Empirical Investigation of Website Design Affecting E-Loyalty

Hsin-Jung Hsieh

Zhaoqing University, Zhaoqing, China

Given the rapid growth of e-commerce and the importance of understanding online customer behavior, it is necessary to develop a universal model as a means to measure the relevant construct. Website design plays an important role in e-commerce because it directly affects online customers during the purchase process. Online customers will continue to be loyal because of good website design. However, the effect of website design has not been clearly defined and a suitable framework for evaluating the status of website design is lacking. The purpose of this study is to develop a comprehensive framework that can guide successful web design and examine the impact of web design on e-loyalty. 207 Taobao customers from China completed an online survey. All scales were analyzed by reliability, construct validity, and convergent validity. Multiple regression analysis is used to test research hypotheses. Findings indicated that the factor of website design should be revised and classified into visual design and information & navigation design. The website design had a significantly positive effect on e-loyalty. The relative order of importance of these predictors was information & navigation design and visual design.

Keywords: website design, web design, e-loyalty, customer loyalty

Introduction

With the rapid development of Internet technology, the improvement of third-party payment, and the construction of logistics facilities, more and more people prefer to purchase products on shopping platforms. The growth rate of online stores is significantly faster than that of physical stores. Faced with the rise of various shopping platforms, for the company, it is not only necessary to attract new online customers but also to retain original customers on the website. To enhance market competitiveness, shopping platforms must take effective ways to meet the needs of online customers. There are usually no significant differences in products and prices between shopping platforms. How to attract online consumers to buy products on their platforms through website design has become an important issue. In an online store, consumers can only search, feel, and experience products through the website. Therefore, a good-looking website will bring a pleasant user experience, and the usability of the website will create a positive attitude toward an online store (Phan & Pilik, 2018). Moreover, if the online customers are satisfied with their past purchasing experience, they are likely to return to the same platform (Winnie, 2014).

Given the rapid growth of shopping platforms and the increase of online customers, several studies focused on how online service quality affects consumer purchase intentions. Few authors pay attention to how website characteristics or quality affect online consumer attitudes and behaviors. However, webpage design has

Hsin-Jung Hsieh, Associate Professor, Economics & Management College, Zhaoqing University, Zhaoqing, China.
Correspondence concerning this article should be addressed to Hsin-Jung Hsieh, Economics & Management College, Zhaoqing University, Zhaoqing, China.

a direct impact on the online purchase process. The characteristics of the website determine the perception of the customer for the online store (Fernandus & Legowo, 2020). Moreover, loyal customers determine the sustainability of a company; the purpose of this research is to examine the influence of website design on e-loyalty. This study aims to determine the primary factors in website design that affect online customer loyalty. Such a framework may benefit the research of website design and solve the dilemma of where the company should direct its online marketing strategy. In addition, the research results will help companies realize the importance of website design and effectively establish a clear and useful website structure.

Literature Review

Website Design

In the traditional shopping environment, managers will manipulate the atmosphere and layout of the retail store to trigger purchase intentions. In the online shopping environment, websites reveal their characteristics to influence customer behavior (Wells, Parboteeah, & Valacich, 2011). A website is a set of webpages that can contain various types of information, including text, colors, graphics, sounds, videos, and animations. A well-designed website can help companies build trust and guide visitors to take action. Website design is a multi-dimensional construct and is divided into different categories by different scholars. Cyr, Kindra, and Dash (2008) conducted an empirical study and classified website design into three factors: visual design, information design, and navigation design.

Pleasing websites will attract more customers than other less attractive websites (Wang, Minor, & Wei, 2011). Visual design elements deal with the balance, emotional appeal, aesthetics, and unity of the overall appearance. It includes colors, photos, shapes, and font types on the website (Cry, 2008). Online consumers visit websites to find information, such as price information, product information, and promotional information. Therefore, websites can attract, retain, and stimulate online consumers by providing valuable information (Gao, 2013). Moreover, good website navigation allows consumers to access appropriate and unlimited information more easily and quickly and has a positive impact on online purchase intentions. This is because if there is not enough navigation, online consumers may feel confused, lost, and unwilling to return to the site again (Winnie, 2014).

