling was required. Another respondent suggested:

"Should not display too much information on first page as will be harder for user to find what they want when they do not know the focus. Putting everything in one screen so that user will not have to scroll up and down to find what they want, creating much inconvenience for them"

This meta-category proved to be an important consideration in web design among our participants as they provided 23 comments about presentation of information, but only a few papers have examined this topic.

Advertisements, Pop-ups, and Animation

With the widespread adoption of Internet technologies such as Java, animation has become much easier to create and increasingly popular on the Web. Flashing objects, pop-ups, and moving text are used to attract users' attention. Hong et al. [2004] confirmed that flash did attract users' attention and facilitated quicker location of the flashed target item in tightly packed screen displays. And they also pointed out that flashing an item might not increase the recall of that item, it could reduce the recall of other items (especially the non-target items) on the screen. Finally, the use of flash had negative effects on downloading time, users' focused attention and attitude towards using the website [Aladwani and Palvia 2002; Hong et al. 2004; Galletta et al. 2006].

Our participants also suggested constructs relating to the use and purpose behind using pop-ups, flash, applets or banners. Specifically, while such media were more attention grabbing, participants pointed out that excessive use of them could be distracting and would create lost traffic, which translated into reduced behavioral intention and user satisfaction. For example, a respondent suggested:

"Should not have advertisements 'running' across the screen, should not hard sell -- put user off to certain extent when applets block icons or features that users want to click."

This echoes Sutcliffe [2001]'s claim that having too many animated banners competing with one another made the site annoying. Therefore appropriate use of advertisements had an effect on 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 would affect users' satisfaction with the site.

Headlines

Our participants contended that taglines, together with graphics and links, cue users on what to expect when s/he activated a hyperlink. This could reduce confusion and attract users' attention, resulting in greater tendency for users to click on the links. Headlines would also make navigation on the sites easier when users know where to find the information that they want more efficiently. For example, a respondent argued:

> *"More headlines on homepage to catch users' attention to attract them to website to read more, give impression of website being informative. Clearer headlines to help user get idea of what to expect when he clicks on a link"*

Prior literature seldom examined headlines as a separate construct; rather, they are often included or mentioned in studies on navigation, links, and visual appearance. Only Liang et al. [2006] compared personalized content recommendation and traditional headline news approach to examine the effect of reducing information overload.

5.2. Further Analysis of Qualitative Data

In the analysis of the comments by the web-designers above, we grouped the comments into fourteen meta-categories and 46 conceptualizations. These meta-categories and conceptualizations were thus far presented in the form of a list without exploring the relationships amongst the meta-categories or conceptualizations. Next, we present a further analysis of these comments as we explore the relationships amongst the conceptualizations. We found that the participating web-designers offered insightful comments that suggested links between some meta-categories. In the following section, we present a further analysis of these comments and portray these suggested links in the form of a concept map (see Figure 1). We also highlight 3 clusters of relationships that form potential directions for further research.

