

# Look and Feel: Examining the Power of Website Design Appearance across Site Types

Achmad SYARIEF<sup>\*</sup> and Haruo HIBINO<sup>\*\*</sup>

*\* Design Psychology Section, Graduate School of Science and Technology, Chiba University*

*1-33 Yayoi-cho Inage-ku Chiba Japan 263-8522, E-mail: achmad.syarief@gmail.com*

*\*\* Design Psychology Section, Department of Design and Architecture, Chiba University*

*1-33 Yayoi-cho Inage-ku Chiba Japan 263-8522, E-mail: hibino@faculty.chiba-u.jp*

**Abstract:** The appearance of a website is not just merely created through the practice of usability and applying technical standard, but also results of an evolving design activity that transforms a web page appearance into a visual communication medium. The interplay of website visual elements builds up meanings that affects users beyond what previous information technology practices have uncovered. Previous research acknowledges that visually appealing website has significant effects in attracting users' attention and trust. Thus, the ability of web designers to create web pages that are easily interpreted yet visually appealing to more target users is therefore of great importance in the success of websites. The present study examines nine selected Indonesian websites to identify variations in visual organizations and arousal potential associated with perceived usefulness and trustworthiness of the sites. Subjects are 135 Indonesian students and faculty members of the Department of Design from Bandung Institute of Technology (ITB) in Bandung Indonesia. The data are cross-referenced to identify gender and subject-experience variables. In conclusions, we offer some directions for the web site design and also discuss its implications for the present new media research and cognitive aspects in the human-computer interaction.

**Keywords:** *Website Design, Visual Appearance, Usefulness, Trustworthiness*

## 1. Introduction

As website design and internet technologies become more established and dependable, the trends of the web research are shifting toward persuasive aspects that might affect the success of a website beyond what traditional usability has uncovered. The key among these is the visual design of the sites, which is currently garnering attention for its relation to the way users cue their decisions, initialize a course of action, or determine the credibility of the presented information [1]. It is widely understood that the appearance of a website is not just merely created through the practice of usability and applying technical standard, but also results of an evolving design activity which transforms a web page appearance into a visual communication medium. The interplay of website visual elements builds up meaning that affecting users beyond what they are initially aimed for, as have been found on other visual communication media. The chosen layout, visual style, presented texts, links, and their contents

are all interact to make a site not just effectively and efficiently performed but also persuasive. Previous research by B.J. Fogg acknowledges that visually appealing website has significant effect in attracting users' attention and trust [2]. Consequently, web pages that are easily interpreted and have visually appealing contents might have higher possibility to become successful websites than those who are not. However, although a considerable number of researches on website visual design have been performed, study in understanding the persuasiveness of visual appearance on website design and how they affect users' overall perception has been very limited. The present study examines nine selected Indonesian websites to identify variations in visual organizations and arousal potential associated with site's perceived usefulness and trustworthiness.

## 2. Method

### 2.1 Subjects

135 students and faculty members from Bandung Institute of Technology (ITB) in Indonesia took voluntary part in this study. On gender variable, male and female subjects are divided in proportionate numbers (68 respondents, or 50.3 % and 67 respondents, or 49.7%). On subject-experience variable, 69 respondents (51.1%) are considered as novice to knowledgeable internet users and 66 respondents (48.9%) are considered as advanced to experienced internet users. All participants had normal or corrected to normal vision, and none have any type of color deficiency prior to the study.

### 2.2 Apparatus and Stimuli

9 (nine) URL address of selected Indonesian websites were examined and later given to respondents for browsing. The experiment was conducted under usual room-light illumination (approximately 410 lx). Respondents viewed and browsed the actual websites as the presented stimuli on CRT display monitors (vary between 17 inch – 21 inch, 8 bit screen resolution and set for 800 x 600 pixels).

