

Segmenting B2C e-commerce consumers on the basis of consumer trust

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Abstract

Trust, in B2C e-commerce, has been recognized as an important barrier because of the transaction - that involves sharing of personal and financial data. It is well established that an absence of consumer online trust can have a negative impact on e-commerce, whereas unwavering trust climate can lead to business growth. This manuscript conducts a literature review and lists the determinants of trust in B2C e-commerce. The researchers intend to propose a conceptual framework for studying trust as well as segmenting consumers in the context of B2C e-commerce. This paper identifies 4 trust based consumer segments with the help of an empirical research. Proper segmentation will support brands and the marketing function in the formulation of appropriate targeting strategies to improve consumer conversion.

Subject Classification: 91D10.

Keywords: Consumer segmentation, Consumer trust, E-commerce, Online consumers targeting.

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1. Introduction

IT advancements in the last two decades have led to the emergence of a strong paradigm for conducting business over the internet –the paradigm of e-commerce [16]. The lockdown brought about by the Covid era witnessed the growth in online sales. Along with this growth, there was a sizable increase in internet fraud and customer complaints. Because of the prevalence of fraud customers are hesitant to shop online or only do so if they have no other choice. Fraud has an impact on trust and is one of the top five influencing factors [13]. Also, online fraud has a significant effect on purchase intention [14]. Trust accounts for a major element in e-commerce adoption [12], absence of trust discourages consumers from shopping online [4][10]. Several researchers have demonstrated that trust positively influences the intention to transact online [21][9][25]. Enhanced online trust can lead to an increase in the number of people transacting online. A conducive trust climate can help in developing consumer confidence in transacting online.

2. Research Purpose

Segmentation in e-commerce has been widely studied. Studies have proposed various segments of e-commerce consumers based on variables like recency, frequency, monetary value, lifestyle, geographic, demographic, psychographic, website quality, commitment, relationship, online reviews, etc. [3][19] and various variables related to trust like, privacy, security, quality, reputation, and social trust [24][20]. However, most of the dimensions of trust have been left out or not yet studied. There is a gap in literature on segmenting e-commerce consumers based on multiple dimensions of trust. Understanding and analyzing online trust may help segment online consumers on the basis of trust [15]. Trust can profile customers distinctly into different groups and trust can be considered as a segmentation variable [6]. The present study is undertaken to identify consumer segments based on trust in e-commerce adoption.

3. Trust

Trust has been studied over years in various disciplines but till today there is no scientific definition that is accepted by all [18]. Sullivan [22] defines trust as ‘the subjective assessment of one party that another party will perform a particular transaction according to his or her confidant expectation, in an environment characterized by uncertainty’.

4. Research Methodology

The design and presentation of this paper is an empirical one. Determinants of trust and variables studied for segmenting e-commerce consumers are identified through literature review. Determinants of trust are categorized into four categories. A conceptual model is proposed for segmenting e-commerce consumers based on trust. A research instrument was developed for data collection. Exploratory factor analysis was used for internal consistency and reliability of scale. For segmentation, K-Means cluster analysis was undertaken.

5. Determinants of trust

Fifty-five determinants of trust were extracted from literature review. For easy understanding and analysis the determinants of trust were divided into categories. A focus group of six members was created. Based on the inputs received from the focus group and the literature review [2][27][8][26] determinants of trust were grouped under the four categories. Two categories, Individual and organizational, were as proposed and concluded by [2][8]. Systemic and Social are two new suggested categories.

1. Individual factors (Ii) – These determinants are individual (customer) specific. The determinants Perceived privacy, Perceived security, Perceived service quality, Disposition to trust, Propensity to adopt, Situation normality, Purchase intention, Cost benefit calculation, Pre interactional filters, Personal characteristics & Consumer behaviour fall into this category.
2. Organisational factors (Oi)- These determinants are specific to an organization (e-commerce). The determinants Ability, Reliability, Honesty, Integrity, Institutional sources, Benevolence, Predictability, Web interface design features, Content design, Structure design, Graphic design, Secure transmission, Storage, Use of sensitive information, Interface properties, Relationship management, Fairness,, Privacy policy, Information content, Product, Transaction, Technology, feedback,, Reputation, Assurance, Communication, Trustworthiness of internet merchant, Company size, Third party certification, Computer mediated communication channel like text chat etc, , Social networking services, Interpersonal trust, Credibility, Web site characteristics, Goodwill, Deterrence, Ease of wish listing,

Online review quantity, Online review consistency & Offline presence are categorized as Organisational factors.

