The Considerations of the Web Page Design

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Abstract: The web page interface is often one of the key factors that determine the browsers to stay or to leave. Limited visual space should be utilized to design the optimal layout in order to offer the important message of web page, increase the surfing, and, furthermore, fully stimulate the click-through rate. Based on content analysis method, this study takes 326 female shopping sites as examples to categorize 45 main entities from most websites and further obtains the web page layout of e-commerce in which there are 7 principles of uniformity for general entities and 5 for specific entities. According to these findings, another usability tests been conducted that are user friendly, usefulness, ease of use regarding other random searched shopping sites for verification. We did discover that the entities possess the characteristics of position-oriented. Our results offer guidelines for planning e-commerce web pages.

Key- words: E-commerce, web page layout, shopping sites, female

1. Introduction

Thanks to the popularization of World Wide Web, people nowadays gradually rely on the Internet to learn, work and even do the shopping. Above all, on-line shopping has become a hot market in recent years. However, the design of current shopping websites has a tendency towards merchandise-oriented. The misunderstanding of more merchandise the better wastes much time of the browser surfing on the complicated hyperlinks between web pages. While an e-commerce web page is built, not only the content design but also the structure design has to be focused. The structure design refers to how the position of related functions should be adjusted during the web page layout after the information of merchandise is decided, *i.e.*: the so-called "uniformity of entity layout" in this study.

The notable rise of consumer confidence to web shopping and the female tendency towards electronic shopping are important factors that contribute to the multiple growths of sales revenues in recent years. For instance: the products vended in the shopping center and shopping master on yahoo.tw that relate to females are: makeup, fragrances, body care, dress, branded purse, skin care, ladies' shoes, cosmetics, accessories, Niuer, fashion & luxury and clothing. In eBay there are female luxuries: blouse, outer garment, purse, pants, skirt and shoes; beauty and skin care: mask, perfumes, cosmetics, hair care, body care, facial care; baby and mother: children's garment, children's shoes, pregnancy, bedding, toys, painting. In recent years, studies of e-commerce that emphasize the relations with gender have appeared such as ([35]; [12]; [21]; [37]; [20]). It is perceived that the academia has gradually attached importance to the female e-commerce shopping..

In physical stores, the proprietors always display the latest and hottest commodities in the most prominent place, so that the consumers do not need to search for them with exertion. The same situation happens in the web. In order to make use of the limited layout and achieve the maximum marketing benefits, the proprietors of web stores also put the commodities at the most appropriate location. Therefore, this research takes the web pages from 326 shopping websites for females as examples to study 45 entities used by most web pages currently. Through content analysis method, the generalization principles of web page layout are explored and, meanwhile, the uniformity is obtained after further effectiveness discussion of these principles.

2. Literature Review

Web stores possess more advantageous characteristics for marketing than many physical stores [10]; however, the success mostly depends on the web page designs that have great impact especially on the willingness of the users [14]. Shneiderman [30] also opined eight user friendly

design principles in order to increase the satisfaction of users and allow the multitude to obtain the most interactive, most immediate and most considerate user interface. The appearance presented by the web page of a website is the projection of physical store for web users who visit for the first time. However, a research [22] pointed out that only 10% of the websites have achieved both friendly and usability. Pragmatically, the content planning of web pages corresponds to the display planning of commodities in physical channels. Since the web page of a website is considered as the virtual shop of e-commerce, the content planning of web page certainly should be careful and discreet ([3]; [4]).

For web page design, a successful website must possess its own distinguishing characteristics ([15], [33]). The web page is the spiritual window of the entire operation of the website and the main "facade" of the communication and trades between the enterprises and consumers. How to let the consumers accommodate this "facade" and be willing to stay is extremely important. Especially, the attractive web pages of commercial websites [14] are the main reasons to keep the web page browsers. Other factors like unobstructed web page design norm, visual design, web page color matching and so forth are important links of the layout for web page contents [25].

