

EXPLORING TRUST FACTOR IN ONLINE RETAIL

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Abstract

This article tries to identify the factors that are responsible for building trust in the mind of customers during online purchase. It evaluates the prominent e-commerce websites on these factors, thereby suggesting the way forward for improving user experience online. The article also helps to understand the buying behavior of different customer segments based on the level of perceived risk associated with online purchase, and the means to build trust applicable to each of these segments.

Introduction

E-commerce is a flourishing industry. It is evident from the extent of investment raining upon the major e-commerce players like Amazon, Flipkart, Snapdeal, etc. However, as the number of players in the industry increases, the need to differentiate takes prime importance. The recent discount & promotional schemes launched by Flipkart & Amazon may help them hold ground in the near future by wooing value conscious customers into purchase, however, retaining these customers will need something more than mere price cuts. Hence, there is a pronounced need to focus on psychological factors like trust.

It is obvious that online retail will find it difficult to replicate the touch & feel factor that is associated with purchase at brick & mortar stores. However, with the advent of technology, the customers are gradually beginning to accept online purchase as a time & money saving substitute to in-store purchase. In order to cater to this demand, the e-commerce players will need to devise strategies to build a trustworthy image, which will help retain old customers and attract new ones.

Methodology

We undertook *literature study* to identify the online features that are responsible for building a user's perception of a website. Then, we conducted *focus group discussions* and *depth interviews* to narrow down the list of features identified through literature study. We formulated a *questionnaire*, covering the objectives under study. We floated the *survey* online to obtain quantitative data for analysis. The sample consisted of active users of e-commerce websites in the age group of 20-30. We used several tools within *SPSS software* to perform quantitative research (*factor analysis, hypothesis testing, and cluster analysis*). Based on the conclusions drawn, *recommendations* are presented that would help an e-commerce player strategically build trust in the mind of its customers.

Analysis of Survey Results

The survey questionnaire had a good mix of scales, viz. nominal, ordinal, Likert and interval. Hence, we were able to draw inferences, backed with quantitative information. The analysis reveals the present shortcomings of e-commerce websites, and the right customer segments to target in online retail space.

a. Factor Analysis

We used factor analysis to narrow down the number of independent variables that contribute to a particular dependent variable (i.e. trust factor in online retail), to a subset of 4-5 variables, which account for most of the variability in the dependent variable. KMO & Bartlett’s test (used to find out if factor analysis is suitable for the data at hand) revealed a sampling adequacy of 0.699 (relatively good), and a significance value of 0.000 (meaning that there are relationships between variables that can be analysed). From the Scree Plot, we observed that there are 5 factors that have Eigenvalue > 1 (significant factors), which need to be retained. **Exhibit 1** shows the result of Principal Component Analysis Extraction Method for explanation of variance of the dependent variable.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.906	30.661	30.661	4.906	30.661	30.661	3.185	19.904	19.904
2	1.995	12.471	43.132	1.995	12.471	43.132	3.001	18.756	38.660
3	1.731	10.819	53.951	1.731	10.819	53.951	1.951	12.195	50.855
4	1.341	8.384	62.335	1.341	8.384	62.335	1.837	11.480	62.335
5	1.045	6.534	68.869						
6	.855	5.342	74.211						
7	.714	4.462	78.673						
8	.673	4.204	82.876						
9	.555	3.466	86.342						
10	.468	2.922	89.265						
11	.450	2.813	92.078						
12	.393	2.458	94.536						
13	.327	2.042	96.578						
14	.219	1.371	97.948						
15	.186	1.162	99.110						
16	.142	.890	100.000						

Exhibit 1: Principal Component Analysis Extraction Method

Initial Eigenvalues specifies the variance explained by that component, prior to narrowing down on the final set of retained factors. Extraction Sums of Squared Loadings is the same as Initial Eigenvalues, except that it excludes the components that are not part of the final set of factors. Rotation Sums of Squared Loadings displays the optimized factor structure, after equalizing the relative importance of the retained factors, through rotation of factor structure. The 4 retained factors together explain 62.335% of total variation of the dependent variable.

Exhibit 2 shows the Rotated Component Matrix. It is a matrix of factor loadings, for each variable onto each factor. It helps to identify a group of variables that attribute to a common component. For example, the variables ‘Brand value of the website’ and ‘Popularity of TV advertisements’ contribute to Component 4, which may be identified as **‘Brand popularity’**. Similarly, variables ‘Website design & appeal’, ‘Convenience of use of the website’, and ‘User ratings/reviews of the product’ contribute to Component 3, identified as

'Ease of product selection on website'. Variables 'Resumption of failed transactions', 'No questions asked return policy', 'Tracking of shipment online', and 'Multiple payment options' can be grouped to a single Component 2, namely **'Safe payment & return policy'**. The variables 'Adherence to delivery dates', 'Variety available for the product', 'Security of payment transactions', 'Integrity – deliver what is promised', 'Product specifications with images/videos', and 'Proper representation of costs & discounts' is grouped to Component 1, identified as **'Integrity in product specification & delivery'**.