E-Loyalty

The theoretical basis of electronic loyalty (e-loyalty) is similar to traditional loyalty. The concept of e-loyalty extends the traditional definition of the concept of brand loyalty. E-loyalty is the favorable impression of consumers towards online sellers, which leads to repeated purchases (Lin & Wang, 2006). Online consumers with loyalty will not only buy products from e-retailers, but they will also help attract new customers through positive word of mouth (Li, Aham-Anyanwu, Tevrizci, & Luo, 2015). Chang and Wang (2011) categorized online loyalty into two dimensions: attitudinal loyalty and behavioral loyalty. Attitudinal loyalty means that consumers love a particular brand in their hearts, while behavioral loyalty means that consumers are ready to take action to purchase again (Watson IV, Beck, Henderson, & Palmatier, 2015). Dharmesti and Nugroho (2013) measured e-loyalty from two dimensions: online repurchase intention and word-of-mouth communication.

Methods and Data Collection

This study integrated different terms used by various authors in describing the website design, considered the online shopping platform that the researcher wants to study, and then categorized the website design as

visual design, information design, and navigation design. This study hypothesizes there is a significant explanatory relationship between website design (visual design, information design, and navigation design) and e-loyalty. So far, there have been few studies on website design and online customers.
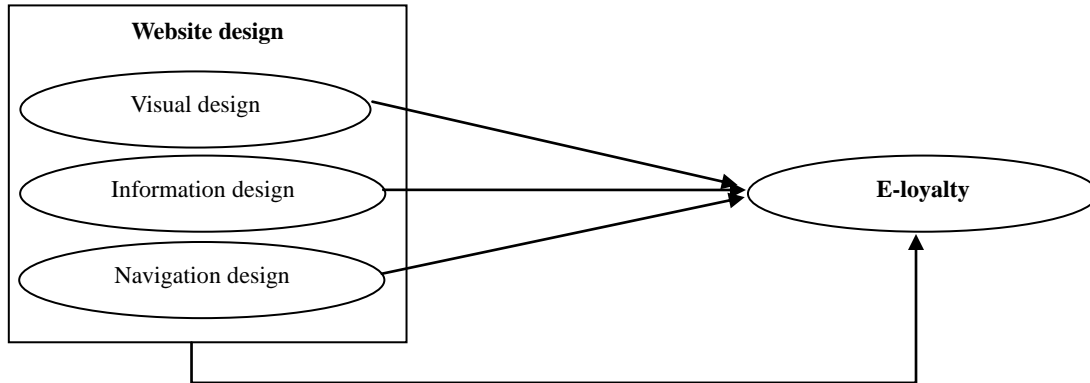

Figure 1. Hypothesized model.

In this study, a randomly selected sample of customers from Taobao in China was used to test the hypothesis. The data is collected using online surveys. These respondents must have shopped on Taobao. This resulted in a total of 207 valid responses used in the data analysis procedures. Three parts, self-report surveys are used to collect data. The website design used 13 items for measurement, and then the e-loyalty used four items. Respondents were asked to give their answer to each item measured by the five-point semantic difference scale, anchored as 1 = "strongly disagree" and 5 = "strongly agree". A higher average score indicates strong agreement with the item, while a lower average score indicates strong disagreement. Personal information used four items and used checklists format for evaluation. In this study, exploratory factor analysis was conducted on the scale to further establish its structural validity. The coefficient alpha of the scale was used as an estimate of internal consistency reliability. Descriptive statistical analysis was used for all items. Finally, the correlational research design of multiple regression statistics was used to test the hypothesis.

