GLOBAL JOURNAL OF COMMERCE & MANAGEMENT PERSPECTIVE
(Published By: Global Institute for Research & Education)
www.gifre.org

THE JOURNEY AHEAD – TRANSITION FROM BRICK & MORTAR TO E-COMMERCE: GEN Y PERSPECTIVE

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ABSTRACT

While few Customers prefer to make purchases online others don't. What decision-making factors affect their choice of purchase channel? In this paper, we share some of our observations in order to give a fair understanding for a new entrant in retailing to choose the best operating sales channel between Ecommerce and Brick & Mortar to achieve more sales. This study offers literature review to explain the concept of customers' choice of channel selection for their purchases. We build the framework using statistical models deploying factor & discriminant analyses. The key findings from our study indicate that, certain factors differentiates between online and brick & mortar stores. It is however critical to understand the variables that best discriminate among the group which influences a consumer to make a purchase channel decision. The study will enable entrepreneurs to better understand and manage what really matters for customers.

Keywords: E-commerce; Purchase Channel, Brick and Mortar, Factor Analysis, Discriminant Analysis.

1. INTRODUCTION

Online E-Commerce platforms are steadily on the rise and continue to gain momentum. Few platforms like Flipkart, Amazon, Snap Deal, E-Bay are playing it the Internet way and have built business models which require lesser operating expenses, improved abilities to reach customers compared to brick & mortar stores where the customers are limited to a locality. Backed up with a strong distribution channel, E-Commerce has the ability to reach a customer residing in a different city or state.

The E-Commerce has a very good strategy in place with a wide range of options for online payment & Cash-on-delivery. It is therefore mandatory to study the viability of the E-Commerce web stores which give several attractive alternatives to its customers as it unveils tangible information and suggest methods of business operations in the future. The main purpose of the study is to find whether the E-Commerce websites have impact over the brick & mortar stores. What should the future business models be like? Should the future business be a complete E-Commerce venture or a combination of both?

1.1 *Objective of the Study:*

Our study focuses on the following research objectives.

1. To distinguish and group variables based on purchase decision between E-Commerce and Brick & Mortar stores.
2. To find out the discriminating variable between two groups of customers (Willingness/Unwillingness to buy) on E-Commerce sites; To predict the classification of customers in making online purchases based on discriminating equation.
3. To gain insight towards customers opinion with regard to E-Commerce platform.

2. REVIEW OF LITERATURE

Watabe and Iwasaki (2007) did a study, "Factors Affecting Consumer Decisions about Purchases at Online Shops and Stores" in Japan to do a research. The authors conducted a questionnaire survey regarding the purchase of a digital camera and a notebook personal computer and analyzed the survey responses. In their study, they have concluded that some factors such as net information, real information, distrust of online shops, and time saving. As a result of the analyses, switching costs, real information, first-hand examination distrust of online shops, and (real shop) service were pointed out as the factors that strengthen the trend to buy a digital camera at a store.

Chircu and Mahajan (2005) in their study, "Managing electronic commerce retail transaction costs for customer value" have investigated in the United States, Texas how electronic commerce (EC) retailers, or e-tailers, manage transaction costs and generate customer value. The study shows that it is hard, if not impossible, to maximize customer value by statically decreasing each individual transaction cost. Retailers have to allow dynamic segmentation of customers by providing them the option to choose among a range of channels and associated transaction costs in each transaction step.

Daunfeldt & Rudholm (2008) in their study, "Congestion charges and retail revenues: Results from the Stockholm road pricing trial" have found the impact of customer shopping patterns and their preference of shopping. Through the study that was done specifically on Congestion Charges & Retail Revenues, the study conducted at Stockholm in 9 different shopping malls which comes within the Toll Area and a control group of 5 shopping malls outside the toll limits. From the study it was concluded that there was a 17% decrease in customer footprints during the congestion charges period of the day/weekend. The hypothesis involved here is the two sampled t test involving samples less than 30 and comparing 9 malls and 5 malls within and outside the toll limits respectively. There has been no study were done on

the revenues generated by these malls before, during and after the congestion charges implementation. The results from this study concluded that there was no statistically significant impact in the revenues in the shopping mall due to the Congestion charges. The limitation in the study is that it has been carried out only in Stockholm and other cities have not been considered. Depending on different locations and different income levels by people living in different cities might, there are chances for differences in the data.

Lee, Lee, Kim and Lee (2003) in their study, "Is the internet making retail transactions more efficient? Comparison of online and offline CD retail markets" to understand the growth of the E-Commerce Market facilitated by B2B, however B2C contributes to the majority of the retail shopping on the E-Commerce platforms. The research hypothesis used here is the Betrand's Price Competition model. The Independent variables in the study are the Channels of marketing (online/offline) and the dependent variables measure price level, price adjustment, and price dispersion among retailers. With almost zero price involved in online search for product information customers tend to drop high rate quoting sellers and opt for low selling retailers. Hence high quoting retailers cannot survive in an E-Commerce platform. Hypothesis 2 – Online retailers change their product pricing more often than offline retailers. The study involved eight offline CD Retailers and twelve online CD Retailers. The sample sizes are lesser than 30 and two different types of samples i.e., online and offline have been studied using Two Sample T-test. The results from this study conclude that due to easier access of information & near zero costs involved in the information search for products will have a significant impact on offline stores to survive in the market. Limitation to the study include that the study has been limited to the CD Retail sales whereas for better accuracy the study could have been developed to few more retail selling products.

