User Satisfaction and Website Usability: Exploring the Linkages in B2C E-commerce Context

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Abstract. In the dynamic and unstable E-commerce environment, online retailers must have more usable websites in order to satisfy their customers and thus increase their market share. This study has been undertaken in context of B2C E-commerce websites and its main purpose is to explore the linkages between different dimensions of website usability and their impact on user satisfaction. A questionnaire survey is used to collect data from select respondents (N=415) regarding B2C E-commerce websites and analysis is performed using structural equation modelling (SEM). Findings suggest that out of four dimensions, trust followed by extension quality is the two most important predictors of user satisfaction. The study has important implications for website designers, developers and researchers.

Keywords: B2C E-commerce, web usability, system quality, trust, content quality, support quality, user satisfaction.

I. INTRODUCTION

E-commerce includes all business activities carried on with the help of electronic media. Business-To-Consumer (B2C) model is the most common model in E-commerce and has grown manifolds both in terms of the type of products sold and transacted money value in recent years. According to a report by IAMAI [16] total Digital Commerce market in India which was valued at INR 53,301 Cr. in December 2013 grew at 53% through 2014 and reached INR 81,525 Cr. by the end of December 2014. The industry is estimated to cross INR one lakh Cr. by the end of 2015. A study by Forrester Research Inc. [8] on Online Retail 2011 to 2016 reveals that India's E-commerce market has shown an explosive growth of 400 % in last five years and is expected to grow more than five-fold by 2016. Attracted by the huge potential offered by online presence, an increasing number of businesses have built websites as important tools for dissemination and communication of vital information. The success or failure of these websites depends on how much the users are satisfied using them. User satisfaction can be defined as the customers' evaluation of a product or service in terms of whether it has met their needs and expectations [17]. It has its roots in the Expectation-Confirmation Theory (ECT). The underlying logic of which is: users first form expectations, they then consume product or service and form perceptions, followed by an assessment of performance vis-à-vis expectation to determine their level of satisfaction [3][24].

Numerous researchers and web development practitioners have proposed various factors for measuring user satisfaction. However, not much research has been conducted that investigates the differential impact of web usability dimensions on user's satisfaction with a website. In fact, no known literature addresses this issue in Indian context. Investigating this relationship will provide developers some insights for improving user's satisfaction level with website.

II. REVIEW OF CONSTRUCTS USED IN THE STUDY

For the present research five constructs have been studied comprising of four independent variables viz. system quality, trust, extension quality and propriety of content jointly called as web usability dimensions and one dependent variable i.e. user satisfaction. These five constructs are very briefly described in the following paragraphs.

System quality refers to the performance characteristics of an E-commerce system and has been studied in E-commerce context from the point of view of navigability [20],[25]; availability[6],[20]; reliability[6],[31]; consistency[25],[27] security[19],[31] and response time [5],[19]. The second construct ***Trust*** is a very critical factor [11], [21], [26] and plays a major role in users' satisfaction with the E-commerce website. As any E-commerce transaction involves online payment, it is imperative that the retailer provide such environment that users feel free in divulging confidential information over the internet. ***Extension quality***, which is the third independent construct, can be defined as overall support delivered by the website, hence services such as product comparison, FAQ's and feedback, order tracking, free services etc. have been included in it. Zeithaml et al. [31] define e-SQ as the extent to which a website facilitates efficient and effective shopping, purchasing and delivery of products and services. Researchers such as [4; 18] have also highlighted the

978-1-4673-6537-6/15/$31.00 ©2015 IEEE

importance of service quality in E-commerce context. ***Propriety of Content*** is defined as the degree to which content displayed on the website is proper in terms of is relevance, completeness, timeliness, accuracy etc. [4;20;25].

User satisfaction: According to Kim et al. [18], satisfaction is measured by comparing actual and expected level of service/ product received. Various researchers viz. [7; 18; 22] have suggested user satisfaction as one of the most important dependent variables for measuring success in E-commerce. In the present study, it tries to capture users' overall experience with the website starting with its design, content, trustworthiness and the services provided. This study patterns the system quality construct used in [5],[19],[25]; trust construct using [11],[21]; content quality after [1],[4]; support quality from [1],[31] and user satisfaction from [4],[20] by adapting it to suit the present context.

