Investigating impact of Influential Factors of Online Advertisement on Youth’s Online Buying Behavior: A Predictive Model

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Abstract. The impact of online advertisement on consumers which motivates them to do online shopping encouraged the researchers, managers, and policymakers to analyse this impact. In any case, because of its perplexing nature, this wonder is still in its early stages in many nations and should be given more consideration. Using advanced statistical tools (AST), the main aim of the present study is to identify the factors that influence the youth to indulge in online shopping in Jaipur, India. Information were gathered from 434 respondents through a survey utilizing the stratified sampling technique. After recognizable proof of elements, a regression model is created. The results of this study demonstrate that, all the factors have very low correlation. The R-square value of the model is 17.7%. It shows that factors that determine the impact do not contribute significantly. The p-value of the regression model shows that at least one factor contributes significantly. The findings of this examination have different handy and administrative ramifications for electronic organizations in nations. The findings of this examination have different functional and administrative ramifications for electronic organization. This paper adds to current writing on the effect of internet shopping behaviour of youth by distinguishing and experimentally approving persuasive factors and factors of concern utilizing the EFA and Regression investigation model. A regression model, which incorporates different components can be used as a strong hypothetical establishment for predicting youth's behaviour during online shopping in developing countries like India.

Keywords Online advertisement, Youth, Regression Analysis, Online Shopping.

1 Introduction
The E-commerce business has grown exponentially across the globe and India is no exception to this fact. It is a classic case of oligopoly market where a few players dominate the market on the basis of price, non-price competition and advertisement to woo the customers. The online players are going all out to influence the buying behaviour of shoppers. The E-retailers are taking recourse to advanced analytics and algorithms to appreciate the customer’s buying behaviour
and use this information to influence shoppers by predicting their preferences. They make use of large amount of shopper’s browsing and actual purchasing data and create a detailed shopper’s profile in their social media activities. The online players are following multi-pronged approach to advertising like their counterparts in China and the West by focusing on mainline advertising including print media and television. They are also planning to create personalized videos on their website and social media pages based on the browsing history of millions of consumers than on one size ad that fits all. The targeted ads help them to achieve customer acquisition and retention. As merely 60 to 70% of online retail sales in India are dominated by the males, the companies are trying to target the women buyers to widen the base and make it more inclusive. Moreover, women buyers tend to more stick to the brands than men. There are some items such as smartphones that are exclusively available on their platforms to divert the customers from offline to online mode. The e-retailers bank upon festive seasons to increase their volume of sales which requires targeted ads based upon customer’s preferences.

The article analyses the impact of advertisement of online players on the buying behaviour of purchasers. The data were collected for the study through primary sources by designing a structured questionnaire. The collected data is tabulated and simple and meaningful analysis is applied to arrive at logical conclusions.

