

False advertising and consumer online purchase behaviour

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ARTICLE INFO

Article history:

Received 12 February 2024

Accepted 15 April 2024

Published 10 June 2024

Keywords:

Online Shopping
Purchase Behavior
False Advertising
E-WOM

DOI:

10.24191/jeeir.v12i2.1521

ABSTRACT

Advertising is one of the main contributors to the rising number of online shoppers worldwide. In the current digital era, digital advertising has emerged as a crucial means of marketing, with a notable global trend in this direction. Amidst the rapid growth of digital advertising, a critical issue has surfaced regarding the prevalence and impact of false advertising on consumer purchasing behaviour online. Some businesses, in fact, incorporate deceptive advertising practices into their marketing strategies. This study aims to examine the variables influencing customers' online purchasing decisions. To achieve this, a survey was distributed to 588 individuals who have made at least one purchase from major e-commerce sites in Malaysia. After the questionnaire's validity and reliability were evaluated, SPSS software was used to collect and analyse the responses. The results show that Malaysian consumers' online buying habits can be significantly impacted by false advertising. Companies can affect consumer perceptions and ultimately influence their purchasing decisions by providing misleading or inaccurate information. This can lead to several negative consequences for consumers, including financial losses, disappointment with purchased products, and erosion of trust in online shopping.

1. Introduction and background

The growth of the Internet service has provided a huge marketplace for retailing in Malaysia. In recent years, online retailing has become a trending business in Malaysia. People began to adapt to the benefits of the online marketplace for both retailers and consumers. Retailers are capitalizing on a cost-efficient channel to reach their target consumers, while consumers benefit from time and cost savings, as well as a broader selection of products (Alba et al., 1997). Businesses that have made the transition to the Internet are searching for goals beyond simple product or service sales. They aim to increase customer satisfaction

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and improve turnovers, soliciting feedback on their performance. It was reported that businesses all over the world have started to use the Internet to lower their marketing expenses, and their product and service costs to maintain a competitive market going forward (Wu, 2013). Notably, Malaysians are also some of the world's most active social media users, contributing to a thriving online shopping sector valued at 8.7 billion, which is projected to reach 14.40 billion by 2027 (Statista, n.d.). While online shopping continues to gain popularity in Malaysia, the increasing use of computers and mobile devices for online transactions has raised consumer concerns about payment security, data protection, inadequate information disclosure, and product quality (Amin & Mohd Nor, 2013).

Advertising is the means of communication used to encourage an audience to make a purchase decision towards a product or service, and an advertisement presents consumers with information about a product or service. Indeed, advertising is considered an important and essential component for the growth of the economic processes of marketers and businesses (Haider & Shakib, 2017). It is a paid form of exposure or promotion by a sponsor that is distributed through numerous media channels (Ahmed & Ashfaq, 2013). Consequently, brands are constantly trying to influence consumer considerations, evaluations, and purchase decisions (Romaniuk & Sharp, 2004). Thus, the shoppers' buying behavior has always been a vital element in the literature of advertising (Ajzen, 2002). However, a common drawback of advertising is the fast methods of displaying products over the Internet, making advertising even more prone to misleading or deceitful acts. In such cases, advertisers may control the features of a product or promotional method to achieve high profits, which tends to result in financial losses for purchasers (Riquelme et al., 2016). Furthermore, advertisers may manipulate consumers by making them more vulnerable to making irrational choices. According to Frolova (2014), false advertising commonly focuses on the product, price, and promotion.

The unethical, deceptive, and misleading advertising practices that influence customers' purchasing decisions are the main topic of this study. This study looks into how customers' online buying habits are impacted by false advertising. The primary topics of earlier research were customer happiness and service excellence. The impact of false advertising components on consumer purchasing behavior has not received much attention. False advertising is a problem that has gone unnoticed, which calls for more research. In addition to exploring future purchase intentions based on fulfillment and satisfaction, this study also investigates consumers' awareness of their past experiences with service providers. Furthermore, this research also looks at various false advertising strategies employed by marketers.

2. Literature review

Online advertising is already a major global communication channel because of technological advancements. Since advertising boosts sales and boosts profits, an advertiser seeks to raise awareness of a company's brand, website, or event. Scholars who have examined advertising generally concur that marketing is an essential instrument for economic expansion (Dwivedi et al., 2021). Advertising companies' exaggerations, however, are complete fabrications. Agencies tend to make promises about products that they cannot fulfill, which makes it easy for customers to be duped. Numerous reports have indicated that the majority of shoppers are credulous and easily influenced by the false claims made in advertisements. The cleverness and smug messaging that advertisers produce and present as authentic mislead customers into making purchases (Fastercapital, n.d.).

Recent studies indicate that businesses commonly use false advertising tactics to capture consumers' attention. There is a growing concern that companies are increasingly resorting to deceptive advertising practices to attract customers. This unethical approach not only undermines customer trust but also discourages future purchases, perpetuating a cycle of mistrust and dissatisfaction among consumers. The images, cost, features, and quality of the goods or services are the main areas where deceptive advertising is employed; for some goods, it even extends to the product's expiration date (Baltezarević, 2023). This study looks into whether viewers of commercials that present conflicting information and make exaggerated claims alter their purchasing behaviour. The three components of fraudulent advertising practices—deception, misleading information, and unethical advertising—will also be put to the test in this study. The

target audience for this research will be tested based on their knowledge, and experience with online shopping followed by their awareness of the methods used.

