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A Study of Selection of Indian E-commerce Websites for Online Shopping Alternatives among Youth using Hierarchical Topsis

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INTRODUCTION

As we move on to spending based economy fuelled by robust infrastructure of affordable handsets and high speed internet, we saw growth of new industry based on new buying behaviour. E-commerce and online sellers are one such example where it has evolved parallel to existing brick-and-mortar retail industry. Over a period of time they have established themselves as a credible alternative to shopping based on convenience as per the consumers time and effort.

With the growth of afore mentioned industry, we also saw new players adding up in the industry and giving “one more” alternative to the customer to browse their product before finally buying it.

In our study we wanted to understand the preference towards e-commerce websites by hierarchical topsis by assigning weights to the important parameters.

INDUSTRY OVERVIEW

E-commerce or electronic commerce, deals with the buying and selling of goods and services, or the transmitting of funds or data, over an electronic platform, mainly the internet. These business transactions are categorised into

- I. Business-to-Business (B2B).
- II. Business-to-Consumer (B2C).
- III. Consumer-to-Consumer (C2C).
- IV. Consumer-to-Business (C2B).

V. Business-to-Business-to-consumer (B2B2C).

E-commerce processes are conducted using applications, such as email, fax, online catalogues and shopping carts, electronic data interchange (EDI), file transfer protocol and web services and e-newsletters to subscribers. E-Travel is the most popular form of e-commerce, followed by e-Tail which essentially means selling of retail goods on the internet conducted by the B2C category.

India has an internet user base of about 354 million as of June 2015. Despite being third largest userbase in world, the penetration of e-commerce is low compared to markets like the United States, United Kingdom or France but is growing much faster, adding around 6 million new entrants every month. The industry consensus is that growth is at an inflection point. Electronics and Apparel are the biggest categories in terms of sales. Few notable players are

- i) Flipkart.com.
- ii) Paytm.com.
- iii) Ebay.in.
- iv) Snapdeal.com.
- v) Shopclues.com.
- vi) Amazon.in.
- vii) Jabong.com.
- viii) Yepme.com.
- ix) Myntra.com

India's e-commerce industry is likely to clock a compounded annual growth rate (CAGR) of 35% and cross the \$100-billion mark over the next five years, from \$17 billion at present, according to an ASSOCHAM-Pricewaterhouse Coopers study.

LITERATURE REVIEW

Novak *et al.*, in 2000, proposed that better skills in using the web, higher perceived control during online interaction, more challenges and arousal, greater telepresence and time distortion all correspond to greater flow online. Liao and Cheung, in 2001, studied that customer's general experience with the Internet influence their online shopping behaviour. Lynch *et al.*, 2001, researched about how online experience influence whether or not product selection can be converted into final buying. Wolfenbarger and Gilly, 2001, had a view that online shoppers enjoy the surprise and excitement of the shopping experience added by e-commerce. Park, 2002, added that there is a positive relationship between Internet usage and choice of e-commerce website. Loiacono *et al.* (2000) created a comprehensive scale for evaluating the online shopping sites. Zeithaml *et al.*, 2002, evaluated service quality of a website based on information availability and content, ease of use or usability, privacy/security, and fulfilment. Barnes and Vidgen, 2002, proposed a scale for measuring an organization's e-commerce offerings which was also called WebQual. Huang, in 2003, studied about arousal, pleasure, and dominance as the three dimensions of emotions that can affect an individual's decision to approach or avoid an environment. Parasuraman *et al.*, 2005, developed a comprehensive ESQual scale for measuring service quality of online shopping sites

Topsis method

Our study is based on TOPSIS method. It was developed by Yoon, K. P., & Hwang, C. L. as Multiple attribute decision making. A positive ideal solution maximizes the benefit criteria or attributes and minimizes the cost criteria or attributes, whereas a negative ideal solution maximizes the cost criteria or attributes and minimizes the benefit criteria or attributes. The TOPSIS method is expressed in a succession of six steps as follows:

Step 1: We first calculate the normalized decision matrix. The normalized value r_{ij} is calculated as follows:

$$r_{ij} = x_{ij} \sqrt{\frac{1}{\sum_{i=1}^m x_{ij}^2}} \quad i = 1, 2, \dots, m \text{ and } j = 1, 2, \dots, n$$

Step 2: Then we calculate the weighted normalized decision matrix. The weighted normalized value v_{ij} is calculated as follows:

$$v_{ij} = r_{ij} \times w_j \quad i = 1, 2, \dots, m \text{ and } j = 1, 2, \dots, n. \quad (1)$$

where w_j is the weight of the j^{th} attribute and $\sum_{j=1}^n w_j = 1$.