Cindy, Chaudhari & Patra (2005) in their study, "Design of a Virtual Shopping Mall: Some Observations" conducted a study in **Singapore** studies the reasons for failure of 3D features on E-Commerce sites due to poorer bandwidth of the internet and the additional plugin installation the customers had to go through to enable their browsers to support 3D. Hence E-Commerce used 2D platforms for customization & personalization to improve customer experiences. Developed a model where the online platform resembled a customer for window shopping, finalize sales transaction, and attempt realistic communication with the seller and other buyers. **Results** from the study concluded that Virtual tours, zoom features, personalized 360-degree 3D rendering have become a more enjoyable experience for e-consumers. The concerns (like the security, navigation, etc.) of e-consumers are important for 3D applications for e-commerce.

3. RESEARCH METHODOLOGY

In our research, we had prepared a questionnaire to survey the opinions of the consumers who have had previous online purchase experience on a minimum of two transactions or above. The questionnaire included a dependent variable Future Purchases captured as a dichotomous variable. Also, five point likert scale were used for all the independent variables such as, delivery convenience, Exchange/replacement, Information available, product comparison, immediate need for the products, and customers's sensory/feel experience on two different modes of shopping. Demographic variables such as age, gender and education were captured through nominal scale.

3.1 Research Design & Instrumentation:

The study provides a summation of data which has been statistically calculated using SPSS Application. The data that was surveyed through the questionnaire were consolidated and imported in SPSS and subject to analyses. In our study, we had used Primary Data. The survey instrument was developed from a study completed by Alina M. Chircu & Vijay Mahajan (2005) published in the journal Decision Support System. The topic of their study was, "Managing electronic commerce retail transaction costs for customer value." Majority of the questions from the instrument in their work were relevant to our study and they were adopted. Questions irrelevant to our study were omitted.

3.2 Source of Data & Sampling:

The data was collected by administering the questionnaire through various channels. First, Online Social Media Network groups; Second, our team visited couple of shopping malls to collect survey responses from few visitors in the shopping mall; Third, survey respondents from university students who have previously completed a minimum of two online purchases.

The sample size of the survey was 196 respondents. The sampling method deployed here is Quota Sample - Different respondents from different geographical locations were reached through social media community forums & offline retail stores to record their responses.

3.3 Statistical Methods Used

1) Factor Analysis
2) Discriminant Analysis

4. ANALYSIS

4.1 Understanding Customers Selection Of Purchase Channel By Employing Factor Analysis

In order to understand why customers differentiate between buying though an online E-Commerce store and that of a brick & mortar store, factor analysis was employed. Through factor analysis, the variables in the questionnaire were grouped into different factors. These factors explain the reasons why customers choose different channels for buying. Factor analysis is a multivariate analytical modeling approach which uses advanced form of correlation analysis to identify groups of correlated variables. These groups which contain variables that are highly correlated with each other are called factors. These factors represent different groups such as E-Commerce based buying and Brick & Mortar store buying.

Twelve questions were asked in the questionnaire concerning the buying preference of customer through different channels. The below variables are included in the questionnaire. Correlation values among variables greater than 0.4

were considered for the study. The variable sensory satisfaction which failed to satisfy the above condition is dropped for factor analysis.

Variables included in the questionnaire
Searching Cost
Product Information
Sensory Satisfaction level
Easy Buying & Checkout procedures
Product comparison
Easy delivery
Easy returns
Time constraints
Repeated buying of same products
Product urgency/Immediate need
Shopping with family & friends
Buying experience in retail stores

4.1.1 Model Fitness of the Analysis

In order to check the appropriateness of applying Factor Analysis, Kaiser-Meyer-Olkin (KMO) index and significance of Chi-Square in Bartlett's test of sphericity was checked. The observed KMO index was = 0.818 > 0.7; the significance level of Chi-Square in Bartlett's Test was observed to be 0.000 < 0.05 (5% level of significance. The KMO & Bartlett's tests yielded very good results. Hence the model developed holds to be acceptable.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.818
Bartlett's Test of Sphericity	Approx. Chi-Square	431.539
	Df	36
	Sig.	.000

4.1.2 Factor Matrix & Factor Loadings

In order to identify the number of factors we check for Eigen values greater than 1. In this analysis, two factors emerged with Eigen values >1.

	Eigen Values Before Rotation			Final Eigen Values After Rotation		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.402	37.8	37.8	3.361	37.345	37.345
2	1.397	15.525	53.326	1.438	15.98	53.326

Extraction Method: Principal Component Analysis.

Before rotation, nine factors were considered; after rotation only two factors were considered which has Eigen values > 1. Factor 1 explains 37.345 % variance, whereas Factor 2 explains 15.980 % variance in choosing the purchase channel decisions.