The layout of different elements for web advertisements gives the browsers diverse visual sensation that leads to the double-headed influences. Wong [36] studied the different positions of web page menu and found out the best location for the menu is on the top or left which gives people the feelings of "clear", "neat" and "cordial". Besides, it approximately divides the web page into two groups that make an obvious distinction for the users. This conclusion compared with the subject of web page layout position concentrated by our study has shown the legitimacy of this study. Jou [16] adopted experimental method to conduct the study on the impacts of web page design method and waiting to the values of web page advertisement. The result showed that the oversize web page elements greatly influenced the bandwidth transmission and indirectly affected the cognition of the browsers toward web pages, but lacked the discussion of the relative positions of web page elements. There was even research [1] to measure user's cognition toward web page quality through equipments. It is thus evident that the layout of web page content is very important. Schaik & Ling [28] have pointed out in their research that the different layout of web page frame and background contrast would influence the effect and efficiency of web content searching. However,

not all of the studies have the coherent answer ([19]; [25], [18]; [14]; [7]). However, the research direction on the subject of position orientation like this study could not be found. In other words, most of the conclusions of web page design lay particular stress on the discussion of technical aspect or statement of principles. For example: [23] and [22] believed that the friendly and usability should be considered in web page design, such as: background color, object size or the issues of symmetry and asymmetry. However, the integral research results for the arrangement of positions are lacked. The phenomenon of polarization even exists in the principles of web page design (layout mode), such as the density of web page. Some prefer high information volume while the others hold opposite opinions. Another example of controversy is the dynamic effect. Lee & Benbasat [18] thought that the dynamic effects should be increased to draw the attention of the users. Besides, TAM model [11] alto pointed out that both perceived useful and ease of use will effect the user attitudes of information technology. Think about the feelings of web users, a lack of consistence or unrecognized chaos web pages not only decrease the website's acceptable willingness but also affect the web users' confidence to surf on. There are also many articles, which discussed the web pages design problems according the TAM model because it is good guidelines to test the usability for a variety of information technology such as the e-commerce currently.

3. Research Design
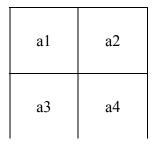
3.1 Content analysis method
Content analysis method was initiated from Sweden in the 18th century [5] (Berelson, 1952) and was firstly applied in the content research of newspapers. Kerlinger [17] defined the content analysis as one type of systematic and objective quantitative research method that had been widely utilized in communication, academia and other social sciences following the progress of technological tools, and had become one of the important research methods. [13] Holsi (1969) also emphasized that although the content analysis method had multiple goals, it was particularly suitable for the investigation of the communication contents ("What", "How", "To whom") to be the basis of ratiocination. There is also no lack of related researches of e-commerce, such as web advertisement [8], traveling website ([9]), as well as the website assessment ([32]) and so on. Other researches include the study of [6] in the websites of 500 top manufacturers listed by Fortune

Magazine and the function analysis of personal web pages proceeded by Papacharissi [26].

The outcome of content analysis must highly respect the reliability coefficient. Wang [34]set the index of reliability coefficient at 0.80. The conclusion of a research appears to be unreliable if the reliability coefficient is below 0.67. During the process of analysis, five research assistants participated in this research were trained by author to understand the analysis process. The classification of the research entities is explained and defined. The formula for its calculation is shown as below: Reliability = (N *average inter-coder agreement) / [1+ (N-1) * average inter-coder agreement]; Inter-coder agreement = $2*M / (N_1 + N_2 + N_3 + N_4 + N_5)$; M: the number or ratio mutually agreed, N: total quantity of encoding personnel; N_k: the number or ratio agreed by the kth encoder.

Corresponding to the uniformity of web page analysis, further more, we will conduct usability test to examine the effectiveness of some web sites features. The random sampling web users who are invited to attend the depth interview to track their cognitions of user friendly [30], usefulness, ease of use [11].

3.2 Samplings

We adopt simple random sampling to seek from existent data in the media. Started from Apr. 01, 2006, five data collectors were invited to gather female shopping websites step by step from portal sites, on-line database, journalism, advertisements, company database from Department of Commerce, Ministry of Economic Affairs in Taiwan and Internet yearbooks. Afterwards, each collector checked up one by one the names of the websites obtained by the other four collectors.

As all of the data collectors are female, the judgment ought to possess internal validity. Other studies regarding to female shopping sites ([12]; [21]; [2]) also determine the female shopping sites on the basis of commodity attribute of the websites. Similarly, the shopping websites for males should be defined based on the commodity attribute.