2 Literature review

Thanks to the advances in technology, online advertising has emerged the major channel of communication around the world alongside television, newspapers radio and magazines (Kotler & Armstrong 2011). The internet is arguably the most measurable media of advertising but those easily tracked click-through and e-commerce sales do not tell the whole story easily (Abraham; 2008). The purchase expenditure model investigates the effect of consumer spending during purchase visits. Results suggest that there are three segments of consumers on the data. The segments are differently affected by recent banner advertising, its frequency as well as monetary value of their purchases (Manchanda et al. 2006). Consumers are of two categories. The first category which high purchase tends to be focused on targeting a few products and categories. The second category of consumers with low purchase intent who have broad search patterns target a higher variety of products (Moe 2003). A similar pattern can be expected in consumers who may be heterogeneous in terms of their purchase and intent and resulting in search behaviour (Moe & Fader 2004). The advertising portals, ad networks and specialist niche sites all significantly contribute to online campaigns at every stage of a consumer’s online journey to purchase, but the key is to look at the whole picture rather than measuring each channel in isolation (Jack; 2010). The brand image and advertisement have a strong positive influence on consumer’s buying behaviour in Pakistan. Their study showed that brand image and advertisement play a critical role in boosting up business performance (Ehsan et al. 2013). There are a large number of competitors and consumers who have different brand choices. Hence a manufacturer needs to understand that proper advertising such as TV ads helps to increase their market share (Ayanwale et al. 2005). But the teenagers in rural areas are more influenced by advertising than their counterparts in urban areas. TV ads especially play an important role in product selection and purchase decision. The urban teenagers do react to the products which exceed their expectations by providing more benefits than they expected (Bishnoi & Sharma 2009). Advertisement does influence people to use the product at least once in their lives. People while buying a product generally rely on advertisements than on any other source. Of course, celebrities used in ads have positive influence on
the people (Bashir and Malik 2009). The advertisers prefer internet ads over television given the advantage of interactivity in ads which makes people more involved and creates brand loyalty (Priyanka 2012). The advertisers in emerging markets use dominant single and multiple celebrities in ads to promote their product and positively influence the buying behavior of the consumers (Pughazhendi et al. 2011). Advertising has a critical role to play in changing behavior of the people in the society towards a product. The demand for canned foods as well as price increased due to television ads (Jakstien et al. 2012). The demographic factors such as age play a significant role in consumer’s buying behaviour. An age factor has negative relationship with customer’s buying desire. Gender and income are not significantly related to it (Ghani and Jan 2010). People in the modern age do shop for social status, self-esteem, and a sense of mental satisfaction. Consumer buying behaviour enjoys a significant positive relationship with social status and brand loyalty. Income has no moderate relation among brand loyalty and consumer purchase attention (Khor, 2010).

There are several studies like those of (Kumar et al. 2019) and (Jan et al. 2019) on online advertising and how it impacts consumer buying behaviour. But these studies are dated and also a lot of dynamic changes happened in the way online players try to woo the customers through different channels of advertisement. The present study aims to analyze the impact of advertisement of online players on buyers buying behaviour through rigorous statistical analysis.

**Objectives**

1. Identification of factors that motivate the youth of university and colleges to do online shopping
2. Product & CRM (PCRM) influence the impact of advertisement in the case of online shopping
3. Product Specification & Delivery (PSD) influence the impact of advertisement with regard to online shopping
4. Product Design & Price Range (PDPR) influence the impact of advertisement in respect of online shopping
5. Impact of advertisement factors on online behavior of youth

**Research methodology**

The research work described in the following pages is based on the university and college students situated in Jaipur, India. A self-explanatory questionnaire was prepared to survey undergraduate and postgraduate students to investigate the impact of advertisement of online players on the buying behavior of university students. In the questionnaire a total of 41 questions were included out of which 04 questions were of demographic nature as they deal with gender, locality, age etc. The questionnaire was distributed among the respondents and data were collected on Likert scale to determine the role of advertisement on buying behavior. The demographic questions were helpful to identify the buying capacity of individuals. All the respondents participated in the survey due to their self-interest and they were not coerced to do so. The survey was carried out by carrying out one to one interview or with the help of Google form. Some respondents sent their responses through email. After conducting the survey, the data was compiled in MS Excel sheet and various descriptive and inferential statistical tools were applied. For inferential analysis SPSS version 26 was used.

**Demographic Analysis**

The study is based upon the respondents consisting of undergraduate and postgraduate students. The age wise distribution of the respondents shows that all belong to 18-25year age group. On the basis of frequency distribution of data, it is identified that 45.2% students were male and 54.8% were female.
This shows the high rate of participation of female students in higher education in Jaipur. Jaipur is the capital of Rajasthan and the biggest city of the state in terms of population density. There are approximately 70 universities and colleges in government and private sector situated in nearby areas of Jaipur. The results show that 61.1% respondents were staying in hostels and 38.9% opted for day boarding. Due to popularity of Jaipur as an educational hub, students were attracted from other parts of India and they opt for the hostel for residing. Also, a high percentage of respondents were female. So due to safety factors also hostel was preferred by them. Approximately, 66.1% students from third year participated in the survey. Students from engineering branch constituting 45.4% joined the survey. Similarly, management, science and arts students constituted 14.5%, 24.4% & 15.7% respectively.