III. DEVELOPMENT OF HYPOTHESES

In order to ascertain the differential importance of website usability dimensions on user satisfaction, a hypothesis linking each independent construct to user satisfaction has been formulated in this section. The positive impact of system quality on user satisfaction has been demonstrated in several earlier studies [4; 5; 18]. Researchers such as [7; 15; 18; 22] assert that trust directly and positively affects users' satisfaction with the website the likelihood of engaging in financial transaction with it. Some researchers viz. [4;5;15] consider overall satisfaction to be primarily a function of service/ extension quality. Researchers such as [4;7] have suggested that content quality, is a prominent predictor of user satisfaction with E-commerce websites. There is therefore support for following hypotheses:

H_1 : System Quality has a positive impact on Satisfaction.
H_2 : Trust has a positive impact on User Satisfaction.
H_3 : Extension Quality has a positive impact on Satisfaction.
H_4:Propriety of Content has a positive impact on Satisfaction

IV RESEARCH METHODOLOGY

Data for the present study has been collected from both primary and secondary sources. Primary data has been collected from respondents using questionnaire survey method. Secondary data from articles and research reports also forms an integral part of the study. The questionnaire uses judgmental sampling technique, has 27 items and uses a 5 point likert scale with 5 indicating a strongly agree and 1 indicating strongly disagree. The questionnaire was administered to 620 respondents and produced 450 responses. Of these, 35 questionnaires have been eliminated and finally a total of 415 usable surveys provide the data for analysis.

V DATA ANALYSIS AND FINDINGS

This section discusses findings of the analysis done using SPSS and AMOS software. After testing the reliability and validity of each construct, hypothesis formulated in the previous section are tested and finally the relative importance of website usability dimensions in determining user satisfaction is analyzed.

5.1 Construct Reliability and Validity

Some of the important measures of reliability are cronbach alpha (CA), average variance extracted (AVE) and composite reliability (CR). A value of alpha i.e. more than 0.7 or above [23], AVE more than 0.5 [9;13] and CR greater than 0.7 [9;13] are often used as evidence that the items measure an underlying (or latent) construct. Table 1 shows CA, AVE and CR statistics. As shown in Table 1, all values of CR, AVE and CA exceed their benchmark values.

Table 1. CA, AVE and CR values of constructs

Construct	CA	AVE	CR
System Quality (SQ)	0.94	0.71	0.94
Trust (T)	0.91	0.64	0.91
Extension Quality (EQ)	0.92	0.71	0.92
Propriety of Content (PC)	0.91	0.67	0.91

5.3 Hypotheses Testing

Hypotheses formulated in previous section have been tested using SEM. Results are shown in table 2 along with statistics such as standardized regression coefficient (SRC), squared multiple correlation (SMC) and critical ratio (CR). Result of hypothesis testing shows that all independent variables significantly influence user satisfaction and are hence accepted. Trust emerges as the most significant predictor (0.74, $p<0.001$) of user satisfaction followed by extension/support quality (0.6, $p<0.001$). It can be said that, the more trustworthy a website is, the more user is likely to feel free in divulging confidential information which may eventually lead to an online purchase. Although propriety of content is a significant predictor of user satisfaction, it seems to be the least important in the present context.

Table 2. Impact of Usability Dimensions on User Satisfaction

Hyp.	Independent Construct	SRC	SMC (%)	CR	Remark
H1	System Quality	**0.57**	**32.7**	**11.4***	Accepted
H2	Trust	**0.74**	**44.6**	**11.6***	Accepted
H3	Extension Quality	**0.6**	**35.5**	**9.7***	Accepted
H4	Propriety of Content	**0.48**	**30.2**	**7.3***	Accepted

* Significant at $p<0.001$

VI ASSESSING RELATIVE IMPORTANCE OF WEB USABILITY DIMENSIONS ON USER SATISFACTION

Main objective of the study is understand relative importance of usability dimensions in determining user satisfaction from customers' perspective so that retailers can gauge what in their website satisfies users and what can be improved. The results shown by figure 1 indicate that in determining user satisfaction, most important factor is trust (0.48, $p<0.001$), closely followed by extension quality (0.42, $p<0.001$). Thus

designers should pay more emphasis on increasing the users' trust in the website by having proper authentication mechanisms and security certificates on their website etc. It can also be implied that users are more satisfied if website provides services such as FAQ's, demos, live chats etc.