### 2.3 Procedures

#### 2.3.1 Phase 1: Site stimuli examination

Each website stimulus is comparatively examined to analyze the general design elements of a site's page and to recognize any similarities and/or differences between each site within category. The examined elements are layout, text, links, object and page visualization, user aid and services (see table 1 for details)

*Table 1 Examined website design elements and their explanatory purposes*

<b><i>Element</i></b>	<b><i>Examination purpose</i></b>
<i>Layout</i>	To identify whether a site is designed using tables or frames, and to determine whether the screen is frozen or liquid
<i>Texts</i>	To identify the number of words on a page, their method of delivery (e.g. percentage of

	non-linked words), and to determine whether CSS ( <i>Cascading Style Sheet</i> ) is used in a site page.
<i>Links</i>	To identify the total usage number of links, their method of delivery (e.g. link-type) and to determine whether any additional pop-up menus or windows exist.
<i>Object and page visualization</i>	To identify the number of non-linkage images, their method of delivery (e.g. illustration, photos, graphics), visualization (e.g. static or animated), and to highlight the percentage use of images within a page.
<i>User aid and services</i>	To identify standard conventions that should be present to aid the users in using a website (within category).

### 2.3.1 Phase 2: Browsing experiment

Subject completed a booklet containing demographic and subject-experience variables along with their 8-digit ID numbers prior to the experiment for identification purpose. Subjects were seated individually at a computer desk and briefly provided with information regarding the purpose of this study, before being asked to browse through the sites as they normally would. After browsing through the sites, subjects filled out the questionnaire by rating each website on their *perceived usefulness (PU)* and *trustworthiness (PT)* using interval value of 1 to 7 (1=the least, 7=the most) following semantic differential method.

### 2.4 Stimuli Category Selection

All stimuli were chosen based on the representative nature and objective of their commercial sites. *Bank websites* represent a BAM (brick-and-mortar) based organization that used websites as supplemental service toward their customers (e.g. personal account and other financial related information). *News Portals* represent a dual system (both BAM and Online based) organization that used websites as an expanded service toward their customers (e.g. online registration and interactive ad). *Online gift-shop websites* represent fully operated online based organization that used websites as its main marketing gateway to reach potential customers. All stimuli were randomly selected from a categorical list of the 2002 Best Indonesian Website Nominee (*Nominasi Situs Indonesia Terbaik 2002*, www.situsterbaik.com). They are three bank websites (*BNI, BCA, and Danamon Bank*), three news portals (*DetikNews, Liputan6 SCTV, and Astaga.com*), and three online gift shops (*Pitakado, Medagifts, and Indoparcel*).

## 2. Results and Discussions

### 2.1 Site Stimuli Examination

#### 2.1.1 Layout

Testing of site layout (see figure 1) showed that frames were rarely being used and all sites were designed using tables whose width attribute can be set to 100%. All sites were categorized as

liquid when the contents width can adjust itself, thus accommodating all the available width the user sets [3]. The fact that all sites have implemented this function implies that they were trying to squeeze as much contents into the window as possible to bring visibility of their appearances.

	Category	Frames being used?	Frames option present?	Tables being used?	Tables nested?	Frozen or Liquid?
BNI	Banking	N	N	Y	Y	Liquid
BCA	Banking	N	N	Y	Y	Liquid
Danamon	Banking	N	N	Y	Y	Liquid
Detik.com	News Portal	Y	N	Y	Y	Liquid
Liputan6	News Portal	N	N	Y	Y	Liquid
Astaga.com	News Portal	Y	N	Y	Y	Liquid
PitaKado	Online Shopping	N	N	Y	Y	Liquid
MedaGifts	Online Shopping	N	N	Y	Y	Liquid
IndoParcel	Online Shopping	N	N	Y	Y	Liquid

Figure 1 - Analysis of site's page layout

### 2.1.2 Text

By looking at the presented texts, we try to analyze similarities/differences between sites in different categories. From figure 2, it is noticeable that news portals have the largest use of words (following the average of three counts on a day, since the number of words changed as news was updated constantly affecting the word count) while banking websites have the least number of words usage. This implies that banking sites tend to provide greater number of users aid pages hence prompting the users to click forward onto another page of their choices. Further, from the total number of words counted for each site, it was found that bank websites have the lowest percentage of non-linked words (29.1%), while online gift-shop websites have the highest percentage of non-linked words (78.3%). This indicates that online gift-shop websites providing more verbal contents and complete information on a page. This result implies that online gift-shop websites maintain the objective of being informative and careful, thus encouraging potential users to be well informed before proceeding to purchase the products.