3.3 The entities

The female shopping websites above-mentioned are Chinese language sites primarily registered in Mainland China, Hong Kong, Macao and Taiwan where based on the principle of simple random sampling, the researcher circularly selected 326 sets from them. In order to avoid the lengthiness of the web page scale of certain websites and the lack of distinction and uniqueness of web page, this study also limited the web pages to 6 pages and excluded the additional pages derived from any hyperlink buttons. Subsequently, the slides at A4 size were partitioned into 4 and 16 blocks that were named respectively template a and template c, the detailed specifications of the templates are shown in figure 3-1. Each template from left to right is: template a: a1, a2, a3, a4; template c: c1, c2, c3... c9, ca, cb, cc, cd, ce, cf, cg (the number surpassed 10 is replaced by alphabet). The transparent template was pasted on a 17 inches LCD monitor, and the resolution of the screen was set at 1024*768 to analyze the layout of web page entities.

a1	a2
a3	a4

c1	c2	c3	c4
c5	c6	c7	c8
c9	ca	cb	Cc
cd	ce	cf	cg

Figure 3-1: the templates a and c

Besides, the 45 web page entities are obtained through the extraction process divided in following three steps: (1) from the 25 blocks on the web page of each website, the entities that occupy most of the scope is registered; (2) accumulating the entity that appear in each position and compile the statistics of top 3 entities with maximum quantity; (3) from the 25 blocks in different positions, finding out the top 3 blocks that appear most frequently in the web pages of all websites, removing the repeated ones and 45 blocks are left and given the names of entities for further analysis. After the process mentioned above, the obtained 45 web page entities are separated into general entity and specific groups depend on position oriented or not respectively. The illustration of entities is shown in appendix.

3.4 Recording process

After no repetition of these 326 female shopping websites and 45 entities are confirmed, the next step is to use the content analysis method to compare and record if each entity appears in separate websites. If the entity appears, the page and position of its presence as well as the date of observation should be recorded. The collection and comparison was executed from May 23, 2006 to September 15, 2006 with the following steps of analysis: (1) First observe if each entity appears in separate websites. (2) Check the page of its presence. A slide template of A4 size is used as the standard of one page. Then, check if there is vertical scroll to determine the web page contains one page or more than one page. If the vertical scroll is pulled to the bottom and the last page is found occupied half the template only, it should be regarded as one page. (3) Record all of the positions in which the entity appears on the website. If the appearing frequency of one entity on a website is greater than 1, all of the pages and positions where such entity appears should be recorded. (4) The position of some entity could not be recorded, such as: vertical scroll. It should be recorded as existence or nil. Nil is marked with x. This phenomenon also leads to the fact that the follow-up entity analysis should be distinguished between general entities and specific entities.

4. Data Analysis and Discussion

4.1 The general entities

4.1.1 Position data compilation of entities

Entity #1-Payment term: 238 out of 326 websites possess the function of payment term, accounting for 23.80% and 762 websites do not have such function, at 76.20%. After adding the appearing frequency of payment term together with the websites without this function, we found the percentage is greater than 1. This is because such entity appears in cross pages that lead to the repeated calculation of the pages after the second page. In addition, the payment term only appears up to page four and it could not be found since page five. The data shows the positions of payment term in template a and c from these 326 websites: (1) the payment term appears in page one at 10.40%, (2) the payment term appears in page two at 5.40%, (3) the payment term appears in page three at 5.00%,

(4) the payment term appears in page four at 3.30%. The highest percentage of the entity #1 in template a and c. In other words, our study has discovered that 23.80% of 326 websites contain the payment term. You can decide on your own if the payment term should appear in the first page and (1) the position that appears most frequently in template a is at a2 in page one, (2) the position that appears most frequently in template c is at c3 in page one.