Results

Validity and Reliability

Principal components analyses using varimax rotation were conducted to test the emergence of each factor. The number of factors actually extracted was determined by the number of items with eigenvalues greater than one. For missing values, cases were excluded listwise. The value of the KMO test should be above 0.7 and Bartlett's sphericity test should be less than 0.05. Factor loadings less than 0.4 were suppressed and all items loaded onto a factor at 0.4 or greater. Eigenvalues indicated the items of website design extracted two factors with 58.010% variance explained. The items of e-loyalty extracted one factor with 68.326% variance explained. Therefore, the researcher combined the "information design" and "navigation design", and named "information & navigation design". The reliability of the website design and e-loyalty scales were expressed by Cronbach's coefficient alpha. The coefficient alpha values exceeded the minimum standard of 0.7, providing good estimates of internal consistency reliability. Table 1 shows that all factors reached an acceptable level of validity and reliability.

Table 1

Factor Loadings and Reliability

Construct and items	Loading for Factor 1	Loading for Factor 2
Website design (KMO = 0.913, Bartlett's sig. = 0.000)		
Visual design (Cronbach's α = 0.895)		
Taobao's page is simple and clear.	0.795	0.179
Taobao's color matching is appropriate.	0.830	0.183
Taobao's font is appropriate.	0.711	0.364
Taobao's layout is reasonable.	0.841	0.137
Taobao looks attractive.	0.608	0.264
Information & navigation design (Cronbach's α = 0.864)		
Taobao's information is accurate.	0.396	0.657
Taobao's information is up to date.	0.312	0.649
Taobao's information is complete.	0.309	0.656
Taobao's information is useful.	0.485	0.496
Taobao is easy to navigate.	0.519	0.549
Taobao's navigation is useful.	0.175	0.733
Taobao's hyperlinks are all accessible.	0.013	0.770
Taobao can guide me to find what I'm looking for.	0.235	0.670
E-loyalty (KMO = 0.794, Bartlett's sig. = 0.000)		
E-loyalty (Cronbach's α = 0.838)		
I will visit Taobao again.	0.843	-
I will purchase from Taobao in the future.	0.893	-
I will purchase from Taobao frequently.	0.796	-
I will recommend Taobao to others.	0.769	-

Convergent validity was established among all scales using Pearson r correlation coefficients. The correlations between scales ranged from 0.511 to 0.639 ($p < 0.01$), providing support for convergent validity of the scales. Table 2 presents the correlation matrix between the scales.

Table 2

Pearson r Inter Correlations

	Visual design	Information & navigation design	E-loyalty
Visual design		0.639**	0.511**
Information & navigation design			0.623**

Note. ** $p \leq 0.01$.

Descriptive Analysis

The four-item respondents profile provided information about the background of each sampled customer. The final data-producing sample consisted of 207 Taobao online customers who completed the survey. Table 3 presents the frequency distribution of gender, age group, educational background, and tier city.

Table 3

Descriptive Analysis of Respondent Profile

Items	Frequency	Valid percentage
Gender		
male	101	48.79%

Table 3 to be continued

female	106	51.21%
Age group		
19 years old and below	33	15.94%
20-29 years old	108	52.17%
30-39 years old	41	19.81%
40 years old and above	25	12.08%
Educational background		
High school and below	93	44.93%
College and undergraduate	106	51.21%
Master and Ph.D.	8	3.86%
Tier city		
First-tier city	62	29.95%
Second-tier city	52	25.12%
Third-tier city and below	93	44.93%

Note. N = 207.

Table 4 presents the results of an analysis of the descriptive statistics for items of website design and e-loyalty.