### 2.1.3 Links

Figure 3 shows that each site within category seems to have similar total number of links on the home page. Interestingly bank and online gift-shop sites tend to have lower amount of links (between 15-30 links in average) compare to news portals. Both categories have commercial purposes in nature, thus those number of links implies that both categories carefully crafted information on the home pages in order to guide users directly to the showcase of products and/or services. The figure indicates that from the total number of links, the news portals have the highest percentage of text-link format (71.7%), while online gift-shop sites have the lowest percentage with

35.7%. This suggests that online gift-shop sites tend to use non-text links that are images, iconic, etc. The use of linked-images implies that they were encouraging the users to view images (pictures, icon, or illustration) and follow the provided links to find their object of interests, hence persuading the users to make connection and reach on a purchase page faster.

	Total words	Diff from avg within category	% Non-linked words
<b>BNI</b>	513	+ 67.3	151 (29.4%)
<b>BCA</b>	330	-115.7	65 (19.7%)
<b>DANAMON</b>	494	+ 48.3	174 (35.2%)
<b>AVG</b>	<b>445.7</b>		<b>29.1%</b>
<b>DETIK</b>	5032	+ 150.3	2069 (41.1%)
<b>LIP 6</b>	4788	- 93.7	2613 (54.6%)
<b>ASTAGA</b>	4825	- 56.7	1992 (41.3%)
<b>AVG</b>	<b>4881.7</b>		<b>45.6%</b>
<b>PITA</b>	898	+ 67.3	698 (77.7%)
<b>MEDA</b>	1225	-115.7	945 (77.1%)
<b>INDO-P</b>	952	+ 48.3	766 (80.5%)
<b>AVG</b>	<b>1025</b>		<b>78.3%</b>

Figure 2. Analysis of texts

	Total links	Diff from avg within category	text links	non-text links
<b>BNI</b>	34	+ 6.3	29	5
<b>BCA</b>	27	- 0.6	12	15
<b>DANAMON</b>	22	- 5.7	12	10
<b>AVG</b>	<b>27.6</b>		<b>75.9</b>	<b>24.1</b>
<b>DETIK</b>	98	+ 22.7	62	36
<b>LIP 6</b>	75	- 0.3	57	18
<b>ASTAGA</b>	53	- 22.3	43	10
<b>AVG</b>	<b>75.3</b>		<b>71.7</b>	<b>28.3</b>
<b>PITA</b>	15	- 3.7	3	12
<b>MEDA</b>	25	+ 6.3	14	11
<b>INDO-P</b>	16	- 2.7	6	10
<b>AVG</b>	<b>18.7</b>		<b>41.1</b>	<b>58.9</b>

Figure 3. Analysis of links

A positive correlation between the number of words and their portion of linking-text was found ( $R^2 = 0.976$ ,  $p < 0.01$ ), thus suggesting that the more words there are on a web page the more text-links there will be. The result implies that most websites tend to use words/text to build interests by providing general terms that are accessible to users, with the objective to get users to click through other pages within a site to find detail information about it.

#### 2.1.4 Object and page visualization

As described in Figure 4a and 4b, the results indicate that both bank and online gift-shop websites tend to dedicate their linked-images for internal links purpose, with 100% and 99.7% of usage percentage. On the other hand, news portals tend to use their linked-images for external links to other commercial sites and/or online advertisements. Given the fact that all news portals are also applying pop-up windows, suggest that they use their site pages as revenue sources by selling spaces for interested parties, resembling similar treatment as in paper media (such as newspaper and magazines). Results also indicate that news portals have higher percentage of animated images (56%) more than bank (18.6%) and online gift-shop websites (5.1%). This result implies that both bank and online gift-shop websites are trying to assure that their sites can be downloaded faster. However, since download speed are also influenced by others factors (such as server load, page size, and

connection method), the correlation between number of images within a site and its download speed is subject to further review.

Results show that news portals use direct external linkage to supporter’s sites and apply additional spaces for animated images to display ad and attract visitors (readers). On the other hand, bank and online gift-shop websites tend to use internal linked images either to a page of product/service showcase or to an information page (news, disclaimer, and/or FAQ). This suggests that both site categories try to keep users/visitors within their sites, persuading them with multiple layer of information on what they are going to buy or have and hence guiding users/visitors through the process (e.g. providing detail about service, liability, benefits, etc.).