General Background
The present section deals with the general background of respondents, about their buying behavior, place of residence and lifestyle. Most of the universities under study were situated in the outer areas of the Jaipur city. Most of the respondents spend 8 hours in the campus for 6 days a week. The day boarding students approximately spend two hours on travelling while hostellers who are far from city center and cannot go to the city regularly. In the current age of information technology all respondents have internet access on their mobiles, mac, laptop and desktop. So, students fulfill their shopping requirement in such a scenario through online shopping. And, most of the online shopping companies also focus on the young generation because it’s easy to attract a youngster through advertisement.

Exploratory Factor Analysis
A class of procedures cast off for data reduction and summarization is called factor analysis. In management, especially in marketing research, there are many variables which are correlated, and which must be reduced up to a manageable level. Relationships among set of many inter correlated variables are examined and represented in terms of a few factors. Mathematically, it is similar to multiple regression analysis, i.e., variable is expressed as a linear combination of underlying factors. The first factor scores explain the largest portion of the variance and it is uncorrelated with all other factors. In the present study an effort has been made to identify such factors so that further analysis can be performed. A lot of statistical terms are associated with factor analysis such as Bartlett’s test of sphericity, correlation matrix, communality, eigen values, factor loadings, factor scores, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, percentage of variance, residuals and scree plots. To identify which factors are the most important, a factor analysis test has been conducted and the results are shown in the following section.

Table 1: KMO and Bartlett’s Test (Bartlett, M.S. (1954))

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .724 |
|-----------------------------------------------|------|
| Bartlett's Test of Sphericity | Approx. Chi-Square | 4216.509 |
| Df                | 666 |
| Sig.              | .000 |

Results shown in table-1, indicate that KMO measure of adequacy is 0.724 and Bartlett test of sphericity is 4216.509 that allows that factor analysis and further analysis on these factors can be performed. A KMO value greater or equal to 0.6 is suitable for further analysis. In parallel, Chi-square
value of 4216.509 is statistically significant at 5% level of significance. Besides the p-value=0.000 is less than level of significance. The Cronbach’s alpha value is 0.792 that shows the reliability of questionnaire. A value of Cronbach’s alpha value greater than 0.6 is always required for the analysis. The varimax rotation is used to identify the factors. From analysis, it is observed that there are seven factors obtained initially. After checking the anti-image, correlation and reliability of individual factors, one more factor is removed from analysis. So, finally there are only six factors that remain. The identified factors are as follows:

Factor-1: Product & CRM (PCRM)
Factor-2: Product Specification & Delivery (PSD)
Factor-3: Product Design & Price Range (PDPR)
Factor-4: Secure Multiple Payments (SMP)
Factor-5: Digital Media Marketing (DMM)
Factor-6: Online Platform & Exchange Policy (OPEP)

**Correlation Analysis**

A statistical measure that is used to measure the strength/ magnitude and direction of relationship between two or more variables is known as correlation analysis. According to direction of variation, it may be positive or negative while on the basis of number of variables under study it is classified as simple, multiple and partial correlation. Simple correlation coefficient lies between -1 to +1. Positive sign shows positive correlation whereas negative sign shows negative relationship. Since correlation coefficient is symmetric, a cause and effect relation must be present between the variables. Here, in the present study, correlation matrix is obtained at the time of factor analysis and all questions with correlation less than 0.5 are not considered for analysis. In second stage correlation analysis is obtained between the individual factors as shown in table-2. And, it is identified that, all factors have very little relationship.