Furthermore, in order to calculate the reliability, five analysts are given the code name as α, β, γ, δ, ϵ, the inter-coder agreement and reliability are obtained, as shown in table 4-2. This shows the acquisition of the position data of the e-commerce web page content above-mentioned should be reliable. The average inter-coder agreement:
(0.67+0.80+0.85+0.79+0.82+0.73+0.89+0.87+0.71+0.73)/10=0.79,
Reliability = (5*0.79)/1+ [(5-1)*0.79] =0.95. Consequently, this study has obtained the following statement of the layout:

Uniformity 1: In the general layout of e-commerce web page content, the 45 frequently used entities should be collocated following the sequence of the common use by the industry and personal requirements.

Second, regarding to the total pages of web page, we have observed that the maximum web pages contain six pages. However, most of the web pages are found in two pages, i.e. the length of two A4 size slides with the resolution of 1024*768, and three pages came in the second place. The pages that extend to the fourth, fifth or sixth page are unusual in these 326 websites. Therefore, our study has obtained the following statement of the layout:

Uniformity 2: In the general layout of e-commerce web page content, it is better to control the total pages of web page in two pages, and three pages at most.

Individual entity in the web page layout shows the characteristic of separate preference. As far as the three templates enumerated in this study are concerned, the first choice of the position for entity #1 payment term is a2 in template a and c3 in template c while the first choice of the position for entity #2 web authentication is a1 in template a and c1 in template c. In other words, different entity possesses the characteristic of position oriented. Therefore, our study has obtained the following statement of the layout:

Uniformity 3: In the general layout of

e-commerce web page content, individual entity possesses the characteristic of selecting the best position in the web page layout.

4.1.2 The trend analysis of entity position

As entity #1 payment term possesses different percentage of layout in different template positions. In order to analyze this data, our study has divided it into 10 equal parts: above 90% (represented by the symbol 9:), below 90% and above 80% (represented by the symbol 8:), below 80% and above 70% (represented by the symbol 7:) and so forth...until the percentage is below 10% (no symbol is assigned). Note that the different position is indicated by ligature and left-to-right represents from large to small. The analysis of at most six positions is taken. Thus, it is notably observed the preference trend of common positions implied in individual entity during the process of web page content. For instance: 238 out of 326 websites possess the function of entity #1 payment term, accounting for 23.80% with the following layout trend in different templates: (1) template a: 7:2-1:1-1:3-4-12-34, represents more than 70% of the entity #1 are collocated in the position of a2, 10% are collocated in the position of a1 or a3; (2) template c: 3:3-2:4-1:8-1:2-1:7-34, represents more than 30% of entity #1 are collocated in the position of c3, 20% are collocated in the position of c4. According to this principle, the position trend analysis of these general 38 entities is compiled in table 4-1. The dispersion trend of each entity could be seen in this table. Therefore, our study has obtained the following statement of the layout:

Uniformity 4: In the general layout of e-commerce web page content, except for the first choice position, individual entity could be collocated to other positions following the position trend in consideration of the difference-in-sameness characteristic of web pages.

Table 4-1: the trend analysis of the positions for general entities

#	Template a *% : position – (from large to small)*	Template c *% : position – (from large to small)*
1	7:2-1:1-1:3-4-12-34	3:3-2:4-1:8-1:2-1:7-34
2	6:1-3:3-4-13-2-12	2:1-2:15-1:5-1:9-9d-59
3	6:2-2:1-3-4-23-34	2:8-1:4-1:1-5-48-78
4	4:1234-3:12-34-24-4-3	2:67ab-1:67-2367
6	5:1-2:2-1:3-12	2:5-1:1-1:34-9
7	5:1-3:3-2:34	3:12-3:5-3:9-3:ab
8	6:2-2:1-1:4-1:3-12	2:4-2:3-1:2-8-7-c-9
9	3:3-3:1-2:2-1:4-1:13	2:9-2:5-1:c-15-59
10	7:2-2:4-1:1-12-3	3:4-3:3-1:f-7-2-23
11	6:2-2:1-1:4-3	3:3-2:4-1:2-1:c-7-5-6
12	7:1-3:2-3-1	3:1-2:2-1:4-1:3
13	7:2-1:1-1:3-4	3:3-3:4-1:7-d-9
14	8:12-1:1234-34-2	2:1234-2:234-1:23-67-67ab
15	2:4-2:12-2:1234-1:34-1:3-1:2	1:g-cg-1234-78bc-678
16	3:24-3:2-2:1-2:3-13-12	2:9c-1:59-1:59c-1234-5-c
17	5:1-3:3-1:2-4	3:1-2:5-1:9-8-a-c
19	2:2-2:1234-2:1-1:12	8-2-67-67ab
20	6:1-2:2-1:3	2:2-2:1-1:3
21	4:34-3:12-1:4	2:ef-1:23-1:67
22	5:2-3:1-3	3:3-2:2-1:4
23	4:2-3:1-2:4	2:3-2:4-1:g
24	3:2-2:1-2:24	2:4-2:8c-1:15
25	5:1-5:2	5:2-3:4-2:34
26	9:1-1:12-2	5:1-3:12-1234
27	5:2-3:1-1:3	3:-4-2:1-1:3
28	5:2-4:1-4-12	3:4-2:2-2:1-1:3
29	6:2-3:1-3-4-12	2:3-2:4-2:2-1:8
30	6:2-4:1-4	3:4-2:1-2:3
31	3:34-2:4-2:2-1:1-1:12-3	2:ef-1:ab-3-7-b-g
32	3:4-2:24-2:12-1:1234-3	1:g-cg-8cg-fg-234

