

Does Consumer Behaviour Matters? Online Advertising Evaluation Via Predictive Analytics

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ABSTRACT

With rapid technological progress, the number of Internet users is increasing. This makes it easy for an internet user to access the internet through their computer, laptop, mobile phone, tablet or other media. The internet is becoming a real advancement of online advertising when there is number of increase internet users. Our extensive reach and contacts make it possible for various online media outlets to be solid advisors in business development. But an increase in the number of Internet users does not mean an increase in Internet purchasing. As a result, it is vital to investigate how online advertising affects consumer buying behavior and influences consumer behavior toward the internet. A survey of Internet users was undertaken to evaluate and test the element that determines consumer behavior toward online advertising. The research was open to the public. The technique applied was quantitative analysis with a sample of 118 people. The analysis of quantitative data involved the use of the SPSS software that generating both descriptive and inferential statistics of results from the data. In addition, predictive analytics via multiple regression analysis was used to analyze the relationship between the independent and dependent variables. The results of this study provide evidence that marketers need to consider the informative, pleasure, and materialism of online advertising when creating online ads. By understanding all the factors that will influence consumer's behavior towards online advertising, marketer can better create an effective advertisement to influence consumer's informational responses.

Keywords: online advertising, consumer behavior, credibility, informative, pleasure, materialism, predictive analytics

INTRODUCTION

People tend to use the internet daily for their routine tasks. Internet became a part of daily life where it is not only a medium to get information but beyond that. Advertising will be done through a spread of media. While not advertising, customers might not understand the merchandise. The advertising and marketing portfolio consists of eight advertising methods: private sales, direct marketing, advertising, promotions and exhibitions, public members of the family and promotions, occasions and experiences, interactive marketing and word of mouth (Shah & Tiwari, 2021). Ask the salesperson to make sure to visit the retail store, ensure that there is sufficient inventory, and provide appropriate training so that the product can be delivered to the consumer (Ahmed et al., 2019) and commercials are placed on television, radio, newspapers and different advertising and marketing channels and advertisers pay advertising organizations to vicinity advertisements. As noted above, advertising relates to products.

In addition, the Internet is the most powerful weapon for communication and entertainment and to a large extent plays a role in shopping. Many new websites are opened every day, covering important news, some other necessary facts on e-commerce, etc., and other fields. These sites are ideal places to promote any types of products and also may be promoting some services because most of people around the world are tend to visit almost daily and advertising are closely relating to point of the effectiveness of advertising towards internet. Advances in transportation and technology have caused manufacturers to reconsider their decisions to improve their ability to provide product awareness (Zangnaa et al., 2020). Since these events, advertising has become an important area of economists' research (Taghipoorreyneh & Cyril De Run, 2016).

Advertising can help provide consumers with information that helps them meet their needs. The effect of advertising cannot be completely determined theoretically, that is, when the company's demand curve touches its average U-shaped production and sales costs, the information or persuasiveness of the advertising and whether there are economies of scale cannot yet be determined (Battista et al., 2021). The information vision of advertising promotes the use of advertising to inform consumers about the different types of products and also the services. There is an additional vision also has been suggested of influences from advertising to consumers by "attributing additional influences to useful parts of the consumer" (Ajina, 2019).

This paper is presented as follows. Section 2 summarizes the literature review. Next, researchers outline the methodology. Section 4 presents results and discussion. Lastly, the conclusion.

LITERATURE REVIEW

Overview Literature Review

Theory of Reasoned Action, TRA is explained in this literature review section together with its variables (dependent and independent) by reviewing other articles and research on the similar research topics.

Theory of Reasoned Action (TRA)

The TRA model as shown in Figure 1 is developed by Ajzen and Fishbein (1980). We hypothesize that behavior is determined by an individual's intention to act as a function of two other fundamental factors that reflect personal and social influence.