Table 3. Regression statistics for relative importance of Website Usability Dimensions according to User Satisfaction

Independent Construct	Dependent Construct	SRC	C.R.	SMC
System Quality	User Satisfaction	0.16	3.78*	0.44
Trust		0.48	9.30*	
Extension Quality		0.42	8.92*	
Propriety of Content		0.01	0.13	

* Significant at p<0.001

Results also indicate that although the relationship between system quality and user satisfaction as shown in table 2 is high (0.57, p<0.001), it becomes very weak (0.16, p<0.001) as shown in table 3 and the one between user satisfaction and propriety of content which was found significant (0.55, p<0.001) in table 2, has now become insignificant (0.01, p<0.05). This can be explained using the concept of moderation effect. Researchers such as [2;10], state that a moderator is a variable that alters the direction or strength of the relation between a predictor and an outcome. Thus due to the moderation effect of trust and extension quality the relationship between system quality and user satisfaction and that between propriety of content and satisfaction has become very weak and even insignificant in the latter case.

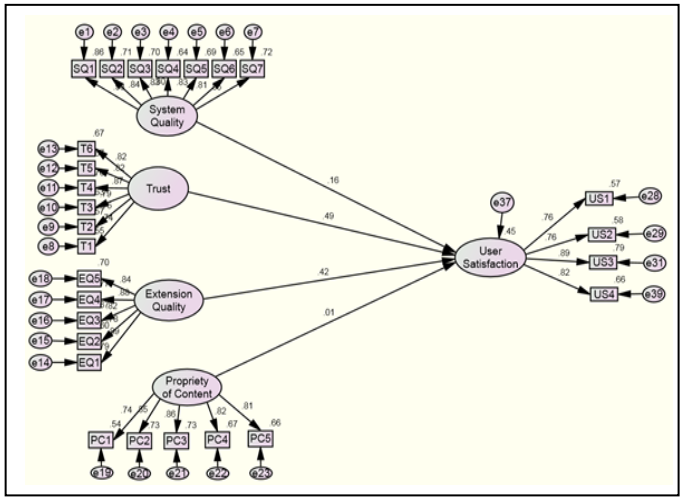

Fig. 1. Usability Dimensions acc. to User Satisfaction

VII DISCUSSION

This study investigated the relative importance of four usability dimensions suggested in literature as significantly impacting an individual's satisfaction level with a B2C E-commerce website. The results indicate that these four criteria are relatively good predictors of user satisfaction but have a differential impact on it. Trust emerged as the most important criteria, a view shared by [7; 15; 18; 22]. Due to uncertainty in the reliability of services, products, or providers in E-commerce, web vendors need to create an environment which makes users confident about any online transaction which in turn creates a sense of satisfaction in the mind of the user.

Extension quality also surfaced as an important feature in determining user satisfaction. In the same context, Harridge-March [14] propose that extending customers the opportunity to retain some control over their order, through tracking and account monitoring facilities, significantly increases the quality of fulfilment experienced by the customer. System quality in the present study has a weak impact on user satisfaction contrary to the findings of [4; 18]. One possible justification is the moderation effect of trust and extension quality on their relationship. Another explanation might be that system quality is more likely to play an important role in determining the usefulness of the website, and only after the users find the website useful that they are likely to be satisfied with it, hence system quality might influence user satisfaction via usefulness and not directly.

Interestingly, contrary to the findings of [1;4], propriety of content came out as an insignificant predictor of user satisfaction. This behavior can be attributed to two reasons, first being the moderation effect and second reason can be that content does not directly play a role in customers' satisfaction but affects it through perceived usefulness. This finding is supported by [4;12] who also suggest that content is not a statistically significant predictor of satisfaction with the website. Inspite of the fact that content was not found to be a predictor of user satisfaction, it should not be ignored.

Findings of the research have important implications for online retailers. Only after their visitors are satisfied with their E-commerce website, do the chances of the customer purchasing, returning recommending it increase. The usability dimensions and their relative importance in determining user satisfaction can aid website designers in creating more successful and useful websites. For researchers, the results suggest that each of the five constructs used in the study are reliable both in terms of internal consistency, convergent validity and construct validity. Thus the study forms a sound base both for researchers and practitioners.

VIII LIMITATIONS AND CONCLUSION

This research attempted to identify the differential impact of web usability dimensions on user satisfaction. Although the findings of the present research provide meaningful implications, this study is not without limitations. Firstly, the present study was limited only to studying the functional aspects of the B2C websites. However, non-functional aspects of the website such as enjoyment, fun and emotional satisfaction may also be important and contribute significantly to overall satisfaction [31],[35]. The study examined website usability in context of E-commerce websites only limiting its external validity to same type of websites. In conclusion, this study has advanced research in the area of B2C E-commerce

website usability by (1) providing evidence of the reliability and validity of constructs determining user satisfaction; (2) identifying the relative importance of usability dimensions in determining satisfaction thus providing practical results that can be used immediately by practitioners in the real world, and by researchers in further analysis.

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