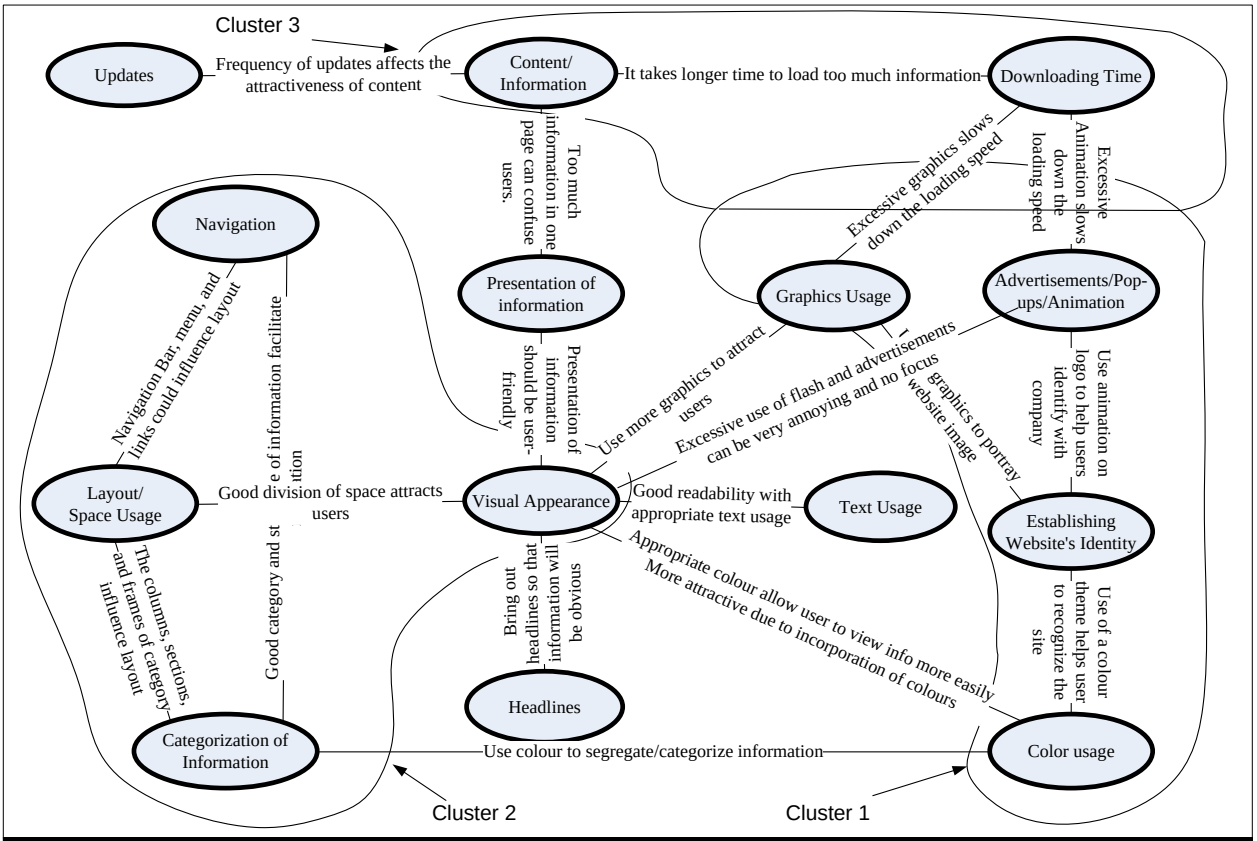

Figure 1: Relationships among meta-categories

In terms of Cluster 1, our participants suggested to "Use animation on logo to help users identify with company"; "Use graphics to portray website image"; and "Use of a color theme helps user to recognize the site" - taken as a whole, can influence website's identity. Similarly, according to Cluster 2, our participants also argued that "Navigation Bar, menu, and links could influence layout"; "The column, section, and frames of category influence layout"; and "Good division of space attracts users". These comments imply that navigation and categorization of information influences layout/space usage, and indirectly affects visual appearance. Likewise, with Cluster 3, our participants indicated that "It takes longer time to load too much information"; "Excessive graphics slows down the loading speed"; and "Excessive Animation slows down the loading speed". These suggest that both the information volume and media use affected downloading time. Some of these relationships had been examined in prior research, such as excess media use slowing down loading speed [Hong et al. 2004], but the other relationships had not received much attention in the literature as far as we can discern. We argue that the relationships we diagrammed above have the potential to offer opportunities for further research on website effectiveness and Figure 1 above proposes an exploratory model of potential relationships amongst the meta-categories.