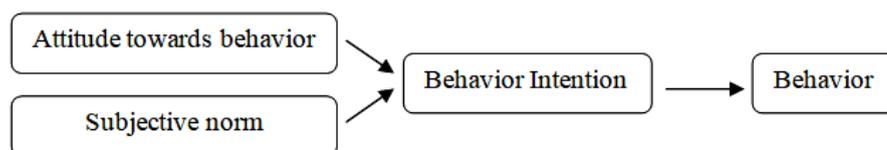


Figure 1. TRA Model

Hypothesis Development

Online advertising has caught the attention of most advertising channels with the current revolution of the technological age. Its commercial value has grown drastically over the year. The awareness of advertising in digital media has not shown any significant increase. The methods used to analyze, classify and prioritize the relevant components (Ahmed et al., 2019). Overall the effective elements and theoretical contributions of online advertising of consumer behavior were discussed (Shah & Tiwari, 2021).

H1: Credibility is significantly related to consumer's behavior towards online advertising.

Various researchers analyzed many factors that may affect online advertising recall, including features, browsing behavior, and the length of time users spend browsing the Internet, advertising

campaigns, websites, and advertisements. Al-azzam and Al-mizeed (2021) studied the role of better quality advertising. Especially animation, the size and wavelength of the banner's contribution to advertising, especially brand orientation, which may indicate how important this is.

H2: Informative is significantly related to consumer's behavior towards online advertising.

Scholar's observations of advertising can have a positive or negative impact. Why online advertising is becoming more and more effective, but still has not answered some questions (Idris et al., 2020). The answer is: "Marketing Value" believes that positive thinking will benefit from communication in many ways. The correlation between the product and the music is low to support the result, which may affect the product preference for the selected wavelength.

H3: Pleasure is significantly related to consumer's behavior towards online advertising.

There are different types of advertising, but the Internet is the main advertising medium that uses the World Wide Web (WWW). The research will use advertising as a medium to communicate with other people to obtain reliable information through re searchable advertising (Ishikar et al., 2020). The market is at a high level. By using e-mail methods to improve the level of the audience, the discussion group is the interaction between the main group and the second group can improve the use of internet access more effectively without hesitation. The Internet plays an important role, and everyone can work without interruption (Shah & Tiwari, 2021).

H4: Materialism is significantly related to consumer's behavior towards online advertising.

The focus on customer shopping for behavior is how people spend precious resources (time, money, and energy) on patron products consists of the items you purchased, vicinity, and the wide variety purchases (Victor et al., 2018). Buy it, how regularly it is used, how to evaluate it after purchase, how it will have an effect on the future and how to get rid of it.

H5: Consumer's behavior towards online advertising is significantly related to informational responses.

METHODOLOGY

This methodology section summarizes the methodology used in this research including the research framework as shown in Figure 2, population and sampling, questionnaire development and statistical technique. In this study, researcher uses a quantitative-based cross-sectional research design.