2.1 *Consumer online purchase behavior*

Consumer buying behavior encompasses a combination of attitudes, preferences, intentions, and decisions, which collectively motivate a consumer to make a purchase. Online shopping behavior, specifically, refers to the act of purchasing goods or services via the Internet (Khan et al., 2022). The buying process can manifest in various forms, including regular shopping behaviors (Tao et al., 2022). A typical online purchase generally involves five steps. It begins with the identification of the needed product or service, followed by using the Internet and search engines to gather information. Next, the consumer evaluates and compares available options to determine which best meets their criteria. After selecting a product or service, the consumer completes a transaction for the chosen item and subsequently experiences post-purchase interactions (Niosi, 2021).

According to Musa et al. (2022), the shopping behavior of a customer is impacted by four significant mental factors, inspiration, recognition, convictions, and disposition. Consumer traits like personality, demographics, and perceptions of the advantages of online shopping have been found to have an impact on consumers' online shopping behavior. Conner and Norman (2022) asserted that as a predictor of behavioral intentions, perceived behavioral control affects the incidence of a behavior. Additionally, an individual's attitude toward engaging in the behavior as well as their sense of its benefits impact the behavioural intention.

2.2 *False advertising*

A form of advertising known as false advertising is one in which the whole truth about a product's features or other details is withheld by the advertiser in an attempt to deceive, mislead, or draw in customers. The majority of nations forbid the use of deceptive advertising. Misrepresenting a product's quality, specifications, makeup, maker, cost, or origin is prohibited (Sripathi, 2020). There are allegedly three methods of deceptive advertising, and these methods are what mould a consumer's perception throughout the world. The three strategies are deception, lying, and fraud. The marketer, the message, and the resulting consumer beliefs about a deceptive advertisement are the common viewpoints of components of advertising communication (Sripathi, 2020). Contributors like Baltezarević (2023) stated that false advertising is a contest among marketers. Sripathi (2020) defined false advertising as an activity of lying, deceiving, and giving out false information. When advertisements suggest what a customer should buy, the customer is considered vulnerable. False advertisements that engage in untruthfulness affect a consumer's choices. A consumer's choice is impacted because these consumers are unfairly convinced and misinformed by the messages displayed by advertisers, which affects their judgment (Santa et al., 2023).

2.3 *The influence of unethical advertising on consumer's online purchase behaviour*

A form of advertising known Unethical advertising involves the distribution of cultural norms and values by political, religious, or governmental groups to individuals seeking moral and ethical guidance. Specifically, it refers to the production and dissemination of false or idealized information to the public via mass media outlets. Additionally, unethical advertising is designed to harm the reputation of rival brands. It primarily aims to mislead and confuse consumers by making incorrect or exaggerated claims. Examples of unethical advertising practices include the use of minors, exaggeration, puffery, deceptive brand comparisons, surrogate advertising, and exaggerated claims. Such advertisements often result in viewers feeling disheartened (Malik, 2023). In a similar vein, Mohd Jafar & Mohd Adnan (2022) stated that advertisers are releasing more exaggerated claims of their products and services, which might result in companies losing their credibility and their competitive position in the market due to unethical advertising. According to Tyagi and Tyagi (2022), unethical advertising can fall into the category of promoting banned

products like alcohol and cigarettes, and advertisements of products that are bad for people's health. Sharma and Bumb (2021) noted that unethical advertisements nowadays' focus on stereotyping gender manipulation and exploitation, advertisements that unrealistically show women and men tend to put pressure on how a person should or would look. Unethical advertising is criticised for hurting society. It fosters negative perceptions among consumers and manipulation, which adversely affects societal values and the environment. Unethical advertising also influences consumer buying behavior through socio-demographic and cultural factors (Wang et al., 2022). Moral principles and values have a significant impact on consumers' attitudes of unethical advertising (Goo et al., 2021). Gourkar (2023) stated that unethical advertising creates negative attitudes by exploiting moral principles, values, age, gender, and religion, thereby affecting consumer buying behavior by influencing how consumers perceive themselves or aspire to be. Unethical advertising is a destructive and immoral action that may harm people's characteristics. According to Qutp et al. (2018), unethical advertising should not be deceptive, harmful, or in violation of moral principles because it shapes people's perceptions both individually and collectively. It also creates false beliefs in the minds of consumers and encourages needless product consumption. Furthermore, because of the immoral behaviour of advertisers, there will always be unethical issues surrounding advertising.

H1: There is a significant influence of unethical advertising on consumer's online purchase behaviour.