	Total No of images	linked	non-linked	ani-mated	static
<b>BNI</b>	8	5	3	1	7
<b>BCA</b>	21	15	6	6	15
<b>DANAMON</b>	14	10	4	1	13
<b>%</b>		<b>69.8</b>	<b>30.2</b>	<b>18.6</b>	<b>81.4</b>
<b>DETIK</b>	36	36	0	26	10
<b>LIP 6</b>	22	18	4	9	13
<b>ASTAGA</b>	17	10	7	7	10
<b>%</b>		<b>85.3</b>	<b>14.7</b>	<b>56</b>	<b>44</b>
<b>PITA</b>	13	12	1	1	12
<b>MEDA</b>	13	11	2	0	13
<b>INDO-P</b>	13	10	3	1	12
<b>%</b>		<b>84.6</b>	<b>15.4</b>	<b>5.1</b>	<b>94.9</b>

Figure 4a Analysis of object and page visualization

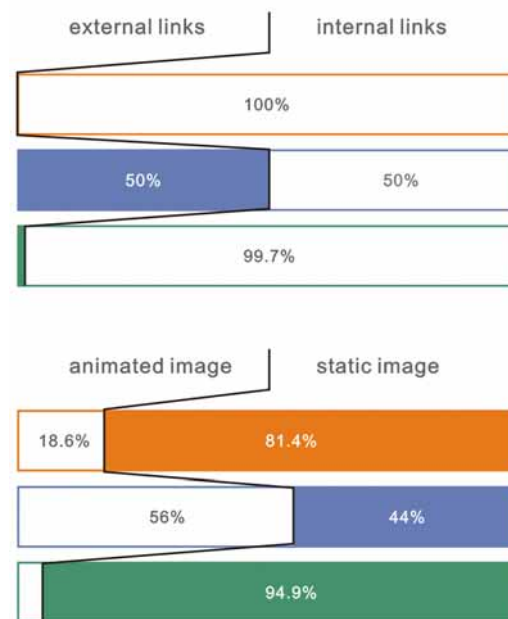


Figure 4b Analysis of linking images

A positive correlation between the number of image and their portion of linking-images was found ( $R^2 = 0.970$ ,  $p < 0.01$ ), thus suggesting that the more images there are on a web page the more image-links there will be. The result also indicates that most websites tend to use image on their menus, either to simplify the information process [4] or to enhance the visual appearance of their site.

### 2.1.5 Users aid and services

As described in figure 5, results indicate that all site categories had a “search” and “contact info” fields, implying that they acknowledge users’ need to know more about the organization they are in contact with and wants to maximize users’ experience by making it easier to them to search and identify their area/product of interests. Interestingly, 100% of bank websites provide “language option” in their sites (Indonesian and English version), while only one online gift-shop (*medagifts.com*) provides this option. The figure also indicates that 33.3% websites apply personalized assistance within their sites, with online gift-shop websites having the highest percentage while only 1 (one) bank

website has applied this service in its site. As expected all online gift-shop sites applied secure and/or member log-in service in their sites, implying that those sites willing to assure users/visitors when the transaction occurs. However, unexpected result appears on bank websites when only 1 (one) site applied the secure or member log-in service, which indicating that most Indonesian bank websites tend to be used more as information site than acting as “real” online banking. Result also indicates that bank websites applied the most of users’ aids and service fields (15/15), while news portals are the least (9/15). Given the facts that news portals are mostly posting information and being popular with Indonesian users, it is expected that help and language option fields are not applied in their sites.