Research Framework

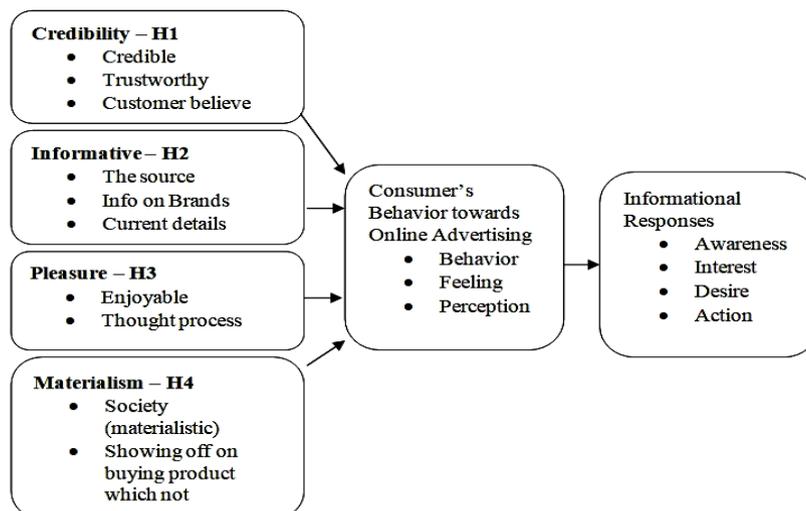


Figure 2. Research Framework

Population and Sampling

As of January 2022, Malaysia's total population was 32.98 million. According to data report (<https://datareportal.com/reports/digital-2022-malaysia>), the number of internet users in Malaysia in January 2022 was 29.55 million. According to data published on Meta's advertising resource, in early 2022, Facebook had 21.7 million users in Malaysia. Meanwhile under age which is 13 years old using Facebook is totally prohibited, meaning that in 2022, 82.4% of Malaysia's "eligible" viewers will use his Facebook. is also worth noting.

Additionally, Facebook's ad reach in Malaysia in January 2022 accounted for 73.4% unknown ages. 45.7% of the Malaysian Facebook Ads audience was female and 5.3% male at early 2022. However, sampling throughout this study known as limited to Seremban, Negeri Sembilan because this place as considered as urban and usually people needs internet in their daily routine work especially who are expose to online advertising.

Questionnaire Development

Figure 3 shows the process flow of the questionnaire survey. Questionnaire is information received by an interviewee. So these forms are forms with questions. Because the questionnaires in this survey contain structured questions and are not structured to provide information about the respondents, respondents may fill out these forms to obtain information from the responses provided (Taghipoorreynh & Cyril De Run, 2016).

First and foremost, the questionnaire has been designed according to the needs of the research. Once designed, the survey form is need to be distributed to the public by hand and as well as published towards online such as Facebook, whatsapp groups, twitter and other relevant mass medias which is very essential and necessary to the research. On the other hand, the questionnaire has been distributed through Google form in order to get the data to move to the next step to conduct the analysis.

The questionnaire needs to be filling up by the respondents and need to be get it done to collection. After the data has been collected will further to the next process of the research. The questionnaire was adapted from the sources as below: consumer behavior towards online advertising (Shah & Tiwari, 2021) and the questionnaire has been designed Likert scale which indicates 1 as “strongly disagree” to 5 indicates as “strongly agree”.

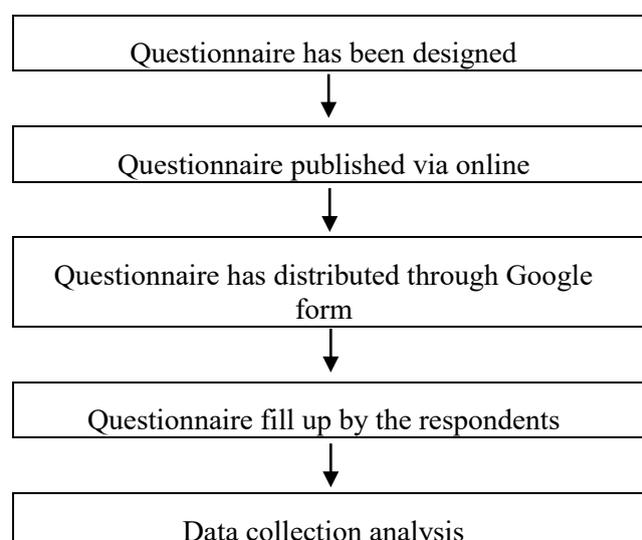


Figure 3. The process flow of questionnaire survey

Statistical Techniques

In this study, researcher uses a quantitative-based cross-sectional research design contains four independent variables; (1) credibility, (2) informative, (3) pleasure, (4) materialism and a conceptual framework were established. The dependent variable in this study is the consumer's behavior towards online advertising. The conceptual framework shown that the relationship between independent and dependent variable is shown in Figure 2.

RESULTS

This section presents the findings of this research. It starts with the demographic characteristics of respondents, followed by the predictive analytics vis multiple linear regression analysis. Data is analyzed using Statistical Packages for Social Sciences (SPSS).

Demographic Profile

Figure 4 summarizes the demographic profile of the respondents.