5.3. Implications for Research and Practice

Taken as a whole, the results of our study have several implications for research and practice: First, we found several meta-categories that were under-studied in the extant literature. Our participants raised the importance of "Promoting corporate identity" through a website, as well as the importance of "Categorization of information", "Presentation of information", "Advertisements, pop-ups and Animation" and "Headlines". Various responses highlighted that these meta-categories were related to some dependent variables such as "Ease of use", "User satisfaction" and "Website success". These findings, we argue, may prove to be important considerations for future research in this area.

Second, we highlighted some relationships amongst the meta-categories based on the comments of the web-designers. The web-designers, in providing comments about website effectiveness, also gave significant insights on the relationships amongst the constructs. The results highlighted some interesting research opportunities. Given the lack of a comprehensive research model in this area, we argue that it may be fruitful for future research to expand on this and focus on exploring the relationships amongst the meta-categories.

Third, our study is one of the first to use the RGT in web-design research. The RGT has not been employed in any web-design research in the past as most adopted the interview and survey approaches [Chao et al. 1999; Benbunan-Fich 2001; Card et al. 2001].

Lastly, prior literature tended to use pre-determined structures – i.e. pre-structured questionnaires or pre-designed or scripted actions to collect data for analysis. In contrast, we used an inductive approach – the RGT to generate web-designers' comments. This technique was effective in generating more than 380 valuable comments from 20 web-designers. RGT allowed our participants to express their views in their own words and provided richer information, which facilitated better understanding of web-designers' perspective. In other words, this study facilitated the elicitation and understanding of a comprehensive set of determinants of website effectiveness that can be tested for validity in future research. An enhanced understanding will guide future research on issues such as matching of what web users want and what the web-designers provide through their designs so as to uncover any discrepancies between the two. In terms of implications for practice, this will allow web-designers to develop websites that can more effectively attract and retain customers. In addition, these determinants can aid companies providing web-designing solutions or commercial companies that own websites in designing appropriate metrics for collecting feedback pertaining to user acceptance of their websites.

6. Conclusion

To sum up, we have shown that using the RGT has indeed elicited more in-depth and specific design factors that address our research objectives. We highlight some factors that web-designers consider in their design but have received little or no attention in the extant literature; meanwhile they also provide more explanations and details about existing website characteristics (e.g. the relationships among them). Finally, The potential relationships between the meta-categories in this research and those related to various external dependent variables offer opportunities for further research.

Our study is however limited in a number of ways. First of all, we have defined B2C sites broadly and the selection of six B2C sites is not meant to be representative of all B2C sites. However, taken as a whole, the interviews have included some service-based sites as well as sites that offer online shopping sections such as Yahoo! and Singapore Telecom. Thus, we believe that our paper covers a representative sample of B2C sites.

Secondly, as we only interviewed 20 web-designers, our findings cannot be generalized to the larger population. For example, a disable web-designer may provide unique opinion for web design. 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.

Thirdly, in coming up with our meta-categories, the researchers were careful to ensure that their definitions and subsequent explanations are clear. However, some meta-categories which we have classified as separate

meta-categories may have been discussed together in prior literature. 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 presented some important considerations web-designers took into account when designing and developing B2C websites. Following this, further research can include the validation of the relative importance of the meta-categories that has surfaced in this study. As suggested above, potential areas of research can also include coming up with a research model relating the meta-categories to one another as well as to external dependent variables. Additionally, future research can consider a longitudinal approach so as to observe the evolving effect of these meta-categories over time [Zhang and von Dran 2001].

Finally, Yen [2007] commented that there was a lack of discussion on the "balance between the designer's expectation and the user's desire". Future research can focus on uncovering and solving any discrepancies between what the web-designers can provide through their designs and what web users want.