3. Systemic factors (SYi) – These determinants relate to the e-commerce environment. The determinants Trustworthiness of internet as a shopping medium and Online trust fall into this category.
4. Social factors(SOi) – These determinants relate to society and its social fabric. The determinants of Culture and Shared values fall in this category.

6. Proposed conceptual model

We propose a conceptual framework for studying B2C e-commerce in India (Figure 1) based on the literature review.

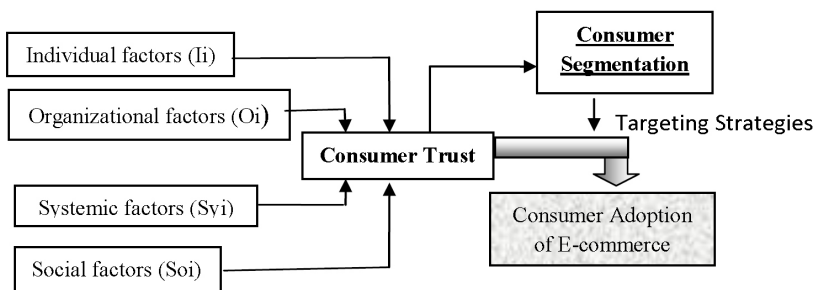


Figure 1
Proposed conceptual framework

7. Data collection

For data collection, the snowball sampling method was used. A Google form was developed and data was collected via directly interacting with the respondents and through e-mail and other social media like WhatsApp and LinkedIn. 309 responses were used for data analysis.

8. Data analysis

Cronbach's Alpha was used for measuring internal consistency and reliability between items [5]. Cronbach's Alpha values - Individual - .867, Organisational - .965, Systemic - .79 and Social - .719 - in all the four categories are above 0.7 which indicates a sufficient measure of internal consistency and reliability of the scale and is acceptable [23]. Kaiser-

Meyer-Oklin Measure of Sampling Adequacy test and Bartlett's Test of Sphericity were done to find the correlation between data and suitability of data for further factor analysis. KMO value in all categories was found to be more than 0.5 and Bartlett's test of Sphericity less than 0.05. The data was acceptable for undertaking Principal Component Analysis. For determinant reduction, Varimax rotation with Kaiser Normalisation was used in Principal Component Analysis. 12 items under the individual category were analysed. Determinant cost benefit calculation had an extraction value lower than 0.5 and was removed [17]. 38 items under the Organisational category were analysed, 5 determinants Information Content, Feedback Mechanism, Online Review Quality, Online Review Consistency and Third Party Certification have an extraction value lower than 0.5 and were removed [17].

8.1 Cluster Analysis

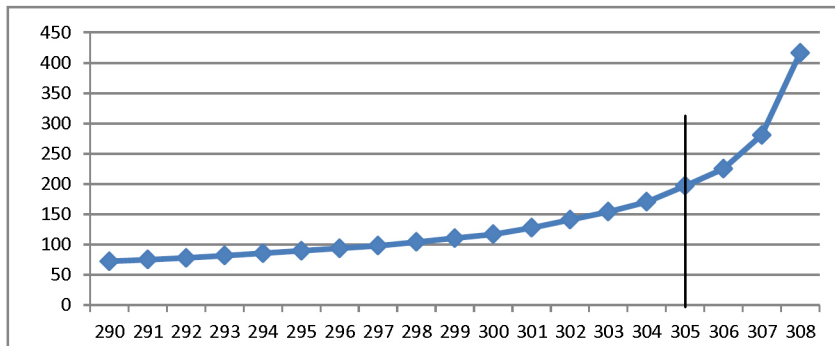
Cluster analysis is a method that helps to group data by identifying relationship between them [7][11]. Cluster analysis was done using K-Means Clustering Algorithm [1]. For determining the number of clusters, for K-Means clustering, hierarchal clustering with ward method agglomeration and elbow method was used. The coefficient values were plotted on the line graph to find number of clusters. In the agglomeration schedule, Table No. 1, it is observed that the major difference in the coefficient values comes at stage 305. The coefficient values when plotted on a line graph formed the elbow at stage 305 (Figure 2).