2.4 *The influence of misleading information on consumer's online purchase behaviour*

Misleading information is the exaggeration of an advertisement to improve the benefits of a product created by advertisers (García-Nieto et al., 2021). It is an advertisement that is likely to mislead anyone who sees it. It may affect a consumer's choice regarding what they buy. Misleading information in an advertisement that creates or exploits a false belief about the expected outcome of a product. The making of false or misleading claims is deliberately illegal (Nuseir, 2018). Additionally, Nuseir emphasized that consumers react negatively to misleading advertising and grow distrustful of claims made about products they do not fully comprehend. According to García-Nieto et al. (2021), firms can create false claims to enhance the perception of their products and services by making unproven assertions about a product that is difficult to establish or refute. Velasques (2006) stated that misleading advertising refers to advertisements that make false claims or misleading statements, as well as advertising that creates a false impression. If retailers systematically advertise merchandise at low prices to attract customers to their online stores and then fail to sell all their merchandise, they are guilty of misleading advertising. This type of practice can take many forms; nowadays, it is mainly content. Content such as fake reviews, misleading photos, and exaggerated product claims skews people's perspectives, making them less trusting of online retailers and platforms, which leads to disappointment (Wang et al., 2020). Bermes (2021) mentioned that false promises and misguided information promote wrong values for the audience and people might get threatened by advertisements in the future. Misleading advertisements encourage irresponsible behaviour or irresponsibly represent people. Sun and Li (2023) and Nuseir (2018) claimed that it is very difficult to assess the impact of misleading advertisements on consumer behavior due to the complexity of features and consumers purchase for a variety of reasons. Richardson-Greenfield (2018) argued that sometimes advertisements may try to mislead two different people, but this will only affect one's economic behavior while the other economic behavior will change. Online misleading information can significantly influence customer behavior, potentially diminishing market competition and causing monetary losses. To address misleading information, stricter laws, increased transparency, and consumer education are necessary to empower decision-making and protect customers from dishonest business practices (Ewah, 2018). Nabi et al. (2020) discussed the impact of sellers' unproven claims on buyers' shopping decisions, indicating that unverified promises by sellers significantly affect purchasers' buying choices. When consumers are given misleading or inflated information about a product, they may become impatient and develop excessive expectations. This can lead to dissatisfaction when the actual goods arrive, resulting in unfavorable reviews and a decline in trust in the platform and seller. Additionally, if customers purchase products that do not

meet their expectations, they risk incurring financial losses. All things considered, buyers' judgments can be greatly influenced by sellers' unverified statements, which can also negatively affect their trust in online platforms and their overall buying experience.

H2: There is a significant influence of misleading information on consumer's online purchase behaviour.

2.5 *The influence of deceptive advertising on consumer's online purchase behaviour*

Deceptive advertising is based on the acquisition of false impressions or beliefs created by advertisers (Held & Germelmann, 2018). If an advertisement or advertising campaign leaves a consumer with an impression or belief different from what was promised about a product or service, and creates an untrue belief, then deception is said to exist. Deception concerns revolve around unfulfilled expectations or false beliefs propagated by advertisers (Held & Germelmann, 2018).

According to Xiang and Song (2020), the determination of deception lies in the consumer's ability to recognize an advertisement that presents a distorted or categorized claim. Baltezarević (2023) notes that deception occurs when a customer believes that an advertisement is deliberately trying to mislead them. Ads that alter product information and incite intended behavioral changes in consumers' decision-making are considered immoral, according to Khan et al. (2020). Advertisement deceptiveness was examined by Garbouj and Saied (2019) as a measure of skepticism that gives consumers the impression that a marketer is attempting to create false views through any kind of marketing communication. Islam (2021) states that dishonest advertising involves lying and fosters misconceptions that may impact customer behavior. When a customer attempts to reconcile the features of the product with any departures from the claims made in advertising, their actions are affected by the findings. Yang et al. (2019) claim that a consumer's behavior is influenced by their impression of deception, which also impacts their desire to repurchase and level of product loyalty.

Golf-Papez et al. (2022) state that deceptive advertising results in financial charges, social disbelief, and emotional distress for the consumer. Iqbal and Siddiqui (2019) researched the effect of deceptive advertising on customers' attitudes, behavior, and psyche. Their research found that deceptive advertising affects the customer's attitude toward purchasing. If a customer's perception differs from the actual experience, their assessment, purchasing attitude, and intention may all suffer. The degree of real or anticipated harm determines how customers will respond to perceived deceit; this response will manifest itself as a desire to buy and repurchase (Timmerman & Piqueras-Fiszman, 2019).

H3: There is a significant influence of deception on consumer's online purchase behaviour.

3. **Research framework**

The framework examines false advertising practices, methods, and techniques used to manipulate consumers' emotions toward online purchase behaviour. This research investigates the influence of unethical advertising, misleading information, and deception on consumers' online purchase behaviour.