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APPENDIX A

For instance, Respondent A provided the following:

1. structure is hierarchical for website that provide more detailed information, with links and branches, and many levels to present information with more depth vs. broad and shallow structure for website that provide brief and concise information with little details or layers, straight to the point)
2. classify information properly in categories

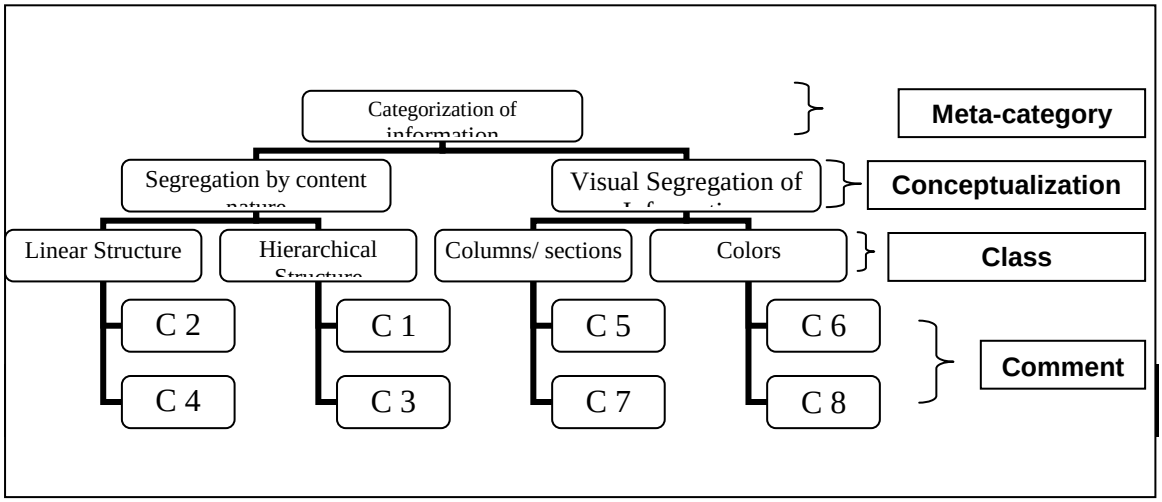
Respondent B provided the following:

3. more focused in terms of organization, users can follow the flow of information through the layers of information
4. categorizes their content into different subjects and topics where users can find information more easily
5. arranging information with pictures and classified into columns
6. use of color to segregate/categorize information into sections make reading easier, make finding information easier

Respondent C provided the following:

7. breaks into columns and sections, more clear-cut and easy to read
8. use of colors to differentiate the hierarchy of information

Firstly, we grouped comments one and three together. Given that both relate to categorizing information into layers, we named it "Hierarchical Structure". Comments two and four pertained to mainly topic information with no layers of depth involved; thus named as "Linear Structure". These two classes collectively refer to the conceptualization "**Segregation by content nature**". Comments five and seven referred to classification of information by "Columns/ sections"; six and eight reflected information segregated by "Colors"-- both classes form the conceptualization **"Visual segregation of information".** The two conceptualizations, "segregation by content nature" and "visual segregation of information" jointly form a meta-category **"Categorization of information"**. This example was classified accordingly as presented in Figure 2. Our discussion in the following section will be built upon similar classification.