	Component			
	1	2	3	4
Adherence to delivery dates	.718			
Variety available for the product	.710			
Security of payment transactions	.655			
Integrity – Deliver what is promised	.649		.412	
Product specifications with images/videos	.622			
Proper representation of costs & discounts	.547			.453
Resumption of failed transactions		.828		
No questions asked return policy		.777		
Tracking of shipment online		.755		
Multiple payment options	.468	.709		
Website design & appeal		.427	.705	
Convenience of use of the website		.437	.624	
User ratings/reviews on the product			.590	
Advice of friends or relatives			.435	
Brand value of the website				.766
Popularity of TV advertisements				.759

Exhibit 2: Rotated Component Matrix

To summarise, the 4 factors influencing trust in online retail are as follows:

- a) Integrity in product specification & delivery (with 6 loads)
- b) Safe payment & return policy (with 4 loads)
- c) Ease of product selection on website (with 3 loads)
- d) Brand popularity (with 2 loads)

b. Hypothesis Testing

We used hypothesis testing to find out if the e-commerce websites are actually providing the parameters perceived to be important by customers, for building trust in online retail. For example, consider the following hypothesis test, on one of the various performance parameters of an e-commerce website, rated on a 5-point Likert scale (1-Poor, 5-Excellent).

Null hypothesis, H₀: E-commerce websites provide low 'Integrity in product delivery' (Mean $\mu \leq 3.75$)

Alternate hypothesis, H_a: E-commerce websites provide high 'Integrity in product delivery' (Mean $\mu \geq 3.75$)

Exhibit 3 shows the One-Sample t-Test Statistics, including Mean, Std. Deviation, t-value, and 2-tailed level of significance, of the various parameters used to evaluate the e-commerce websites. The hypothesis test

conducted is a one-tailed test (right-tailed), hence, we halved the p-value [Sig. (2-tailed)] for analysis. We reject the null hypothesis if the p-value is lesser than a predetermined significance level, α (chosen to be 0.05 = 5%).

	N	Mean	Std. Deviation	Std. Error Mean	Test Value = 3.75					
					t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Quality of user reviews in website	48	3.8958	0.88100	0.12716	1.147	47	0.257	0.14583	-0.1100	0.4016
Visual appeal of the website	48	3.9792	0.75764	0.10936	2.096	47	0.042	0.22917	0.0092	0.4492
Adherence to delivery date	48	4.0625	0.88501	0.12774	2.446	47	0.018	0.31250	0.0555	0.5695
Quality of TV advertisements	48	3.3125	0.97099	0.14015	-3.122	47	0.003	-0.43750	-0.7194	-0.1556
Brand image	48	4.3542	0.81187	0.11718	5.156	47	0.000	0.60417	0.3684	0.8399
Clarity of product specifications in website	48	3.9375	0.83555	0.12060	1.555	47	0.127	0.18750	-0.0551	0.4301
Opinion of friends about website	48	3.9375	0.72658	0.10487	1.788	47	0.080	0.18750	-0.0235	0.3985
Convenience of use	48	4.2500	0.83793	0.12094	4.134	47	0.000	0.50000	0.2567	0.7433
Integrity in product delivery	48	4.0000	0.89917	0.12978	1.926	47	0.060	0.25000	-0.0110	0.5111
Economical	48	4.0208	0.97827	0.14120	1.918	47	0.061	0.27083	-0.0132	0.5549
Number of payment options	48	4.0208	0.97827	0.14120	1.918	47	0.061	0.27083	-0.0132	0.5549
Reliability of return policy	48	3.7083	1.18426	0.17093	-0.244	47	0.808	-0.04167	-0.3855	0.3022

Exhibit 3: One-Sample t-Test Statistics

From *Exhibit 3*, it is evident that we reject the null hypothesis for most of the parameters, which means that the customers are actually satisfied with the performance of the website basis these parameters. For the example considered, the p-value for the parameter 'Integrity in product delivery' is $0.060/2 = 0.03$, which is lesser than $\alpha = 0.05$, hence, we reject the null hypothesis that the e-commerce website provides low 'Integrity in product delivery', i.e. the website provides high 'Integrity in product delivery'. We identified the following parameters for which the null hypothesis holds true:

- a) Quality of user reviews in website
- b) Clarity of product specifications in website
- c) Reliability of return policy

Hence, we recommend that the e-commerce websites will have to improve on the parameters listed above to build trust in the mind of customers. It is interesting to note that the parameters 'Clarity of product specifications' and 'Reliability of return policy' were also identified as 2 of the 4 factors, which influence trust in online retail the most.

c. Cluster Analysis

We use cluster analysis to group individuals or objects into homogenous sub-groups called clusters, based on the response to certain input variables. We chose two-step clustering, as it can handle both categorical and continuous variables. We identified the input variables from the survey results through trial-and-error method, as given below:

- a) Highest education (categorical variable)
- b) I like to remain up-to-date with fashion & technology (continuous variable)
- c) I prefer shopping online than at brick & mortar stores

We identified 'Perceived risk associated with Electronics' as the output variable (evaluation field). We restricted the number of clusters to 4. We achieved 'Good' cluster quality basis the Silhouette measure of cohesion and separation, which specifies the solution's goodness-of-fit. We realized the 'Ratio of Sizes: Largest Cluster to Smallest Cluster' as 1.80, meaning the clusters are equally distributed in terms of size.