	Search Menu	Help or FAQ	Language Option	Update Info	Contact Info	Personalized assistance	Secure or member log-in
BNI	Y	Y	Y	Y	Y	N	N
BCA	Y	Y	Y	Y	Y	Y	Y
DANAMON	Y	Y	Y	Y	Y	N	N
% of Y	100	100	100	100	100	33	33
DETIK	Y	N	N	Y	Y	N	N
LIP 6	Y	N	N	Y	Y	N	N
ASTAGA	Y	N	N	Y	Y	N	Y
% of Y	100	0	0	100	100	0	33
PITA	Y	Y	N	Y	Y	Y	Y
MEDA	Y	Y	Y	Y	Y	Y	Y
INDO-P	Y	Y	N	Y	Y	N	Y
% of Y	100	100	33	33	100	66	100

Figure 5. Analysis of sites’ user aids and services

In summary, results from site examination can be described as follow:

- (1) All websites used tables in their sites to accommodate all the available width the users have set.
- (2) Bank websites have the least use of words, while news portals have the largest use of words. Most websites use linking words/texts that are accessible to users/visitors, with the objective to get them clicking through other pages for details.
- (3) Online gift-shop sites have the least number of links, while news portals have the most number of links. Most of the links within online gift-shop sites are images, while on news portals are texts.
- (4) Bank and online gift-shop sites dedicate most of their linked-images for internal linkage within their sites, while news portals dedicate equal number of their links between internal and external linkage purposes. Most websites use linking images as web icons, with the objective to simplify the information process or to enhance their visual appearances.
- (5) All websites apply “search” and “contact info” field in their site page. Bank websites applied the most of user’s aid field (15/15), while news portals applied the least (9/15). Online gift-shop offered the most customized service field for users (5/6), while news portals offered the least customized service field for users (1/6).

## 2.2 Browsing Experiments

As described in figure 6 (the highest and lowest scores are written in bold), results show that in overall bank websites have the highest score of *perceived usefulness* (PU) with 4.641 in mean score, while online gift-shop sites have the lowest score of PU with 4.071 in mean score. Result also shows that bank websites have the highest score of *perceived trustworthiness* (PT) with 5.035 in mean score, while news portals have the lowest score of PT with 4.272 in mean score. This result implies that the *perceived usefulness* of a website might have a correlation with how users perceive the *trustworthiness* of site contents. A positive correlation result ( $R^2 = 0.771$ ,  $p < 0.05$ ) confirm the significance relation between these two variables. The analysis suggests that when users acknowledge a website for being useful, he or she might incline to trust the content of that website as well.

	Perceived Usefulness	Perceived Trustworthiness	PU Male	PU Fem	PT Male	PT Fem	PU NK	PU AE	PT NK	PT AE
<b>BNI</b>	4.879	<b>5.651</b>	4.882	4.876	5.662	5.640	5.742	4.015	6.266	5.037
<b>BCA</b>	4.848	<b>5.454</b>	4.720	4.976	5.517	5.391	5.349	4.348	5.506	5.403
<b>DANAMON</b>	4.197	<b>4.000</b>	4.235	4.159	3.793	4.207	4.562	3.832	4.253	3.747
Mean	<b>4.641</b>	<b>5.035</b>	<b>4.612</b>	<b>4.670</b>	<b>4.990</b>	<b>5.079</b>	<b>5.218</b>	<b>4.065</b>	<b>5.342</b>	<b>4.729</b>
<b>DETIK</b>	4.121	<b>3.530</b>	4.105	4.137	3.398	3.662	4.833	3.409	3.956	3.105
<b>LIP 6</b>	4.682	<b>5.151</b>	4.867	4.497	5.339	4.962	5.031	4.333	5.481	4.822
<b>ASTAGA</b>	4.197	<b>4.136</b>	4.264	4.052	4.220	4.052	4.068	4.326	3.991	4.282
Mean	4.333	<b>4.272</b>	4.412	4.255	<b>4.319</b>	<b>4.225</b>	4.644	4.022	4.476	<b>4.069</b>
<b>PITA</b>	4.061	<b>5.227</b>	4.575	3.547	5.264	5.190	3.847	4.274	5.170	5.284
<b>MEDA</b>	4.015	<b>4.121</b>	4.072	3.958	3.968	4.274	3.912	4.118	3.835	4.407
<b>INDO-P</b>	4.136	<b>4.052</b>	3.956	4.316	3.781	4.323	4.909	3.363	4.385	3.718
Mean	<b>4.071</b>	<b>4.466</b>	<b>4.201</b>	<b>3.941</b>	<b>4.338</b>	<b>4.596</b>	<b>4.222</b>	<b>3.918</b>	<b>4.463</b>	<b>4.469</b>