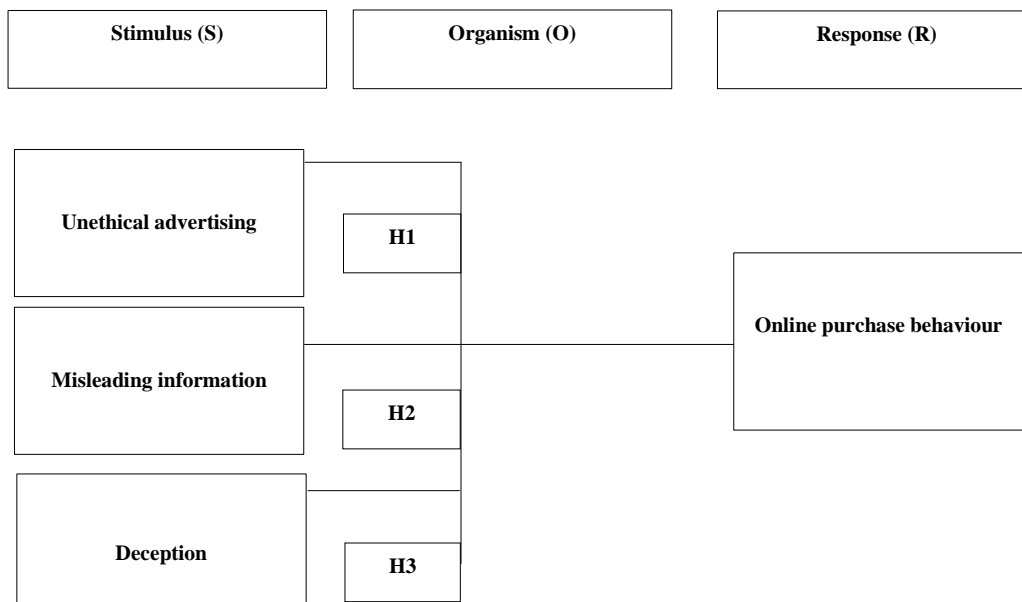


Figure 1: Stimulus, organism, and response model (SOR) (Russell & Mehrabian, 1977)

3.1 The stimulus-organism-response model (s-o-r) and false advertising effects on online shopping behaviour

The S-O-R Model applied to false advertising explains how misleading stimuli (the stimulus) can lead to cognitive dissonance and emotional responses (the organism), which, in turn, influence consumer behaviors and reactions (the response). This model helps us understand the complex interactions between external stimuli, internal psychological processes, and observable behavioural responses, shedding light on how online shopping and false advertising are intertwined and how they impact consumer decision-making. When addressing false advertising, stimuli include dishonest product claims, misleading images and descriptions, unrealistic promises, deceptive pricing tactics, and manipulative data usage. The organism aspect of false advertising involves cognitive processes, trust, scepticism, and emotional responses. Consumers evaluate misleading advertisements by comparing them with their existing knowledge and expectations (Xie & Boush, 2011). Trust in advertising claims varies among consumers and is influenced by prior experiences and attitudes toward marketing.

False advertising can elicit emotions such as frustration, disappointment, and anger if consumers feel deceived. Finally, the response to false advertising may involve consumers making purchases based on false claims, subsequently feeling deceived, which erodes trust and loyalty and potentially leads to complaints or negative word-of-mouth that can impact the brand's reputation and sales (Bhandari & Rodgers, 2019).

4. Research methodology

This study's research paradigm was centered on quantitative techniques, and the structured questionnaire used to collect primary data was part of the research instrument. The quantitative technique was deemed most appropriate for this study as it facilitates comparisons and statistical aggregation by employing a strict, predefined set of variables to survey a larger number of participants. This study applied a 5-point Likert scale, with responses ranging from strongly disagree (1), disagree (2), neutral (3), agree (4), to strongly agree (5). Most researchers prefer the 5-point Likert scale (Kim et al., 2023) because it allows respondents

to express positive or negative opinions on the items in the questionnaire, which enhances the reliability and outcome of the study (Brewer & Sebby, 2021). The questions were developed based on consumers' online purchase behavior according to the findings of researchers listed in the table below.

Table 1. Variable research instruments

Variable	Source (Author, Year)	Adapted / Adopted / New
Online purchase behaviour	Agyapong (2018), Lina et al. (2022), Peterson and Limbu (2009), Dipti et al. (2014)	Easy, Convenient, Availability, Time saving, and cost effective
Unethical advertisement	Md Isa et al. (2017), Aguilar (1994), Bretcu (2013)	Vulgar, Puffery, Stereotypical
Misleading information	Lee and Jin (2019), Chaouachi & Rached (2012)	Exaggeration, Manipulation, Dishonesty
Deception	Iqbal and Siddiqui (2019), Chaouachi & Rached (2012)	Overpromising, Cheated, Disappointed

4.1 Sampling and data collection

A survey method was employed for data collection, involving the distribution of questionnaires personally to respondents to gather primary data. The questionnaire items were developed based on the research objectives and questions. Designed as a user-friendly, web-based instrument using Google Forms, the questionnaire was distributed online. Distribution occurred through social media accounts, direct email, and direct contact with individuals and groups via apps such as WhatsApp and Telegram. The questionnaires were disseminated throughout Malaysia (Hair et al., 2017).

The questionnaire was crafted according to the research objectives and theoretical variables. It was then distributed to respondents who are users or customers of online shopping platforms offered by the top five vendors in Malaysia. For this study, the questionnaire was prepared bilingually, in English and Malay. It was divided into three sections: Section A focused on respondents' demographic background, Section B on the independent variable, and Section C on the dependent variable. The items were designed to address all predetermined research questions.