Step 3: After that we calculate the ideal (A^*) and negative ideal (A^-) solutions.

$$A^* = \{(\max_i v_{ij} | j \in C_b), (\min_i v_{ij} | j \in C_c)\} = \{v_j^* | j = 1, 2, \dots, m\} \quad (2)$$

$$A^- = \{(\min_i v_{ij} | j \in C_b), (\max_i v_{ij} | j \in C_c)\} = \{v_j^- | j = 1, 2, \dots, m\} \quad (3)$$

Step 4: Then we obtain the separation measures using the multi-dimensional Euclidean distance. The separation measures are as follows:

$$S_i^* = \sqrt{\sum_{j=1}^m (v_{ij} - v_j^*)^2}, \quad j = 1, 2, \dots, m \quad (4)$$

$$S_i^- = \sqrt{\sum_{j=1}^m (v_{ij} - v_j^-)^2}, \quad j = 1, 2, \dots, m \quad (5)$$

Step 5: Using above equation we assign the relative closeness to the ideal solution. The relative closeness of the alternative A_i with respect to A^* is defined as follows:

$$RC_i^* = \frac{S_i^-}{S_i^* + S_i^-}, \quad i = 1, 2, \dots, m \quad (6)$$

Step 6: Finally we rank the respective order.

NEED OF THE STUDY

These days online shopping website is an important part as shopping alternative to brick-and-mortar shops. Our study will be helpful for this industry in addressing the youth preference. Knowledge of key factors affecting the shopping behaviour on e-commerce websites can help in enhancing the service parameters and positioning for different segments of customers. It will lead to adding new customers, retaining the customer, building the trust, more frequent selling through websites and eventually high profit to the organisation.

SCOPE OF THE STUDY

We have studied the perception of youth (15-35) years of age. The study can be further conducted for different age groups. We have focussed on those e-commerce which are having multi product lines. This study can be further extended to specialised e-commerce (like IRCTC, Lenskart, travel portals etc). This study is conducted on Indian millennials, the study can be further extended to different geographical regions.

RESEARCH METHODOLOGY

We have collected primary data based on structured questionnaire consisting of scale proposed as ESQal by Parsuraman et al. Respondents are chosen who are active users of online shopping and sample is taken as convenient random sampling. Collected response is tested through mathematical calculation in spreadsheet. Then we used these reduced numbers in R software with inbuilt library called TOPSIS. Results are tabulated afterwards.

ANALYSIS OF THE STUDY

We have collected response from 100 respondents with structured questionnaire based on ESQal scale. We have asked for assigning weightage to four parameters (viz. Efficiency, Availability, Promise Fulfilled and Privacy) and their opinion about 8 e-commerce websites based on construct. Details are below.

Websites – Paytm, Amazon, Snapdeal, ebay, Shopclues, Flipkart, Homeshop18, Indiatimes shopping

Construct:

- EFF1 This site makes it easy to find what I need
- EFF4 Information at this site is well organized.
- SYS1 This site is always available for business.
- SYS2 This site launches and runs right away.
- FUL1 It delivers orders when promised
- FUL5 It has in stock the items the company claims to have.
- FUL6 It is truthful about its offerings.
- PRI1 It protects information about my Web-shopping behaviour
- PRI2 It does not share my personal information with other sites

(Response were tabulated on a 7 point Likert scale. 1=Least preferred and 7=Most preferred)

ANALYSIS OF DATA

Step 1: Decision matrix was made.

| | <i>Paytm</i> | <i>Amazon</i> | <i>Snapdeal</i> | <i>ebay</i> | <i>shopclues</i> | <i>flipkart</i> | <i>homeshop18</i> | <i>indiatimes</i> |
|-------------------|--------------|---------------|-----------------|-------------|------------------|-----------------|-------------------|-------------------|
| Efficiency | 5.22 | 6.225 | 5.99 | 6.055 | 5.91 | 6.445 | 4.015 | 4.54 |
| Availability | 5.01 | 5.83 | 5.83 | 4.775 | 4.55 | 6.205 | 3.24 | 3.1 |
| Promise fulfilled | 5.5733 | 5.88 | 5.736667 | 5.55 | 5.006667 | 5.003333 | 4.82 | 2.493333 |
| Privacy | 4.105 | 5 | 4.86 | 5.215 | 6.275 | 5.94 | 4.885 | 4.43 |

Step 2: Standardizing the decision matrix.