Table 1
Agglomeration Schedule

Stage	Coefficients	Stage	Coefficients	Stage	Coefficients	Stage	Coefficients
290	72.342	295	89.675	300	116.988	305	196.930
291	75.092	296	93.718	301	127.760	306	225.126
292	77.999	297	97.976	302	140.937	307	280.761
293	81.693	298	104.099	303	154.205	308	416.526
294	85.639	299	110.486	304	170.564		

8.2 K-Means cluster analysis

Data analysis was done using K-Means cluster analysis and 4 clusters were extracted. Each cluster is assumed to be a homogenous set of consumer having same trusting behaviour. Table 2 show the final clusters centers and number of cases in each cluster. It is observed that within



Calculation for number of clusters : Total number of cases : 309

Stage with major difference in coefficient value & elbow formation = 305

Number of clusters : $309 - 305 = 4$ Clusters

Figure 2

Line graph for the coefficient values

individual category cluster 3 and 4 are comparatively similar where as cluster 1 and 2 show dissimilarity (Figure 2). In organizational category cluster 3 and 4 are found to be closely similar whereas cluster 1 and 2 show differences. Within systemic category cluster 1 and 4 show similarity whereas cluster 1 and 3 and 3 and 4 show high dissimilarity. Within social category none of the cluster shows high similarity though the distance between cluster 3 and 4 seems to be the least one.

Table 2

Final Clusters Centers

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Valid	Missing
Individual	3.38	4.52	4.03	4.01		
Organisational	3.38	4.71	4.02	4.18		
Systemic	2.89	4.04	3.84	2.95		
Social	3.17	4.53	3.68	3.81		
Nu. Of cases	61.000	64.000	95.000	89.000	309.000	.000

9. Results

In Individual category only one determinant was found to have low loading below .5, rest all 11 determinants were found to be a strong measure of trust. In Organisational category 5 determinants were found to have factor loading below .5, rest all 33 determinants were found to be strong

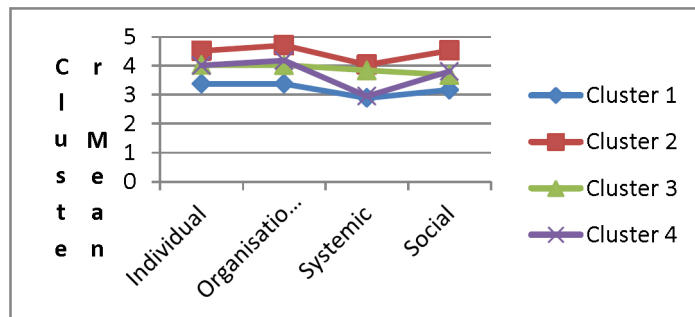


Figure 3

Cluster mean for each category of trust

measure of trust. Within systemic and social category all the determinants were found to be strong measure of trust having factor loading value above .5. This establishes the relationship between determinants and trust in e-commerce.

9.1 Consumer Profiles

Based on the trust in e-commerce adoption consumers were divided into 4 segments. Figure 3 shows the profile map of each segment.

9.2 Consumer segments

Segment 1 : Pessimistic contender – Low on Li, Oi, SYi & SOi – This segment includes consumers who rate low on all categories. This is the toughest consumer segment. Consumers in this segment have no prior experience of e-commerce, they are low on adoption. They do not trust and perceive the internet environment and e-commerce company unsafe. They differ with e-commerce companies in their shared values.

Segment 2 : E-commerce enthusiast – High on Li, Oi, SYi & SOi - This segment includes consumers who rate high on all the categories. They constitute the most significant consumer segment for an e-commerce company. These consumers already have a propensity to trust an ecommerce brand and have significant knowledge about the brand. These consumers feel good about the ecommerce organization and its attributes, as visible through the brand's website. They feel that the environment and culture are conducive for ecommerce transaction.

Segment 3 : Avoiders – High on Li & Oi, Average on SYi & SOi – The segment includes consumers who rate high on individual and organisational category but show an average rating in systemic and social

category. Consumer in this segment are open to adopting new thing and trust e-commerce company but while using online system they are slightly reluctant. This can be due to either a previous bad experience or not much experience in operating computers and browsing through internet. Consumers in this segment are the fence sitter for e-commerce companies who can switch over with slight support.

Segment 4 : Reluctant possible – High on Ii, Oi & SOi, Low on SYi – This segment includes consumers who are high on Individual, Organisation and Social category but low on Systemic. Consumers in this segment are open to adoption, are high on trust and feel good about e-commerce organization. But, they do not trust the internet as a shopping medium and are low on online trust. This could be due to no prior experience, previous bad experience, fear of personal information loss, fear of financial loss or unavailability of reliable internet infrastructure.

10. Conclusions

Building online trust is very challenging due to the very nature of online business. Adding to this is the ever-evolving and constantly changing expectations of consumers creating new dimensions of trust. Through this paper we have identified fifty-five determinants of trust and have categorized them under four groups. K mean cluster analysis was used for processing the data and 4 trust based clusters were identified. Based on the cluster mean score and category each cluster was profiled.

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