The targeted respondents for this research were online shoppers aged 21 to 60 years, who could understand the consent form, had made a purchase in the last twelve months, and regularly shopped through the top five e-marketplaces in Malaysia: Shopee, Lazada, Lelong.my, 11street, and Goshop. As of April 2019, these top five e-marketplaces averaged between seven hundred thousand to twenty million visits daily (Mofokeng, 2021). A sample size of 588 respondents was deemed appropriate, surpassing the benchmark power of analysis set by Serdar et al. (2021) for a standard effect size of 384 and falling within the recommended range of 30 to 500 (Roscoe, 1975). SPSS 26.0 was used to analyze the collected data, with a total of 17 items created to examine consumers' online purchase behavior. Reliability tests were conducted to ensure the validity and reliability of the constructs, achieving a minimum Cronbach's Alpha of 0.7

5. Results

This section provides information on the respondents who belong to the demographic profiles that had been measured using the set of questionnaires in section A. Section A of the questionnaires consists of 10 questions on gender, age, marital status, race, level of education, profession, salary, shopping frequency, average amount spent online, and preferred online shopping platform. A total of 588 questionnaires were distributed and 588 were collected from the respondents, and all 588 responses were used as they fulfilled the data criteria; no missing values and the questionnaire was answered by the right respondents.

Table 2. A summary of the characteristics of the total sample of customers who participated in the study.

Variable	Frequency	Percentage
Gender		
Male	203	34.5%
Female	385	65.5%
Total	588	100%
Age		
21-30	354	60.2%
31-40	155	26.4%
>41	79	13.4%
Total	588	100%
Marital status		
Single	388	66%
Married	183	31.1%
Other	17	2.9%
Total	588	100%
Race		
Malay	266	45.24%
Chinese	232	39.46%
Indian	58	9.86%
Others	32	5.44%
Total	588	100%
Level of education		
Secondary school	18	3.06%
Diploma	84	14.28%
Undergraduate	368	62.59%
Postgraduate	114	19.39%
Others	4	0.68%
Total	588	100%
Profession		
Self-employed	82	13.95%
Unemployed	180	30.61%
Employed in the public sector	52	8.84%
Employed in the private sector	189	32.14%
Others	85	14.46%
Total	588	100%
Salary		
Below RM1000	230	39%
RM1000 – RM3000	110	19%
RM3001 – RM5000	85	8.84%
RM5001 – RM9000	163	27%

Total	588	100%
Shopping frequency		
Daily	45	7.7%
Weekly	145	24.7%
Monthly	342	58.1%
Yearly	56	9.5%
Total	588	100%
Average amount spent online		
RM0 – RM250	316	53.2%
RM251 – RM500	160	27.2%
RM501 – RM1000	60	10.2%
RM1001 – RM2500	23	3.9%
RM2501 – RM5000	25	4.5%
RM5001 and above	4	1%
Total	588	100%
Preferred online shopping platform		
Shopee	412	70.1%
Lazada	148	25.2%
Zalora	5	0.9%
Lelong.my	14	2.4%
Others	9	1.2%
Total	588	100%

5.1 Factor analysis

Factor analysis was conducted for all the variables using a principal component factor analysis with varimax rotation. The reason is to determine the dimension of measurement scales and item purification in the independent and dependent variables in this study. It was done using the measure of adequacy (MSA), Kaiser-Meyer-Olkin (KMO) and the Barlett's test of Sphericity. The appropriate value for the Measure of sampling (MSA) should be above 0.5 (50%), the overall value for Kaiser-Meyer-Olkin (KMO) should be above 0.6 (60%) and the value of Bartlett's test of Sphericity should be $p < .05$, only if the correlation matrix is sufficient for factor analysis.

The 20 questionnaire items were subjected to a principal component analysis using SPSS. None of the 20 items were removed due to high cross-loadings or inconsistency with the theory. The differences of the factor analysis results are due to differences in time, sample and data collection steps (Hair et al., 2006).

Table 3. Results of factor analysis of the independent variables

Questions	Component		
	1	2	3
Deceptive advertisements lead to a distort perception of reality.	.864		
Advertisement allows people to provide subjective opinions, bluffing, or making vague statements not based on facts.	.813		
The quality of a product or service is different from what was mentioned in the advertisement.	.739		
Online advertisers uses misleading tactics to convince customers to buy their products and services.	.724		
Advertisements try to persuade consumers to buy things they do not need.	.716		
Advertisers' ads are not entirely truthful about their products and services. .	.675		
Online retailers are not refrained from providing fraudulent and exaggerated advertisements.	.646		
Advertisements exaggerate the benefits and characteristics of products and services.		.837	
The coverage and service of online operators do not match the claims made in the advertisement.		.797	
Advertisement uses deceptive tactics to convince consumers by exaggerating the benefits and characteristics of its offerings.		.790	
Advertisements are not entirely truthful about products prices.		.771	
Overpromising advertisements affect a consumer belief.		.752	
The use and display of women are the only attractive elements of an advertisement.			.885
Sex appeal in an advertisement is being used as the easiest approach to meet people's desires.			.650
Deception in an advertisement can easily be identified.			.472
% Variance explained	30.72	27.78	10.97
KMO			.892
Bartlett's test of Sphericity	Approx. Chi-Square		6096.161
	Df		105
	Sig.		.000
MSA			.472 - .885

The results indicate that the KMO value shows the measure of sampling adequacy, which has the value of .892 while Bartlett's Test of Sphericity is significant ($p < 0.01$). This suggests that the data were suitable for factor analysis. The KMO value of .892 indicates that the items were interrelated and exceeding the recommended value of 0.6 (Kaiser, 1974). It shows that the correlation matrix is sufficient and appropriate for the factor analysis to be conducted.