For standardizing, each column of decision matrix, is divided by root of sum of square of respective Columns

| | <i>Paytm</i> | <i>Amazon</i> | <i>Snapdeal</i> | <i>ebay</i> | <i>shopclues</i> | <i>flipkart</i> | <i>homeshop18</i> | <i>indiatimes</i> |
|--------------------------|--------------|---------------|-----------------|-------------|------------------|-----------------|-------------------|-------------------|
| Efficiency | 0.328999 | 0.392341 | 0.377529 | 0.381626 | 0.372487 | 0.406206 | 0.253052 | 0.286141 |
| Availability | 0.358598 | 0.417291 | 0.417291 | 0.341778 | 0.325673 | 0.444132 | 0.231908 | 0.221887 |
| Promise fulfilled | 0.38561 | 0.406828 | 0.396911 | 0.383996 | 0.346403 | 0.346173 | 0.333488 | 0.17251 |
| Privacy | 0.282724 | 0.344366 | 0.334724 | 0.359174 | 0.432179 | 0.409107 | 0.336445 | 0.305108 |

Step 3: Obtaining weights for the parameters and making the Weighted standardize Matrix

Weights obtained from response

| | <i>Weights</i> |
|-------------------|----------------|
| Efficiency | 5.8 |
| Availability | 4.77 |
| Promise fulfilled | 5.9 |
| Privacy | 6.7 |

Step 4: Then we used above matrix and weights as input for statistical software package called “R”. We used inbuilt library named as “TOPSIS” for analysis.

Steps are below

```
library(topsis)
warning message:
package ‘topsis’ was built under R version 3.2.5
```

```
> a<-read.csv(file.choose(),header=FALSE)
> w<-c(5.8,4.77,5.9,6.7)
> i<-c("+","+","+","+")
> topsis(a,w,i)
Error in topsis(a, w, i) : ‘decision’ must be a matrix or data frame
```

```
> b<-as.matrix(a) #data file "a" converted into matrix format
> b
```

| | V1 | V2 | V3 | V4 |
|------|-----------|-----------|-----------|-----------|
| [1,] | 0.3289988 | 0.3585983 | 0.3856101 | 0.2827244 |
| [2,] | 0.3923405 | 0.4172910 | 0.4068279 | 0.3443658 |
| [3,] | 0.3775293 | 0.4172910 | 0.3969109 | 0.3347236 |
| [4,] | 0.3816260 | 0.3417778 | 0.3839957 | 0.3591736 |
| [5,] | 0.3724871 | 0.3256731 | 0.3464034 | 0.4321791 |
| [6,] | 0.4062064 | 0.4441322 | 0.3461727 | 0.4091066 |
| [7,] | 0.2530518 | 0.2319079 | 0.3334882 | 0.3364454 |
| [8,] | 0.2861407 | 0.2218872 | 0.1725098 | 0.3051081 |

```
> topsis(b,w,i)
```

| alt.row | score | rank |
|---------|-----------|------|
| 1 | 0.5575600 | 6 |
| 2 | 0.7575650 | 2 |
| 3 | 0.7241168 | 3 |
| 4 | 0.6958914 | 5 |
| 5 | 0.7054657 | 4 |
| 6 | 0.8311044 | 1 |
| 7 | 0.3956415 | 7 |
| 8 | 0.1057193 | 8 |

CONCLUSION

For analysis in R, above matrix was transposed and loaded as matrix as the data file. We find that according to result the choice of ecommerce website based on scores of multi dimension criteria is as

Flipkart > Amazon > Snapdeal > Shopclues > ebay > Paytm > Homeshop18 > Indiatimes shopping

REFERENCES

- Loiacono Eleanor, Richard T Watson and Dale Goodhue (2000), "WebQual: A Web Site Quality Instrument", Working Paper, Worcester Polytechnic Institute.
- Wolfenbarger Mary and Mary C Gilly (2003), "eTailQ: Dimensionalizing, Measuring, and Predicting Etail Quality", *Journal of Retailing*, Vol. 79, No. 3, pp. 183-198.
- Liao, Z., & Cheung, M. T. (2001), Internet-based e-shopping and consumer attitudes: an empirical study. *Information & management*, 38(5), 299-306.
- Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001), Reciprocation of perceived organizational support. *Journal of applied psychology*, 86(1), 42.
- Lee, S., Lee, S., & Park, Y. (2007), A prediction model for success of services in e-commerce using decision tree: E-customer's attitude towards online service. *Expert Systems with Applications*, 33(3), 572-581.
- Barnes, S. J., & Vidgen, R. T. (2002), An integrative approach to the assessment of e-commerce quality. *J. Electron. Commerce Res.*, 3(3), 114-127.

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- Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005), ES-QUAL a multiple-item scale for assessing electronic service quality. *Journal of service research*, 7(3), 213-233.
- Yoon, K. P., & Hwang, C. L. (1995), Multiple attribute decision making: an introduction (Vol. 104). Sage publications.

Websites

<http://www.livemint.com/Companies/Fr3TRBvk0Cy0bjlUCg1Xrj/Flipkart-remains-most-popular-ecommerce-brand-in-India-Red.html>
accessed on 21-01-2017

<http://economictimes.indiatimes.com/industry/services/retail/indian-ecommerce-market-to-grow-fastest-globally-over-3-years-morgan-stanley/articleshow/51031652.cms> accessed on 20-01-2017