**Table 2: Coefficient of Correlation among factors**

|       | PCRM | PSD   | PDPR   | SMP   | DMM   | OPEP   |
|-------|------|-------|--------|-------|-------|--------|
| PCR M |      |       |        |       |       |        |
| Pearson Correlation | .315** | .295** | .266** | .169** | .417** |
| Sig. (2-tailed)       | .000       | .000       | .000       | .000       | .000       |
| PSD |      |       |        |       |       |        |
| Pearson Correlation | .315** | 1       | .276** | .139** | .245** | .293** |
| Sig. (2-tailed)       | .000       | .000       | .004       | .000       | .000       |
| PDPR |      |       |        |       |       |        |
| Pearson Correlation | .295** | .276** | 1       | .159** | .184** | .245** |
| N     | 434       | 434       | 434       | 434       | 434       |
| SMP |      |       |        |       |       |        |
| Pearson Correlation | .266** | .139** | .159** | 1       | .016   | .265** |
| Sig. (2-tailed)       | .000       | .004       | .001       | .735       | .000       |
| DMM |      |       |        |       |       |        |
| Pearson Correlation | .169** | .245** | .184** | .016   | 1      | .141** |
| Sig. (2-tailed)       | .000       | .000       | .000       | .735       | .003       |
| OPEP |      |       |        |       |       |        |
| Pearson Correlation | .417** | .293** | .245** | .265** | .141** | 1      |
| Sig. (2-tailed)       | .000       | .000       | .000       | .000       | .003       |
| N     | 434       | 434       | 434       | 434       | 434       |

**. Correlation is significant at the 0.01 level (2-tailed).
Table 3: Rotation component matrix of factors

| Questions of Marketing          | PCRM | PSD  | PDPR | SMP  | DMM  | OPEP |
|--------------------------------|------|------|------|------|------|------|
| Seller reliability             | 0.777|      |      |      |      |      |
| Customer care service          | 0.656|      |      |      |      |      |
| Damage refund exchange         | 0.592|      |      |      |      |      |
| Detailed description of product| 0.559|      |      |      |      |      |
| Content                        | 0.763|      |      |      |      |      |
| Uniqueness                     | 0.542|      |      |      |      |      |
| Tracking system                | 0.522|      |      |      |      |      |
| Design                         | 0.680|      |      |      |      |      |
| Price of products              | 0.671|      |      |      |      |      |
| Large selection of products    | 0.583|      |      |      |      |      |
| Multiple payment option        |      | 0.811|      |      |      |      |
| Privacy and secure checkout    |      | 0.649|      |      |      |      |
| Certified buyers               |      | 0.529|      |      |      |      |
| Presence of film star or sports star |      | 0.723|      |      |      |      |
| Social media                   |      | 0.673|      |      |      |      |
| Slogan                         |      | 0.636|      |      |      |      |
| Shopping website               |      |      | 0.698|      |      |      |
| Advertisement                  |      |      |      | 0.616|      |      |
| Return exchange policy         |      |      |      |      | 0.563|      |

Table 4: Descriptive and reliability analysis of factors

| Statistics                  | PCRM       | PSD        | PDPR       | SMP         | DMM         | OPEP         |
|-----------------------------|------------|------------|------------|-------------|-------------|--------------|
| N                            | 434        | 434        | 434        | 434         | 434         | 434          |
| Valid                       |            |            |            |             |             |              |
| Missing                     | 0          | 0          | 0          | 0           | 0           | 0            |
| Mean                        | 4.61877    | 3.39522811 | 3.0920230  | 3.9708940   | 4.41460369  | 3.56804839   |
| Std. Deviation              | 1.46958    | 1.12301517 | 0.98347079 | 1.53974135  | 1.39256083  | 1.26688118   |
| Minimum                     | 2.58400    | 1.827000   | 1.934000   | 1.989000    | 2.032000    | 1.855000     |
| Maximum                     | 10.3360    | 9.135000   | 6.473000   | 7.427000    | 9.524000    | 8.766000     |
| Cronbach’s Alpha            | 0.744      | 0.565      | 0.534      | 0.577       | 0.559       | 0.543        |

Hypothesis Testing

Table 5: Chi-square test for PCRM

| Value           | Asymp. Sig. (2-sided) |
|-----------------|-----------------------|
|                 |                       |
A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been stored in table-5. The Pearson chi square calculated value and p-value are 649.514 and 0.000 respectively. From these results, it is revealed that the null hypothesis that PCRM has no influence on online shopping is rejected. So, there is statistically significant relationship between PCRM and impact of advertisement on online shopping behavior. Thus, PCRM and impact of advertisement on online shopping behavior are not independent from each other. They are significantly associated.