APPENDIX B

Table 5: Meta-categories, Conceptualizations, Classes and comments example

Meta-category	Conceptualization	CLASS	Comments example
Navigation	Position of menu/ navigation bar	Side Navigation Bar	- uses side navigation, creates larger space and use of scroll bar, allows more categories
		Menu	-putting "quick launch" on top left corner as page refreshes from top to bottom and left to right, user will see this portion first and can click before the whole page finishes loading, reduce waiting time.
		One-Page navigation	- listing all links or categories on one page allows users to click directly on the page instead of going into many layers to get what they want
	Search function	Scope of search	- offer global search engines
			- search engine within their own corporate website
		Quality of search function	- search engines to generate good and effective keywords to help users identify information they need, more relevant searches, direct keywords.
	Rollover effect	*	- have clear icons, and roll over mouse effect text links
	Links	Extent of Use	- clear cut, focused, not confusing
		Text Links	- use of underlined text links to induce user to click
		Graphics Links (Menu tabs/ icons)	- very clear interface, buttons and tabs, creates good navigation and improve usability, can find things easily, user-friendly
	User friendliness	*	- more user friendly, has clear navigation, tries to make customers surf and get what they want
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	*	- should not have so much variety that quality of information suffers (too much broad but no quality)
Categorization of information	Segregation by Content Nature	Linear Structure	- categorizes their content into different subjects and topics such as regions, products and business functions where users can find information more easily
		Hierarchical Structure	-structure is hierarchical for website that provide more detailed information, with links and branches, and many levels to present information with more depth vs. broad and shallow structure for website that provide brief and concise information with little details or layers, straight to the point
	Visual Segregation of information	Columns/Sections	- sections are clearly defined, not cramp
		Frames	- use of frames to section content for each item (e.g. Large image, a lot of content, a summary of thee content) to enable layout of content have more impact
		Colors	- use of color to segregate/categorize information into sections make reading easier, make finding and looking for information easier
	Extent of Use	*	- should not have excess categories as users will not know where to click on

Color Usage	Choice of colors	Color use to portray website image	- use of a color theme which help user to recognize the site, simple colors pleasing to the eye should be used
	Consistent use of colors	*	- Consistent use of colors; should not use too many colors
	Emphasis through color usage	*	- making use of colors to attract attention to search function which is the selling point of the company
Layout and Space usage	Extent of space usage for features	*	- use good sense of space, wide space, more comfortable to look at, visually clearer, main focus where users identify what they want
	Consistency in Layout/design	*	- similar layout throughout all pages
	Position of features	*	- to have prominent search features presented on top of the page for portal websites and corporate information more prominent and eye-catching for corporate website
Graphic Usage	Extent of usage	*	- use more graphics if website is to attract more non-office people.
	Organization of graphics	*	-neat in terms of graphics arrangement
	Quality of graphics	*	- Quality graphics: visible and sharp images.
	Use of graphics to portray website image	*	- use more graphics if website were to portray more fun image.
	Functional use of graphics	*	- Use of graphics to give hints as to what to expect from a link so that user will be less confused.
Establishing Website's Identity	Use of visual presentation	*	-similar design and layout throughout the pages to create a strong identity with the users
	Consistency	Within the website	- synchronizing website with other forms of corporate media or ads to create identity, very captivating.
		With other forms of media	- gives a more customer feel and appears "friendly and helpful" with people images
	Image portrayed	*	- frequent updates makes website more user-friendly, attract users to visit more frequently.
Presentation of information	Font size and type	*	- use of same font sizes for information with same importance (e.g. Same font size for headlines)
	Association between text and background color	*	- use of text of dark color against white background to allow user to view information more easily
	Display of Information	*	- all information at one glance is easier for users: no need to scroll left and right, technically better
Visual Appearance/ Look	Simple and practical	*	- Very clean, good and neat: not messy so users can search easily
	Professional	*	- more polished, powerful, more of third generation design
	Clean/ Neat	*	- neat: follow a layout, are more appealing to most people
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 updates	*	- use of new, up-to-date design, graphics always changing

Advertisements/ Popup/ Animation	Extent of use	*	- advertisements should not be flashing as will be very distracting
	Nature of advertisements/ animation	*	- Design with stronger corporate identity through colors and logo (e.g. SingTel uses red and logo throughout website) so as to make user more comfortable and know that they are still surfing the site
Text Usage	Extent of use	Text use due to web's nature	- more text-base for website to look more serious and business-like to attract more working people--match objective of company and purpose of website.
	Functional use of text	Text use to meet users' needs	- targeted more to users who are text-savvy
		Text use for easy viewing	- should not have too much as it is less user friendly.
Downloading Time	*	*	- faster loading time if website meant for business user as they value time and want to have access to information more quickly (e.g. use more text)
Headlines	Extent of use	*	- bringing out headlines and structures so that information will be obvious to users is important
	Hint on content	*	- hints/short description to allow users to know what to expect within a certain link can lead to higher likelihood of user clicking on the link.
	Portray website image	*	-display headlines or taglines to help portray website or company image, purpose and focus (e.g. Taglines denotes that website solely on business)