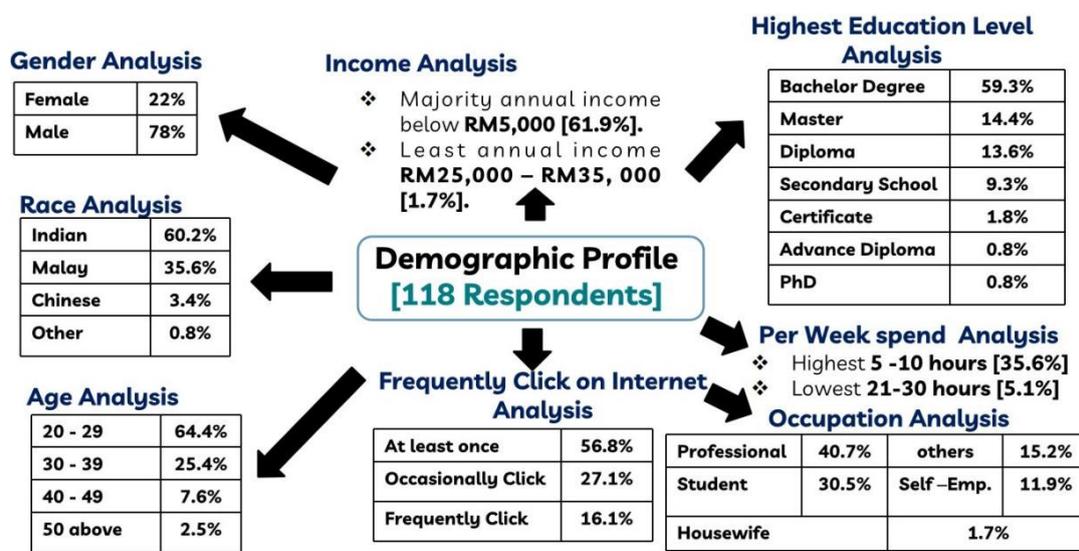


Figure 4. Demographic Profile of Respondents

According to demographic analysis, 118 respondent's data survey has been collected. From there, we could summarize that there are 78% of male respondents and 22% of female respondents were involved in this study to accomplish the survey. There are 60.2% of Indians, 35.6% of Malays, 3.8% of Chinese and 0.8% of other respondents involved in this survey.

According to the analysis, majority respondents are the age between 20-29 which is 76%, following 30-39 (25.4%), 40-49 (7.6%) and the remaining ages are 50 and above which is 2.5% respectively. Furthermore, the highest education level analyzed as the respondents from Bachelor degree is the highest 59.3%, 14.4% Masters, 13.6% Diploma level and least number of respondents are from the background of PhD which is 0.8%.

Based on the occupation analysis, the highest respondents are from professionals (40.7%) following up 30.5% students, 11.9% self employed, 15.7% other occupations and the least number of percentage from housewives, 1.7%.

Apart from that, income analysis has analyzed as the majority annual income is below RM5,000 which 61.9% while the least annual income is in between RM25,000 to RM35,000 which is 1.7%. On the other hand the highest per week analysis is in between 5 – 10 hours, 35.6% while the lowest analysis is in between 21 – 30 hours, 5.1%. Lastly, from the frequent user analysis can be concluded as 56.8% users use internet at least once, 27.1% user click occasionally and 16.1% users use frequently.

Reliability Analysis

Based on Table 1, Cronbach's Alpha test has been developed through SPSS software in order to get the value to analyze and indicates the variable is reliable or not. Among the six variables credible has considered the highest range which is 0.930 while the lowest is 0.896. In addition, all the independent variables have reached the range more than 0.90 which is considered as stable but when look at the value of BTOA it is a bit lesser indicates stability slightly low and inconsistent. Table 1 summarizes the reliability assessment.