4.1.3 Variable Segregation & Factor Identification:

In Factor Analysis Rotated Component Matrix segregates the variables based on correlation values into different factors. The rotation method used here is Varimax rotation and factor loadings < 0.6 have been suppressed. The Rotated Component Matrix output is displayed below.

Rotated Component Matrix[a]

	Component	
	1	2
Searching Cost	.669	
Product Information	.651	
Easy Buying process & Check-out	.803	
Product Comparison	.698	
Easy Delivery	.685	
Easy Returns	.618	
Time Constraints	.709	
Shopping with Family and Friends		.833
Buying Experience in Retail Stores		.815

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

The factor loadings represent the simple correlation between each factor and each variable. The variables which have heavy loadings on a specific factor make up or constitute the factor. Thus,

Factor 1 Comprises:
Searching Cost
Product Information
Easy Buying Process & Check-out
Product Comparison
Easy Delivery
Easy Returns
Time Constraint

Factor 2 Comprises:
Shopping with family & friends
Buying experience in Retail Stores

Factor 1: Reasons to choose E-Commerce platform
Factor 2: Reasons to choose Brick & Mortar stores

37.345 % of variance in Factor 1 constitutes to choose E-Commerce platform for buying.
15.980 % of variance in Factor 2 constitutes to choose Brick & Mortar platform for buying.

The variables displayed in the table – Rotated Component Matrix differentiates as to when and for what reasons a customer chooses between E-Commerce Site and a Brick & Mortar store to make a purchase.

4.2 ***Prominent Reasons To Choose E-Commerce Sites For Purchase Decisions By Employing Discriminant Analysis***

While there are several reasons (variables) listed under Factor 1 wherein a customer chooses to buy via E-Commerce sites, only a few variables may be dominant for a customer in making a buying decision. Linear Discriminant Analysis develops a linear equation in terms of all variables which measure the characteristics of the two groups (Willingness/Unwillingness to buy through online E-Commerce sites) in a way that discriminates the groups in the maximum possible manner.

4.2.2 Model Fitness of the Analysis

The model is developed using step wise method, which initially loads the most influencing variable in to the model. From the results, the correlation values among the independent variables are not more than 0.7. The significance of Chi-Square associated with Wilks Lambda is 0.000 < 0.05 (5% significance). The model with the predictors as shown in Factor 1 is significant and acceptable.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	0.921	15.89	2	0.000

The discriminating variables that have been identified from the analysis are Easy Delivery & Sensory Satisfaction based on the Structure Matrix which is displayed below.

Structure Matrix

	Function
	1
Easy Delivery	.845
Sensory Satisfaction	-.281

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Among all the variables that contribute for customers to choose online buying, "Easy Delivery" is the most influential variable. Sensory satisfaction (feel/touch) has a negative impact in making a decision to buy online.

4.2.3 Prediction to Classify Willingness of Customers to Buy Online

Based on the discriminant equation formed from the analysis the classification of customers purchase intention (willingness/unwillingness) to buy through online E-Commerce is predicted.
The discriminating equation is formed as below;

$$Z = -2.366 + 1.008 * \text{Easy Delivery} - 0.489 * \text{Sensory Satisfaction}$$

The classification of the customer is done based on the Z cut off score developed by Edward I. Altman which is calculated through the formula, $Z = (nB * ZA + nA * ZB)/(nA+nB)$

In the above equation;
nA = Customers who opted not to buy through online E-Commerce
nB = Customers who opted to buy through online E-Commerce
ZA = Cumulative Z Score of customers who opted not to buy through E-Commerce
ZB = Cumulative Z Score of customers who opted to buy through E-Commerce

Based on the above formula, the Z Cut off score calculated is = – 1.588.

Whenever the Z Score of any respondent is less than Z Cut off score, the predicted membership is Group A – Customers who will not buy through E-Commerce Websites; Whenever the Z Score of any respondent is greater than the Z Cut off score, the predicted membership is Group B – Customers who will buy through E-Commerce Websites.

5. CONCLUSION

Through this study, two different factors were identified where the variables within the factors distinguish customers' channel of purchase selection between an Online E-Commerce store and a Brick & Mortar store. While it comes to Online E-Commerce stores, the variables, "Searching Cost, Product Information, Easy Buying process & Check-out, Product Comparision, Easy Delivery, Easy Returns and Time Constraint. The variables that contribute to Brick & Mortar stores are "shopping together with family and friends and experience in retail stores.*"*

From the variables obtained from factor analysis, discriminant analysis model was developed to identify the discriminating variable that mostly influences the choice to buy online. "Easy delivery" is one of the most prominent reasons as to why a customer opts to buy through E-Commerce sites. Also, from the survey responses nearly 97% of respondents have given their opinion that they would continue to make purchases through online E-Commerce platform, which expresses the strength of the E-Commerce business model.

FUTURE PROSPECTS FOR THE STUDY

1. Customer reviews of other customers influences buying decision?
2. Delivery charges influence buying decision through online sites?
3. Ease of payment options as a factor for decision making.

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