Notes: Since there is only one sub-category, these will take the same label as the conceptualization

APPENDIX C: Meta-categories extensively studied in prior research

Navigation

Navigation is an important design element, with the objective of allowing users to acquire more of the information they seek and making the information easier to find [Fang and Holsapple 2007]. A good navigation system includes adequate links, clear description for links, easy to locate, easy to go back and forth, a few clicks, and a search function [McKinney et al. 2002]. Navigation has been deemed important by several researchers. For example, Palmer [2002] suggested that navigation and content were significantly associated with website success. Zhang and von Dran [2001] also found that navigation was ranked among the three most important clusters in all types of website.

Our participants mentioned that websites with superior navigation functions were perceived as being user-friendly.

> "Very clear interface, buttons and tabs, creates good navigation and improve usability, can find things easily. Lesser things in menu provides easy navigation, easy to find things, easy to see, user-friendly"

Quality web design should allow users to experience smooth and efficient navigation through valid and relevant links [Cox and Dale 2002] and have appropriate degree of control and flexibility on the ways of accessing the web-pages on a site [Whyte et al. 1997]. Cox and Dale [2002] contended 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 revealed that the coverage and quality of the search feature are important elements in web design.

> "Search engines to generate good and effective keywords to help users identify information they need, more relevant searches, direct keywords."

Minimal steps required to complete a task can also be programmed to enhance ease of use [Scapin and Bastien 1997]. Our participants also indicated that good use of navigation functions enabled users to surf around effortlessly, thus contributing to website effectiveness.

> "Very clear interface, buttons and tabs, creates good navigation and improve usability, can find things easily, user-friendly"

Content/ Information

Many studies describing how to use the Web stress the importance of content. Agarwal and Venkatesh [2002] reported that website content was the most important attribute that web-users preferred in their study. Content refers to the information, features, or services that are offered in the website [Huizingh 2000]. Content features of websites could include commercial, non-commercial, and transaction information, such as corporate information, communication/customer support, currency, financial information, employment opportunities [Huizingh 2000; Robbins and Stylianou 2003]. Key characteristics of content include comprehensiveness, richness, and completeness of information [Palmer 2002]. On the other hand, the quality, accuracy, and reliability of the information are critical too. Media richness theory suggests that the quality and accuracy of information in an exchange have a significant effect on user understanding and perceived effectiveness of communication. Accuracy of content makes a website more credible. Users are likely to value the quality of information more highly than the quantity of information. Web sites with constantly updated, fresh, and relevant content are more likely to attract and retain users [Mithas et al. 2006].

Our study also found that the scope and quality of content are among important factors (49 comments, second most comments) influencing users' perceived usefulness. Participants indicated that it is essential for websites to provide wide variety of information to attract audience. At the same time, participants agreed 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.

> "Website should have clear objective of what it is trying to do, should not have content that tries to please everyone-- not focused, cannot please everyone (e.g. as subscriber cannot get enough technical support from site; as general public cannot get enough information) users will not want to come as no one is satisfied."

Color Usage

Visual representation (e.g. color) improves attractiveness and proved to enhance ease of use most among other variables [Lee and Lee 2003]. Our participants mentioned the choice of colors as another important design factor. Simple combinations of colors would be pleasing to the eye whereas glaring colors cause visual discomfort. Users' perceived enjoyment during the interaction would be thus enhanced with proper color use. Consistent colors should be used to reduce distraction as well as portray the website image. Colors could 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 research. Our findings have extended our current knowledge on color use.

> "Use of more intensive and solid colors makes site more high class. Use lesser colors will look clean and simple, over-using colors will have side effects, can be attractive initially, but this attractiveness will not be lasting."