33	3:2-2:1-2:3-1:4-1:34	1:3-1:9-2-4-g
34	5:12-1:2-1:2-1:34-4-24	1:234-1:1234-67-678-23
37	5:2-2:3-2:4-1:1-12-24	2:8-2:4-1:3-1:c-d-g
41	3:1-2:2-2:4-1:3-1:13-1:24	2:15-1:59-4-cg-9-d
42	4:1-3:2-1:3-12-13-24	2:5-1:3-1:9-1:4-8-2
43	7:2-2:1-1:3-4-12-23	4:3-2:4-1:2-9-5-7
44	4:4-2:24-2:3-1:2-1-34	1:g-1:cg-1:8c-c-d-8

4.1.3 Cross-analysis of entity positions

If the entities are cross-analyzed with the template positions, the characteristic of preference for positions between different entities could be found. Although template a is divided into only four blocks, some entities have the phenomenon of cross blocks which are arranged as shown in table 4-3. Units #14, #25, #34 and #45 are presented in the position between a12. The same situation happened in other entities such as #21 and #31 in the position between a34. Understanding the reciprocity between the positions of template a and entities could only generate a rough conclusion for the basis of template c, as shown in table 4-5: for the dispersion of entities, the most frequently collocated position is a2 with 17 websites, the least is a3 with only 1 websites, and the others are encountered with the situation of cross four blocks. Therefore, our study has obtained the following statement of the layout:

Uniformity 5: In the general layout of e-commerce web page content, if a page is divided into 4 blocks, the upper positions are used most frequently and the lower left corner is used least frequently.

Table 4-2: statistics of template a and entities (# stands for the entity number)

a	1	2	3	4	12	13	34	1234
#	2,6,7,12,17,20,26,41,42	1,3,8,10,11,13,19,22,23,24,27,28,29,30,33,37,4	9	15,32,44	14,25,34,45	16	21,31	4

The dispersion of 16 blocks in template c is the most explicit analysis of the position data. We could perceive from table 4-3 that only c1, c2, c3, c4, c5, c8, c9 and cg occupy single block and the others have the cross-blocks phenomenon. As template c has the maximum blocks in this study, therefore, we have assigned group numbers from 1 to 8 to the entities that appear clearly in single block which include entity group 1 <c1, (2,12,17,26)>; entity group 2 <c2, (20,23,25)>; entity group 3 <c3, (1,11,13,22,29,33,43)>; entity group 4 <c4, (8,10,24,27,28,30,37)>; entity group 5<c5, (6,7,42)>; entity group 6<c8, (3,19)>; entity group 7<c9, 9)> and entity group 8<cg, 15,32,44)>. In other words, the relationship between the interdependence and the positions of the entities could be well considered in further layout of web page content. For instance, entity group 8 means: cg is the optimal position to collocate text button advertisements or related contents of sales information. Other entities with cross-blocks, for example: the position of #16 product list is at 59d on the left of the web page and the static advertisement is at 67ab in the center of the web page, should also be considered. Therefore, our study has obtained the following statement of the layout:

Uniformity 6: In the general layout of e-commerce web page content, if a page is divided into 16 blocks and each block has its own entity, the group characteristics will be shown then. For example: entity group 8<cg, 15,32,44)>.