The results also show that all 15 items formed three factors resembling the original conceptualization of the variables: six items came together to stand for deception, explaining 30.716% of the variance, five items came together to stand for misleading information, explaining 27.775% of the variance, and three items came together to stand for unethical advertising, explaining 10.967% of the variance.

Table 4. Results of factor analysis of the dependent variable

Questions	Component
	1
I can shop from wherever I want.	.881
I can shop for products online that are not available at my place.	.864
The Internet is easy to be used to do my shopping.	.858
Online purchasing would allow me to do my shopping more quickly	.847
The reason I shop online is due to the attractive pricing and discounts.	.792
% Variance explained	72.086185%
KMO	.848
Bartlett's test of Sphericity	Approx. Chi- Square 1884.806
	Df 10
	Sig. .000
MSA	.792 - .881

Table 4 presents a principal component factor analysis with varimax rotation performed to examine the factors of the five items. A clear factor structure was produced explaining 72.086% of the total variance. The KMO value of .848 indicates that the correlation matrix is acceptable for factor analysis to be conducted. Bartlett's test of Sphericity shows a significance value (Approx. Chi-Square = 1884.806, $p < .001$), indicating the significance of the correlation matrix and appropriateness for factor analysis. The individual MSA values range from .792 to .881, indicating the data matrix was suitable to be factor analyzed. The five items formed one component that represents online purchase behavior, explaining 72.086% of the total variance.

5.2 Descriptive statistics

The purpose of conducting the mean and standard deviations is to understand the central tendency and dispersion values of the factors. A descriptive mean analysis was performed on the variables in this study. Table 5 presents the mean values and standard deviations of each variable. As can be seen, the mean values range between 3.11 and 5.40 and Standard deviation values range from .84 to 1.50. The highest mean value is for online purchase behaviour with a score of 5.40 and the lowest is for unethical advertising with a score of 3.11.

Table 5. Results of descriptive test, correlation analysis, reliability analysis

No.	Variables	Mean	SD	1	2	3	4
1	Unethical advertising	3.11	1.09	(.666)			
2	Misleading information	3.49	0.84	.674**	(.792)		
3	Deception	3.31	0.94	.659**	.789**	(.856)	
4	Online purchase behavior	5.40	1.50	.642**	.633**	.791**	(.901)

Notes: **. Correlation is significant at the 0.01 level (1-tailed). Cronbach's alpha values are along the diagonal in the parentheses.

Before conducting a simple or multiple regression analysis on the variables under investigation, it is necessary to establish the association between the independent and dependent variables, as demonstrated by the correlation analysis results between the two variables in the above table. Correlation coefficients between the variables (independent and dependent variables) about online purchasing behaviour, deceit, false information, and unethical advertising often fall between .633 and .791. In summary, there exists a spectrum of moderate to high overall correlations between independent and dependent variables.

By utilizing SPSS reliability analysis, each variable in the questionnaire was tested, and the results ranged from moderate to high. Items measuring unethical advertising (.666) have moderate consistency (< 0.7) whereas items measuring misleading information (0.792), and deception (0.856) have high consistency (> 0.7). Items measuring online purchase behavior (0.901) have very high consistency. The highest reliability is shown for online purchase behavior with a result of above 0.9, which is considered excellent consistency. Table 5 above shows a summary of the reliability test for the variables.

Table 6. Results of a multiple regression analysis of independent variables and online purchase behaviour

Variables	Standardized beta coefficients	Sig.
Unethical advertisement	.232	.000
Misleading information	-.071	.092
Deception	.694	.000
R	.808	
R ²	.653	
Adjusted R ²	.651	
F value	365.514	
Sig. F value	.000	
Durbin Watson	1.577	

Table 6 presents the results of a multiple regression analysis of independent variables on online purchase behaviour. The assessment of the data reveals how much each independent variable contributes to explaining the variance in the dependent variable. This might be evaluated using the provided coefficients table. Which independent variable helped predict the dependent variable is indicated by the Standardised Coefficient Beta. The dependent variable is better explained by the highest beta values.

It is necessary to compare the Standardised Coefficient Beta to identify the model's largest contribution. The greatest Beta in this model is 0.694 for deceit, and its t-value is confirmed to be significant. The model indicates that unethical advertising has the second biggest Beta of 0.232, which is also deemed statistically significant. In this model, misleading information has the third-largest Beta (-0.071), although it is not statistically significant.