Visual appearance

Prior literature has indicated that visual appearance and website layout influence the consumer experience and customer loyalty [McKinney et al. 2002; De Wulf et al. 2006]. An intuitive layout of a website that has clear organization is likely to lead to higher levels of user success in terms of being able to reach the desired content or functionality of a Website.

Our participants mentioned that the overall appearance of websites is a 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 preferred the site to be simple and clean, as a neat website would allow 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.

> "Not busy, or else may need time to learn where to click on to find information they need. Must have good division of space so as to attract user (e.g. Center portion of page takes up 50% of the page thus catching people's attention)"

Layout/Space Usage

Consistency in layout [Scapin and Bastien 1997] is important in web design as it helps strengthen users' impression of the site. A consistent layout across pages enables ease of navigation when surfing through the pages [Constantine and Lockwood 1999] and reduces search time considerably. Similarly, our participants suggested that consistent presentation (layout, organization, color and navigation menu) throughout the whole website would portray a strong design concept and create a deeper impression on users as they surf compared to inconsistent sites.Participants also suggested ways to maintain consistency including the use of uniform organization, colors, font size and the way information was presented. Additionally, we found 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 mentioned that users could focus better on a website's features if appropriate amounts of white space were used thereby inducing perceived playfulness.

> "Page conforms to certain type of framing, design style is consistent so that users will remember that they are in your website after surfing through many pages, or else will weaken impression that users get. Use of prominent features to show main focus and purpose of the website or else user will feel confused"

Graphics Usage

The proper use of graphic has been explored in research [Aladwani and Palvia 2002; Song and Zahedi 2005; Venkatesh and Ramesh 2006]. A Web site can be rather sober, with plain information and focus on the content providing function, or it could contain many elements (e.g., graphics) that are primarily used to make the content more attractive [Huizingh 2000]. Many participants considered graphic usage crucial in web design. Quality, organization, extent of use and functional use of graphics were considered essential in reducing confusion and portraying the website image.

> "More graphics-based, caters to attract wider range of users using a mixture of nice graphics."

Text Usage

However, a webpage with more attractive content takes more time to download and thus increases the cost to the web-user (see below – downloading time). The extent to which a website uses media appropriately and effectively to communicate the content is an area of research to be studied in conjunction with utility factors such as download time. Prior literature has paid little attention to the appropriate deployment of graphic; yet many participants suggested a balance between graphic and text use. Many participants highlight the importance of text usage.

> "Use of text links more practical for information that changes/requires update more frequently. More text-base for website to look more serious and business-like to attract more working people--match objective of company and purpose of website."

Updates

Prior literature has extensively studied the currency and update of the information, such as Freshness of content [Mithas et al. 2006], Timeliness of information [Liu and Arnett 2000; McKinney et al. 2002], Current information [Aladwani and Palvia 2002; De Wulf et al. 2006]. Ensuring updated information on a website is crucial to effective web design, enhancing perceived usefulness and reliability [Lee and Lee 2003] and leading to behavioral intention to make future visits [Whyte et al. 1997]. Dragulanescu [2002] supported that timeliness of website reviews and constant updates enhance the quality of websites. Prior research also revealed users' preference for frequent updates of information. Similarly, our study on the designer's perspective found that frequent updates of information enhances user friendliness, hence attracts users and encourages revisits.

> "Frequent updates on information and banners/advertising to attract users to visit the site more frequently to check out the sites and attract more companies to buy advertising space."

Our participants further suggested using pre-defined design templates and small logos as ways to facilitate constant updates. This phenomenon of using pre-defined design templates and small logos for updates has not been examined in studies on web-users' perspective.

Downloading Time

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

> "Faster loading time if website meant for business user as they value time and want to have access to information more quickly (e.g. More text-based to reduce loading time of graphics). Consider difference in technology level and thus loading time of different countries when designing websites (e.g. local sites can have more graphic as more users use broadband, but global sites must take into consideration difference in loading capabilities).