Table 1. Reliability test analysis

Variable	Cronbach's Alpha
Credible	0.930
Informative	0.907
Pleasure	0.909
Materialism	0.908
IR	0.906
BTOA	0.896

Note: IR = Informational Responses
BTOA = Behavior towards Online Advertising

Inferential Analysis

Table 2. Correlation matrices (Pearson)

		Credible	Informative	Pleasure	Materialism	BTOA	IR
Credible	PC	1	0.528**	0.651**	0.507**	0.593**	0.468**
	S		0.000	0.000	0.000	0.000	0.000
	N	118	118	118	118	118	118
Informative	PC	0.528**	1	0.699**	0.702**	0.805**	0.750**
	S	0.000		0.000	0.000	0.000	0.000
	N	118	118	118	118	118	118
Pleasure	PC	0.651**	0.699**	1	0.689**	0.740**	0.626**
	S	0.000	0.000		0.000	0.000	0.000
	N	118	118	118	118	118	118
Materialism	PC	0.507**	0.702**	0.689**	1	0.736**	0.769**
	S	0.000	0.000	0.000		0.000	0.000
	N	118	118	118	118	118	118
BTOA	PC	0.593**	0.805**	0.740**	0.736**	1	0.804**
	S	0.000	0.000	0.000	0.000		0.000
	N	118	118	118	118	118	118
IR	PC	0.468**	0.750**	0.626**	0.769**	0.804	1
	S	0.000	0.000	0.000	0.000	0.000	
	N	118	118	118	118	118	118

Note: PC = Pearson Correlation; S = Sigma (2-tailed); N = Total Respondents; IR = Informational Responses; BTOA = Behavior towards Online Advertising; ***Correlation is significant at the 0.01 level (2 tailed); developed from SPSS software.

Based on Table 2, the correlation matrix table has developed from SPSS software to identify the p-value between independent and dependent variables and if the value is less than 0.01 the correlation is significant. Based on the table above could summarize that the association between BTOA to informative is the strongest ($r = 0.805$) indicates informative has a positive significant to BTOA and the correlation coefficient is significant ($p = 0.000$). Unfortunately, the relationship between BTOA to credible is the weakest ($r = 0.593$) that reflects credible is moderately weak to BTOA. Overall, all independent variables significantly related to BTOA.

The p-value between independent to the dependent variables is 0.000, less than 0.01 that indicates it has significantly related to the variables. The value ($r = 0.804$) which associated between IR and BTOA has strong positive significant between the two variables.

Multiple Regression Analysis

Multiple regression analysis was used in this research as a statistical inferential analysis tool to test the hypotheses.

Table 3. Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.804 ^a	0.647	0.644	0.55704

Note: a. Predictors: (Constant), BTOA; BTOA = Behavior towards Online Advertising; *developed from SPSS software.*

Based on Table 3, the value of R square is 0.647 (64.7%) explains the variances in informational responses to BTOA while the remaining 35.3% were explaining the variances of informational responses by other factors.

Table 4. Test Significance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Significance
1	Regression	65.932	1	65.932	212.485	.000 ^b
	Residual	35.994	116	.310		
	Total	101.926	117			

a. Dependent Variable : RESPONSES

b. Predictors : (Constant), BTOA

Note: BTOA = Behavior towards Online Advertising; *developed from SPSS software.*

Based on Table 4 above, the value of F ratio is equivalent to 212.485 with the significance level of 0.000 which shows the difference between informational responses (IV) to BTOA (DV) which concludes the entire model is significance.

Meanwhile, based on Table 5, the value of standardized coefficients Beta between IR and BTOA is 0.804.

Table 5. Multiple Linear Regression Analysis Coefficients^a

Model		Un- standardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Significance
1	(Constant)	0.716	0.195		3.673	0.000
	BTOA	0.785	0.054	0.804	14.577	0.000

a. Dependent Variable : RESPONSES

Note: BTOA = Behavior towards Online Advertising; *developed from SPSS software.*

Regression Equation

From the analysis in this study, multiple regression equation has developed:

Consumer behavior towards online advertising =

$$0.305 + 0.396 (\text{Informative}) + 0.278 (\text{Pleasure}) + 0.273 (\text{Materialism}) \quad (1)$$

Next, the equation for the multiple regressions is as follows:

$$\text{Informational Responses} = 0.716 + 0.785 (\text{Behavior towards Online Advertising}) \quad (2)$$

Hypotheses Results

Table 6 below summarizes the hypotheses results of this research.