5.3 Hypothesis results

The current study aims to investigate the effects of false advertising on consumers' online purchase behavior. The dependent variable, online purchase behavior, was regressed against the independent variables: the three types of false advertising—unethical advertising, misleading information, and deception. The 'R Square' value presented in the table above indicates the proportion of variance in the dependent variable explained by the independent variables. The results of the regression analysis show that 65 percent of the variation in online purchase behavior is explained by these three independent variables.

Additionally, the coefficients were assessed to determine the influence of each factor on online purchase behavior. Hypothesis 1 (H1) evaluated whether unethical advertising significantly and positively affects consumers' online purchase behavior. The results revealed a significant and positive influence ($B = .232$, $t = 6.731$, $p < .000$), thus supporting H1. Hypothesis 2 (H2) examined whether misleading information impacts consumers' online purchase behavior. The results showed a negative impact, but it was not significant ($B = -.071$, $t = -1.688$, $p < .092$), so H2 was not supported. Hypothesis 3 (H3) assessed whether deception significantly and positively affects consumers' online purchase behavior. The results indicated a significant and positive influence ($B = .694$, $t = 16.776$, $p < .000$), supporting H3.

The unstandardized coefficient for unethical advertising is .318, indicating that each increase in unethical advertising leads to a 31.8% increase in online purchase behavior. The unstandardized coefficient for misleading information is -.126, meaning that each increase in misleading information results in a 12.6% decrease in online purchase behavior. Lastly, the unstandardized coefficient for deception is 1.110, indicating that each increase in deception leads to an 11% increase in online purchase behavior.

6. Discussion and conclusion

The study confirmed that false advertising does influence consumers' online purchase behavior. Through the use of misleading or false information, companies can manipulate consumer perceptions and ultimately affect their buying decisions. This manipulation can lead to several negative consequences for consumers, including financial losses, disappointment with purchased products, and erosion of trust in online shopping. One key effect of false advertising is that it can lead consumers to make uninformed purchasing decisions, which is particularly problematic in the online space where consumers cannot physically examine products before buying. Consequently, false advertising may result in consumers purchasing products that do not meet their expectations or are of lower quality than advertised. Another important effect is the erosion of consumer trust in online advertising. When consumers feel misled or deceived by false advertising, they may become less trusting of any online advertisements, making it more difficult for businesses to reach and persuade potential customers. Additionally, false advertising can result in financial losses for consumers who must spend extra money to replace products or recover the cost of their initial purchase. These results align with previous studies by Avery et al. (2020) and Wang et al. (2019).

The purpose of the study was to investigate how customers' online buying habits are affected by false advertising. The regression analysis examined three different forms of false advertising—unethical promotion, misleading information, and deception—and their influence on online purchasing behavior. The research successfully addressed this goal by highlighting how various forms of false advertising affect customers' decisions to make online purchases. The problem statement likely raised issues regarding the frequency of false advertising in online marketplaces and its impact on customer behavior. The study's findings provide important insights into this problem by demonstrating the effects of different types of false advertising on online purchasing decisions.

According to the study, unethical advertising significantly and positively influences consumers' online buying decisions. It shows that unethical advertising strategies can indeed affect customers' online purchases, which is consistent with the study's objectives and problem statement. In contrast, while misleading information had a negative impact on consumers' online buying decisions, the effect was not statistically significant. This suggests that although false information might influence customer choices, it does not have as strong an effect as unethical advertising or deception. Furthermore, deception had a

significantly positive impact on consumers' online buying habits, underscoring the importance of addressing deceptive advertising techniques, as they can profoundly affect customer behavior and potentially harm consumers.

Overall, the study's findings offer valuable insights into how various forms of false advertising affect consumers' online buying decisions. By examining the study's objectives and problem statement, the research advances our understanding of the challenges posed by false advertising in online marketplaces and highlights the importance of ethical advertising for both companies and consumer protection.

7. Theoretical contribution

This study explores the applicability of the Stimulus-Organism-Response (S-O-R) model in understanding the impact of false advertising on consumers' online purchase behavior. The S-O-R model posits that external stimuli influence internal cognitive and emotional states (Organism), which in turn shape behavioral responses (Response). By examining this framework, we gain insights into how cognitive processing, emotional responses, and trust dynamics affect consumer behavior in the online shopping realm. Theoretical insights from information economics, persuasion theories, trust-related frameworks, and ethical decision-making illuminate various aspects of consumer reactions to false advertising. These insights inform marketing strategies, consumer protection measures, and policy development in the online marketplace. Additionally, exploring consumer skepticism, heuristic usage, and memory theories offers valuable perspectives on credibility assessment and brand recall. Empowerment models and digital literacy frameworks further our understanding of how consumers navigate deceptive advertising effects.

8. Practical contribution

This section uncovers the tangible impacts of the study beyond academia, reaching various sectors such as businesses, regulatory frameworks, consumer behaviors, online platforms, and advertising agencies. It outlines actionable insights derived from the research, highlighting how these insights inform strategic decisions, shape regulatory practices, empower consumers, improve online platforms, refine advertising strategies, and stimulate ongoing academic inquiry. The study's practical implications offer valuable guidance to industry players. It suggests leveraging these insights to make informed strategic decisions, align with regulatory standards, enhance consumer empowerment, optimize online platforms, refine advertising approaches, and foster continued exploration within academia. These suggestions collectively contribute to fostering a more transparent, ethical, and consumer-focused online shopping environment in Malaysia.