Exhibit 4 graphically depicts the extent of perceived risk associated with purchase of Electronics items through online retail, based on data gathered through survey. The size of the bubbles is a measure of the perceived risk. The number on the bubble corresponds to that particular cluster.

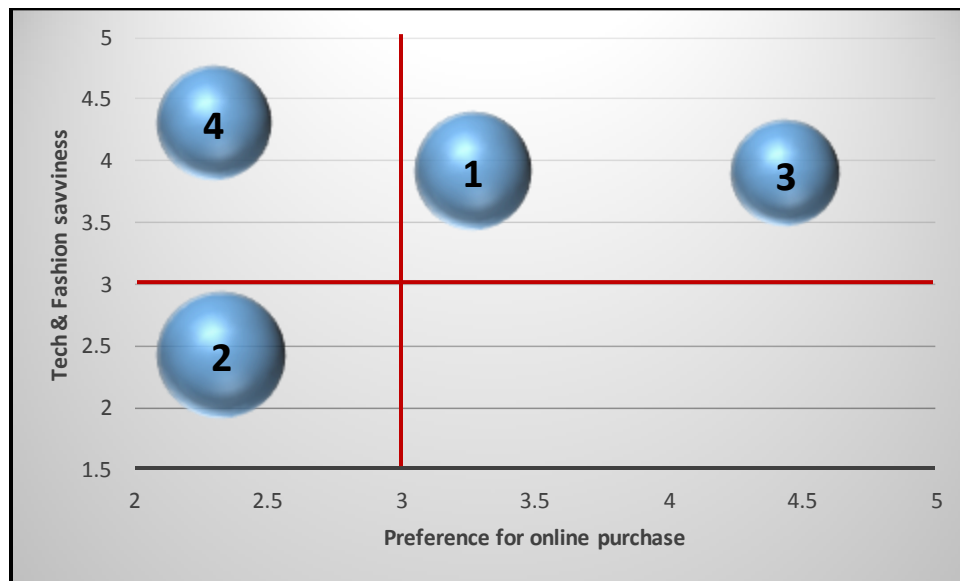


Exhibit 4: Perceived Risk for Different Customer Segments

Exhibit 5 shows the result of Cluster Analysis, with inferences. It gives the mean statistics for the four clusters. For example, consider Cluster 3. A high mean value of 4.44 for the input variable 'I prefer shopping online than at brick & mortar stores' means that the respondent is comfortable with online retail. A high mean value of 3.89 for the input variable 'I like to remain up-to-date with fashion & technology' means that the respondent is fashion conscious. The corresponding low mean value of 2.50 for the output variable

'Perceived risk associated with Electronics' means that the respondent in Cluster 3 (Go Getter) is the ideal customer for online retail. On the other hand, the Meticulous Shopper is the most difficult to convince.

	Cluster 1		Cluster 2		Cluster 3		Cluster 4	
	Inputs							
	I like to remain up-to-date with fashion & technology	I prefer shopping online than at brick & mortar stores	I like to remain up-to-date with fashion & technology	I prefer shopping online than at brick & mortar stores	I like to remain up-to-date with fashion & technology	I prefer shopping online than at brick & mortar stores	I like to remain up-to-date with fashion & technology	I prefer shopping online than at brick & mortar stores
	3.91	3.27	2.42	2.33	3.89	4.44	4.30	2.30
	Output							
	Perceived risk associated with Electronics		Perceived risk associated with Electronics		Perceived risk associated with Electronics		Perceived risk associated with Electronics	
	3.00		3.58		2.50		2.86	
Name	Trendy Aspirer		Meticulous Shopper		Go Getter		Inhibited Fashionista	
Characteristics	Average scores on both 'Preference for online purchase' and 'Tech & Fashion savviness'. Hence, the perceived risk is also average.		Low 'Preference for online purchase' and low 'Tech & Fashion savviness'. Hence, the perceived risk is the largest.		Highest 'Preference for online purchase' and above average 'Tech & Fashion savviness'. Hence, this segment has the lowest perceived risk.		Low 'Preference for online purchase', even though highest 'Tech & Fashion savviness'. Hence, the perceived risk is quite large.	

Exhibit 5: Cluster Analysis Results & Inferences

Conclusion

The emerging e-commerce companies will have to invest in building trust about the brand in the mind of customers. They will need to act on the factors identified in this study (viz. Integrity in product specification & delivery, Safe payment & return policy, Ease of product selection on website, and Brand popularity), to maintain high standards in this regard. The companies will have to improve on parameters like 'Quality of user reviews', 'Clarity of product specifications' and 'Reliability of return policy'. It is also worthwhile for the companies to invest in customer segmentation & targeting strategies. While it is easier to retain the 'Go Getter' type of customers, it is necessary to target the 'Meticulous Shopper' type of customers through high discount promotions, followed by best service thereafter to build a bond with the customer. Enhancing the trust factor is the foremost requirement in this direction.

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