Table 6. Summary of Hypotheses Testing

Hypotheses	B	P	Decision
H ₁	0.113	0.709 > 0.05	Not supported
H ₂	0.460	0.000 < 0.05	Supported
H ₃	0.253	0.001 < 0.05	Supported
H ₄	0.239	0.002 < 0.05	Supported
H ₅	0.804	0.000 < 0.05	Supported

From the Table 6, the H₁ is rejected indicates that credibility is not significantly related to the consumer's behavior towards online advertng because the Beta value is 0.113 with the significant value is 0.079.

H₂ (Informative) has highest Beta value 0.460 significant value of 0.000, H₃ (pleasure) has Beta value of 0.253 with the significant value, 0.001 and H₄ (materialism) has the Beta value 0.239 with the significance value, 0.002 were not rejected and significantly related to the consumer's behavior towards online advertising.

Moreover, H₅ also not rejected, as a result consumer's behavior towards online advertising also significantly related to informational responses. The Beta value is 0.804 with the significant value of 0.000. This shows that the consumer using internet to view online advertising has positive impact towards informational responses.

DISCUSSION

118 respondents participated in this survey. The majority of the study sample consisted of Indians (60.2%) and males (78.0%). The majority of respondents are students with higher education (59.3%). Most of the respondents are between the ages of 20-29 (64.4%). Overall, the survey found that the majority of respondents spend 5 to 10 hours per week online (35.6%), with the majority clicking on online ads at least once (56.8%). This suggests that respondents typically see ads online. As a result of statistical analysis, only H1 of the five hypotheses H2, H3, H4, and H5 was rejected. This suggests that informative, pleasure, and materialism are important predictors of consumer behaviour toward online advertising. Additionally, consumer behaviour toward online advertising is an important predictor of information response. Among the six structures, the mean informative value is the highest at 3.4470 and the mean credibility value is the lowest at 3.0593. The average values for the remaining structures are 3.3581 to 3.2514.

CONCLUSION

As the Internet becomes more and more important in people's lives, the use of the Internet is also increasing (Onewo et al., 2020). Therefore, it is strongly recommended that marketers place more advertisements on the Internet than traditional media. Research result provides evidence which marketers need consideration of the variables of online advertising when creating online ads (Battista et al., 2021).

Research uses the regression modeling, one tool and the most used of predictive analytics (Bala, 2017). Regression analysis entails looking to understand and assessing the strength in the association between independent and dependent variables.

A review of the literature suggests that credibility is related to consumer behavior toward online advertising. However, this study comes to a different conclusion. Credibility is not significant to consumer behavior toward online advertising (Bala, 2017). Overall, credibility index is not agreed with the research before that consumer behavior is favorable for online advertising when the advertising message is credible. Therefore, reliability does not necessarily affect consumers; Internet advertising behavior is still informative, entertaining and tangible when advertising.

The results of the research are presented theoretical and practical theory for each organization which understand the contributes of knowledge in the field of marketing. The study also facilitates better decision-making and helps stakeholders understand the concepts of online advertising and customer behavior easily and effectively, and also provides easy insight into the analysis of factors that influence customer behavior toward online advertising (Shah & Tiwari, 2021).

LIMITATION

Time and budget constraints are the main limitations that have prevented researchers from conducting surveys across larger sample sizes and geographic areas (Shah & Tiwari, 2021). This can result in inefficient surveys and similar demographics for respondents.

RECOMMENDATION

When preparing the sample of future studies, it should be taken into account the different geographical areas and age of respondents. Overall validity of the research results can be improved in a more cost-effective process. In future research, respondents with a lower level of education should be briefly and clearly explained before answering the questionnaire. This can help researchers to save time explaining and reach more respondents.

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