9. Limitation and future research direction

The recent research focused solely on consumer purchase behavior, specifically online purchases in Malaysia. While it examined the top five online platforms, it overlooked other marketplaces such as Carousell, Mudah.my, and social media. Additionally, it did not address post-purchase experiences like product quality and return policies. The study also did not consider variables such as demographics and cultural factors that influence buying decisions, and it only briefly explored trust, convenience, and perceived risk. Moreover, it did not investigate the impact of website design, product variety, and pricing on consumer behavior. Furthermore, the research did not consider the influence of brands and vendors on these platforms, focusing only on consumers. The findings may be relevant only within Malaysia and might not apply universally due to cultural and economic differences. Additionally, the study did not account for Malaysian consumers shopping on international platforms.

Several potential areas for future research on the effects of advertising on the online shopping behavior of Malaysian consumers have been identified. Future studies could explore how false advertising impacts consumer trust in e-commerce platforms. Researchers should investigate the extent to which false advertising affects customer trust in these platforms and their likelihood of returning. Evaluating the

effectiveness of Malaysia's regulations on advertising is also essential. Researchers should analyze the country's regulatory framework and enforcement mechanisms related to false advertising to determine how well they protect consumers and suggest improvements.

Understanding the role of third-party platforms in combating false ads and investigating their influence is another area for future research. Researchers should explore how third-party platforms, such as e-marketplaces, can mitigate deceptive advertising practices and protect consumers. Additionally, examining how consumer education and awareness efforts influence shopping habits could be valuable. Researchers could develop initiatives aimed at educating consumers about misleading advertising practices in Malaysia.

The study's conclusions emphasize the critical role that advertising plays in shaping customer perceptions of products and services and driving consumer purchasing behaviour. Industry sectors need to plan their advertising strategies considering the significant influence of innovative commercials on consumer decision-making. Advertisers should consider using a blend of intellectual and emotional appeals to better engage consumers and meet their psychological, emotional, and social needs. Furthermore, companies should recognize that customer attitudes and the quality of advertising indirectly impact consumer decisions regarding online advertising.

Businesses can maximize their impact on consumers by optimizing their online advertising strategies, leveraging the clear correlation between purchasing behaviour and online marketing. Based on these findings, industry participants are advised to prioritize marketing efforts that appeal to customers' deeper emotional needs while also highlighting the practical benefits of products. This comprehensive approach to advertising has the potential to strengthen the bond between consumers and products, ultimately positively influencing their purchasing decisions. Additionally, ongoing efforts to enhance the clarity of online advertising and adapt to evolving consumer sentiments will lead to more effective and successful advertising campaigns, benefiting both the market and consumers overall.

Acknowledgements

The authors would like to acknowledge the support of Department of Postgraduate and Professional Studies, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia for providing the facilities and morale support on this research.

Conflict of interest statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

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An example appendix

A1. Questionnaire items - (5-point Likert Scale)

Instruction:

Please rate how strongly you agree or disagree according to the number (1 until 5) with each of these statements (1=strongly disagree; 5=strongly agree).

Questions	Source
Independent Variable – False advertising (Unethical Advertising, Misleading Information Deception)	
<ol style="list-style-type: none"> 1. Deceptive advertisements lead to a distort perception of reality. 2. Advertisement allows people to provide subjective opinions, bluffing, or making vague statements not based on facts. 3. The quality of a product or service is different from what was mentioned in the advertisement. 4. Online advertisers use misleading tactics to convince customers to buy their products and services. 5. Advertisements try to persuade consumers to buy things they do not need. 6. Advertisers' ads are not entirely truthful about their products and services. 7. Online retailers are not refrained from providing fraudulent and exaggerated advertisements. 8. Advertisements exaggerate the benefits and characteristics of products and services. 9. The coverage and service of online operators do not match the claims made in the advertisement. 10. Advertisement uses deceptive tactics to convince consumers by exaggerating the benefits and characteristics of its offerings. 11. Advertisements are not entirely truthful about products prices. 12. Overpromising advertisements affect a consumer belief. 13. The use and display of women are the only attractive elements of an advertisement. 14. Sex appeal in an advertisement is being used as the easiest approach to meet people's desires. 15. Deception in an advertisement can easily be identified. 	<p>Md Isa et al. (2017), Aguilar (1994), Bretcu (2013), Lee and Jin (2019), Chaouachi and Rached (2012), Iqbal and Siddiqui (2019)</p>
Dependent Variable – Online Purchase Behavior	
	<p>Agyapong (2018), Lina et al. (2022), Peterson and Limbu (2009), Dipti et al. (2014)</p>

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Authors' contributions

Ahmed Michail Awad Ahmed is involved in the research investigation, methodology, formal analysis, visualization and wrote the original manuscript. Abdul Kadir Othman reviewed and edited the manuscript. All authors have read and agreed to the published version of the manuscript.



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