Uniformity 7: In the general layout of e-commerce web page content, if a page is divided into 16 blocks and it is foreseeable that the position of each entity commonly used could be a single block or cross-blocks, for example: entity #16 could be considered to collocate in the position of 59d which is generally on the left of a web page.

Table 4-3: statistics of template c and entities (# stands for the entity number)

c	1	2	3	4	5
#	2,12,17,26	20,23,25	1,11,13,22,29,33,43	8,10,24,27,28,30,37	6,7,42

c	8	9	15	234	1234
#	3,19	9	41	34,45	14
c	59d	67ab	ab	ef	g
#	16	4	31	21	15,32,44

4.2 The specific entities

In addition, there are 7 specific entities that are not position oriented. There are entity #5 scroll advertisement, entity #18 page number of web page, entity #35 horizontal scroll bar, entity #36 background music, entity #38 vertical scroll bar, entity #39 background color, entity #40 pop-up advertisement and so forth which will be explained as following.

Unit #5 scroll advertisement: 87 out of 326 websites possess the function of scroll advertisement, accounting for 8.70% overall. The ones on the right are in the majority which are over 92% and far surpass the ones on the left, at 8%. In addition, there are also 298 websites that do not possess the function of scroll advertisement, accounting for 91.30% overall. Unit #18 page number of web page: in these 326 websites, the web page often consists of two to three pages. The majority contain two pages, accounting for 36.7%, with the average of 2.664 pages. There are three websites beyond the scope designed by the research. There are 31 sites that contain only one page of the web page, 121 sites with two pages, 114 sites with three pages, 65 sites with four pages, and the sites with five and six pages are under 16. (This conclusion is equivalent to the uniformity 2. Therefore, it is not listed redundantly in the uniformities.) Unit #35 horizontal scroll bar: 4 out of 326 websites possess the function of horizontal scroll bar, accounting for 1.20% overall. There are 322 websites without this function, at 98.80% overall. Unit #36 background music: 4 out of 326 websites possess the function of background music, accounting for 1.20% overall. 322 sites do not have the function of background music, at 98.8% overall. The end-users could decide to play or stop the background music by themselves. Unit #38 vertical scroll bar: 300 out of 326 websites contain the function of vertical scroll bar, accounting for 92.00%. Only 26 websites do not possess such function, at 8.00% overall. This proves that the vertical scroll bar is indispensable. (As this conclusion is not particular, it is not listed redundantly in the uniformities.) Unit #39 background color: 253 out of 326 websites in templates a and c have the prevailing background color in white, accounting for 77.60% overall. The background color of 73 websites is not mainly in white, at 77.60% overall. The other colors include: pink at the second place, light blue at the third place, blue at the forth, gray at the fifth and light yellow at the sixth place. Unit #40 pop-up advertisement: 12 out of 326 websites have the function of pop-up advertisement, accounting for 3.70% overall. 314 websites do not possess such function, at 96.30% overall.

According to the above explanation, we discovered that the horizontal scroll bar (1.20% overall) and vertical scroll bar (92.00%) could respond to two types of factions in the web page design. From the studies in the past concerning to the use of scroll bar, [27] and [31] opined that the web pages without scroll bar enabled the user to comprehend easily the content. However, those who hold contrary opinions ([24]) believed that the sites without scroll bar could increase the usability of web pages. As for those who do not have experience, the study of [29] did not agree there would be any effect that could be proved by the results of our study. Currently, the mainstream of scroll bar design resides in less horizontal and more vertical.

Uniformity 8-1: In the general layout of e-commerce web page content, if the scroll advertisement is collocated, the position on the right should be considered.

Uniformity 8-2: In the general layout of e-commerce web page content, try to avoid horizontal scroll bar in the web page.

Uniformity 8-3: In the general layout of e-commerce web page content, background music in which is not recommended used in web page.

Uniformity 8-4: In the general layout of e-commerce web page content, white could be considered as the color of web page.