**Table 6: Chi-square test for PSD**

| Value                        | Asymp. Sig. (2-sided) |
|------------------------------|-----------------------|
| Pearson Chi-Square           | 297.282               | .000               |
| Likelihood Ratio             | 228.596               | .000               |
| Linear-by-Linear Association | 15.486                | .000               |
| N of Valid Cases             | 434                   |                    |

A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been stored in table-6. The Pearson chi square calculated value and p-value are 297.282 and 0.000 respectively. From these results, it is revealed that the null hypothesis that PSD has no influence on online shopping is rejected. So, there is statistically significant relationship between PSD and impact of advertisement on online shopping behavior. Thus, PSD and impact of advertisement on online shopping behavior are not independent from each other. They are significantly associated.

**Table 7: Chi-square test for PDPR**

| Value                        | Asymp. Sig. (2-sided) |
|------------------------------|-----------------------|
| Pearson Chi-Square           | 135.800               | .063               |
| Likelihood Ratio             | 136.647               | .057               |
| Linear-by-Linear Association | 6.357                 | .012               |
| N of Valid Cases             | 434                   |                    |

A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been stored in table-7. The Pearson chi square calculated value and p-value are 135.800 and 0.062 respectively. From these results, it is revealed that the null hypothesis that PDPR has no influence on online shopping is accepted. So, there is no statistically significant relationship between PDPR and impact of advertisement on online shopping behavior. Thus, PDPR and impact of the
advertisement on online shopping behavior are independent from each other. They are statistically insignificant.

**Table 8: Chi-square test for SMP**

|                          | Value     | Asymp. Sig. (2-sided) |
|--------------------------|-----------|-----------------------|
| Pearson Chi-Square       | 547.706   | .000                  |
| Likelihood Ratio         | 255.258   | .000                  |
| Linear-by-Linear Association | 20.857   | .000                  |
| N of Valid Cases         | 434       |                       |

A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been stored in table-8. The Pearson chi square calculated value and p-value are 547.706 and 0.000 respectively. From these results, it is revealed that the null hypothesis that SMP has no influence on online shopping is rejected. So, there is statistically significant relationship between SMP and impact of advertisement on online shopping behavior. Thus, SMP and impact of advertisement on online shopping behavior are not independent from each other. They are significantly associated.

**Table 9: Chi-square test for DMM**

|                          | Value     | Asymp. Sig. (2-sided) |
|--------------------------|-----------|-----------------------|
| Pearson Chi-Square       | 435.856   | .000                  |
| Likelihood Ratio         | 255.125   | .009                  |
| Linear-by-Linear Association | 10.977   | .001                  |
| N of Valid Cases         | 434       |                       |

A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been stored in table-9. The Pearson chi square calculated value and p-value are 435.856 and 0.000 respectively. From these results, it is revealed that the null hypothesis that DMM has no influence on online shopping is rejected. So, there is statistically significant relationship between DMM and impact of advertisement on online shopping behavior. Thus, DMM and the impact of advertisement on online shopping behavior are not independent from each other. They are significantly associated.

**Table 10: Chi-square test for OPEP**

|                          | Value     | Asymp. Sig. (2-sided) |
|--------------------------|-----------|-----------------------|
| Pearson Chi-Square       | 270.355   | .002                  |
| Likelihood Ratio         | 221.146   | .253                  |
| Linear-by-Linear Association | 5.410    | .020                  |
| N of Valid Cases         | 434       |                       |

A Chi-square test has been executed at a desired level of significance, i.e., at 5% and results have been displayed in table-10. The Pearson chi square calculated value and p-value are 270.355 and 0.002 respectively. From these results, it is revealed that the null hypothesis that OPEP has no influence on online shopping is rejected. So, there is statistically significant relationship between OPEP and impact of advertisement on online shopping behavior. Thus, OPEP and the impact of
advertisement on online shopping behavior are not independent from each other. They are significantly associated.