Table 4

Descriptive Analysis of All Items

Construct and items	Mean	Standard deviation
Website design	3.70	0.520
Visual design	3.59	0.647
Taobao's page is simple and clear.	3.61	0.816
Taobao's color matching is appropriate.	3.71	0.779
Taobao's font is appropriate.	3.56	0.810
Taobao's layout is reasonable.	3.52	0.841
Taobao looks attractive.	3.55	0.798
Information & navigation design	3.78	0.527
Taobao's information is accurate.	3.52	0.716
Taobao's information is up to date.	3.94	0.757
Taobao's information is complete.	3.96	0.757
Taobao's information is useful.	3.45	0.752
Taobao is easy to navigate.	3.87	0.804
Taobao's navigation is useful.	3.92	0.666
Taobao's hyperlinks are all accessible.	3.80	0.674
Taobao can guide me to find what I'm looking for.	3.77	0.742
E-loyalty	3.89	0.656
I will visit Taobao again.	4.02	0.757
I will purchase from Taobao in the future.	3.93	0.721
I will purchase from Taobao frequently.	3.87	0.867
I will recommend Taobao to others.	3.75	0.845

Multiple Regression Analysis

Multiple regression analysis was used to measure the influences of visual design and information & navigation design together on e-loyalty. As shown in Table 5, the F value (70.741) for the regression model

analyzing the two website design dimensions and e-loyalty was significant (p = 0.000) for an explanatory relationship. The adjusted R^2 indicated that the visual design and information & navigation design as a whole explained 40.4% (0.404) of the variance in e-loyalty. To analyze the individual predictors, the t-statistic, which is the regression coefficient divided by the Standard Error (SE), was utilized and found to be significant for the two dimensions of visual design (t = 2.736, p = 0.007) and information & navigation design (t = 7.155, p = 0.000). In terms of the relative importance of these predictors, based on the values of the β coefficients, the order of importance was information & navigation design (β = 0.500) and visual design (β = 0.191). In summary, the overall model was significant in supporting the hypothesis.

Table 5

Summarized Multiple Regression Analysis

Variable	B	SE	β	t	p
(Constant)	0.843	0.259		3.248	0.001
Visual design	0.194	0.071	0.191	2.736	0.007
Information & navigation design	0.624	0.087	0.500	7.155	0.000

Note. Dependent variable: E-loyalty.

Conclusions

Findings

The researcher combined information design and navigation design into one factor through validity and reliability analysis. Web designers also often combine the concepts of information architecture and navigation design. Therefore, website design was divided into visual design and information & navigation design. The study found that there was a significant explanatory relationship between website design and e-loyalty. The finding was consistent with other research, even online customers. In terms of the relative importance of the two values, the order of importance was information & navigation design, followed by the visual design. The dimension with the highest rated score was e-loyalty, followed by information & navigation design, and visual design. The visual design item with the lowest average score is "Taobao's layout is reasonable". The highest average score is "Taobao's color matching is appropriate". The information & navigation design with the lowest average score was "Taobao's information is useful", followed by "Taobao's information is accurate". The item with the highest average score was "Taobao's information is complete". The item of e-loyalty with the lowest average score was "I will recommend Taobao to others". The item with the highest mean score was "I will visit Taobao again". Taobao has slightly more female customers than men. 20-29-year-olds (52.17%) represent the largest Taobao customers, followed closely by the 30-39-year-old (19.81%) age group. 51.21% of Taobao's customers have a college and undergraduate education. Taobao's customers account for a relatively high proportion of third-tier cities and below (44.93%).

Discussions

This research helps managers to more deeply define the key factors of their website design and increase customer e-loyalty. Some examples from this research are presented:

1. To enhance e-loyalty, managers could place greater emphasis on improving the information & navigation design. Taobao should ask sellers to provide more useful and corrected information to customers. After all, consumers cannot see the product directly or ask detailed questions about the product. Detailed and

accurate product information can give online shoppers more confidence. It can also avoid return disputes caused by incorrect information.

    2. The website should look attractive, but more importantly, it should provide users with what they want as efficiently as possible. Online customers have little patience with difficult pages, which is why many visitors leave within the first few seconds. A reasonable website layout does not always allow online customers to stay, but it may be the reason for them to leave. An unreasonable webpage can trigger negative word of mouth about the website and affect business growth.

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