Figure 6. Results of browsing experiment on perceived usefulness (PU) and trustworthiness (PT) according to gender and subject-experience variables

On gender variable (see figure 6), both male and female users tend to have the highest PU scores on bank websites and the lowest PU scores on online gift-shop. As expected, similar results appear when both genders perceive the *trustworthiness* of a website (PT). Both tend to have highest PT scores on bank websites and lowest PT scores on news portals. These results indicate that there is no significance difference between genders when acknowledging the *usefulness* and *trustworthiness* of websites. Thus, gender differences do not have significant effect on how users view, judge, and trust the visual presentation of a website.

On subject experience variable (see figure 6), both novice to knowledgeable users (NK) and



advanced to experienced users (AE) tend to have the highest PU scores on bank websites, while the lowest PU scores appear on online gift-shop websites. The highest PT score for NK and AE appear on bank websites, while the lowest PT scores for NK appears on online gift-shop websites and for AE appears on news portals. There seems to be a difference between NK and AE users when they perceive the trustworthiness of websites. However, using one-way ANOVA test, the result indicates that there is no positive differences between NK and AE users when they perceive the *usefulness* and *trustworthiness* of a website. Thus, subject experience differences do not have significant effect on how users view, judge, and trust the visual presentation of a website.

BNI of bank website, Liputan6 of news portals, and Indoparcel.com of online gift-shop website are deemed to be the most useful websites within their categories. The following identifies similarities/differences in the visual organization of each website, in respect of the quality of their perceived *usefulness*:

(1) *BNI website* is perceived to be useful because it has...

- a. Tables with 100% set of width attribute, which accommodates all the available width the users might have set (liquid)
- b. High amount of linkable texts (about 70%), written mostly as key information (e.g. keywords, main service) prompting the users to click onto other pages for having more detail information.
- c. Low amount of linkable images (14.7%) that mostly serve as web icons and do not externally linkable (all available links are set for internal purpose only).
- d. All available user aid fields (search, help, language option, update, and contact info).

(2) *Liputan6.com website* perceived to be useful because it has...

- a. Tables with 100% set of width attribute, which accommodates all the available width the users might have set (liquid).
- b. Medium amount of linkable texts (59%), written mostly as general information for users (e.g. summary or headlines) before clicking onto other pages for looking more detail information.
- c. Medium amount of linkable images (24%) that serve as both web icons and banner ad. About half of them (50%) are dedicated for external links (e.g. link to other sites or ads)
- d. 60% of the available user aid fields without "help/FAQ" and "language option" fields.

(3) *Indoparcel.com website* perceived to be useful because it has...

- a. Tables with 100% set of width attribute, which accommodates all the available width the users might have set (liquid)
- b. Low amount of linkable texts (19.5%), written as explanatory information of a product/service (e.g. product data, delivery option).
- c. High amount of linkable images (77%) that serve as both web icons and product illustrations with no available external links (to other sites).
- d. 80% of the available user aid fields without "language option" fields.

### 3. Conclusions

The results show that there are significance differences in the visual organization of websites that are particular to each site category. The results also show that the perceived *usefulness* of a website do correlate with its *trustworthiness* quality. A website that is perceived to be useful will be perceived to be trusted as well. This study has successfully highlighted a positive association between certain elements of website's visual organization and the perceived *usefulness* of a website. It can therefore be suggested that by understanding the unwritten design conventions of each category, we can organize certain visual elements to make website design more useful and trustworthy. In addition, the study found that differences between user's genders and experiences do not have significant effect on how they view, judge, and trust the visual presentation of a website. Although the study found that five elements of visual organization were adequate to identify website visual variations, other elements as well as the number of site stimuli need to be emphasized to make the results more applicable (for example adding the element of download speed and using additional 10 site stimuli per category). Thus, further studies on the inclusion of such elements are suggested. It is then, hopefully, this kind of study could serve as guidance for website design process, providing starting points to understand what the applicable elements of website visual organization are and how to identify the persuasive qualities of a website that fit according its category. For all previous efforts that have been done, the present study thrive to contribute a body of knowledge for making website design not only technically effective and efficient, but also perceptually useful and trustworthy.

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