**Regression Analysis**

Regression analysis is a statistical technique that provides a mathematical or functional form of relationship between response variable and predictors. Modeling, estimation, inference and prediction are the key components of regression analysis. It is also helpful for finding the impact of predictors on response variable and predict its value. In the present study, our objective is to analyse the impact of advertisement on online shopping behavior of youngsters. So here one response variable and six predictor variables are available on which multiple regression analysis has been executed. The influence of advertisement is considered to be response variable and six factors have been considered predictors. The results of regression analysis are presented below:

**Table 11: Model summary for regression analysis**

| Model | R       | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|---------|----------|-------------------|---------------------------|
| 1     | .421    | .177     | .166              | .82036                    |

In table-11, model summary of regression is presented. The value of multiple coefficients of correlation is 0.421 and R-square is 0.177. It is revealed that all predictors have moderate influence on response variable and 17.7% variation in response variable happened due to factors and the rest of the variation may be due to some other factors. The low value of R-square may be because of influence of some other factors or some nonlinear terms of existing factors. Though, the R-square value is a measure of goodness of fit, its high value does not guarantee that the model is accurately fitted. If the model is statistically significant then with low R-square value a good model can be fitted.

**Table 12: ANOVA table for regression analysis**

| Model      | Sum of Squares | Df | Mean Square | F     | Sig.  |
|------------|----------------|----|-------------|-------|-------|
| 1          | Regression     | 6  | 10.315      | 15.327| .000  |
|            | Residual       | 427| .673        |       |       |
|            | Total          | 433|             |       |       |

Analysis of variance of the regression model has been performed in table-12 with the null hypothesis that all the parameters i.e. regression coefficients are equal to zero. The F-value is 15.327 and p-value is 0.000 at 5% level of significance. The p-value is less than the level of significance. So null hypothesis is rejected. Hence, at least one parameter corresponding to any predictor is not zero. It is also revealed that predictor’s impact on response variable is statistically significant. The impact of individual predictors is also tested, and the results are stored in table-13. PDPR and OPEP have negative impact on influence while PSD and PDPR are statistically insignificant. All other factors are statistically significant. By removing PSD and PDPR, one can improve the existing model.

**Table 13: Regression coefficients for the impact of influential advertising factors on online shopping**

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|-------|-----------------------------|---------------------------|---|------|

| B       | Std. Error | Beta |  
|---------|------------|------|
| 1 (Constant) | .335 | .204 | 1.642 | .101 |
| F1      | .211 | .031 | .345 | 6.756 | .000 |
| F2      | .056 | .039 | .070 | 1.440 | .151 |
| F3      | -.015 | .043 | -.017 | -.351 | .725 |
| F4      | .085 | .027 | .146 | 3.135 | .002 |
| F5      | .064 | .030 | .099 | 2.153 | .032 |
| F6      | -.071 | .036 | -.101 | -2.012 | .045 |

Dependent Variable: Influence

Other factors such as PCRM, SMP & DMM showed positive and statistically significant impact. Factor-6 has also makes significant contribution. The results from the above table can also be written in an equation form:

\[
\text{Influence} = 0.335 + 0.211\text{PCRM} + 0.56\text{PSD} - 0.015\text{PDPR} + 0.085\text{SMP} + 0.064\text{DMM} - 0.071\text{OPEP}
\]

**Conclusion**

In the present work, we tried to investigate the factors of online advertisement that influence the university students, i.e., youth to purchase products from online shopping website in Jaipur, India. A self-explanatory questionnaire in Likert scale along with some demographic questions has been prepared and distributed among university and college students of Jaipur metropolitan area, selected according to stratified random sampling method. The implementation of regression equation has confirmed that factors PCRM, SMP, DMM & OPEP played a key role in motivating the students for online shopping. Though the effects of the factors have been confirmed and table-12 also established the result that at least one variable makes a significant contribution, but these variables only contribute 17.7% to influence youth for shopping through online websites. Therefore, for a future study, it is recommended that future work should be carried out by including some other influencing factors.

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