Uniformity 8-5: In the general layout of e-commerce web page content, the pop-up advertisement in which is not recommended used in web page.

4.3 Effectiveness analysis

In order to examine if these 45 entities possess the uniformity in the positions analyzed from the 326 female shopping websites, our study has conducted ten times depth interview with at

least 3 personal target groups that are staffs, graduated students and colleagues who are random invited from campus. The usability test regarding to user friendly, usefulness, ease of use in each male shopping website is tracked and compared with the foresaid 10 uniformities and the results of support are obtained in table 4-4. The results indicate that if more then two of usability test are approved then the result is considered "y" otherwise "-" respectively. We could notice that most web users support the

uniformities proposed by our study. Uniformity 5 has gained the maximum support and the next are uniformities 2, 3 and 6. An additional remark is that uniformity 8 belongs to specific entity that includes 5 separate sub-entities and it will be deleted if any one of these sub-entities does not support it. At last, the average effectiveness ratio of uniformity support reaches 0.76 that shows the uniformity principles of the layout in e-commerce web page content addressed by our study do effectiveness.

Table 4-4: usability test (user friendly/ usefulness /ease of use)

	g-1.	g-2.	g-3.	g-4.	g-5.	g-6.	g-7.	g-8.	g-9.	g-10.	result	Reliability
u-1	-/y/y	y/y/y	y/y/y	-/y/y	y/y/y	-/y/-	y/-/-	-/y/y	-/-/y	y/y/y	7	.94
u-2	y/-/y	y/y/y	y/-/-	y/y/y	-/-/y	y/y/y	y/-/y	y/-/y	y/y/y	y/-/y	8	.90
u-3	-/y/y	-/y/y	-/y/y	-/-/y	y/y/y	-/y/y	y/y/y	y/y/y	y/y/y	-/-/y	8	.85
u-4	y/y/y	-/y/-	y/-/y	y/y/y	y/y/y	y/y/y	y/y/y	y/-/-	-/y/y	-/y/y	7	.89
u-5	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	y/y/y	10	.84
u-6	y/-/y	y/-/y	y/y/y	y/y/y	y/y/y	-/y/y	y/-/-	y/-/-	y/y/y	y/-/-	8	.93
u-7	y/-/-	y/y/y	y/y/y	-/y/-	y/y/y	y/y/y	y/y/y	y/y/y	-/y/-	y/y/y	7	.97
u-8	y/y/y	y/-/y	-/y/y	-/y/y	y/y/y	y/-/-	y/y/y	y/y/y	y/y/y	y/-/-	6	.95
result	9	9	8	7	8	6	8	6	7	7	.76	

5. Conclusion

An e-commerce web page is like a physical store. What kind of products should be collocated in which regular position in order to be quickly found by the shopper? The layout of web page is just like transparent display window, the positions of the entities with different functions have their necessity of existence to attract the browsers. In other words, the planning of web page content responds to the planning of product display in physical store mutually. The web page of e-commerce website is esteemed as the virtual facade; we should be deliberate in planning the content of web page. In conclusion, our study has contributed the following:

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Appendix

Entities for #5, #18, #35, #36, #38, #39, #40 are

specific entities.

1:payment term,

2:web authentication,

3:browsing counter,

4:static ad,

5:scroll advertisement,

6:search engine,

7:advertising video & audio,

8:message board,

9:banking cooperation,

10:cooperation proposal,

11:order inquiry,

12:back to web page,

13:on-line customer service,

14:banner,

15:text advertisement,

16:product list,

17:service for returning goods,

18:page number of web page,

19:the most updated news,

20:company introduction,

21:contact information,

22:shopping indication,

23:language selection,

24:voting area,

25:personal mail box,

26:heading,

27:date of the day,

28:add to my favorite,

29:shopping cart,

30:set as web page,

31:screen resolution,

32:button ad,

33:promotion activity,

34:scroll,

35:horizontal scroll bar,

36:background music,

37:e-paper,

38:vertical scroll bar,

39:background color,

40:pop-up advertisement,

41:links to friend sites,

42:member login,

43:FAQ,

44:hit parade of sale,

45:dynamic ad.