# How Google Advertisements Attract Consumers' Call-to-action and Electronic Word-of-mouth

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**Abstract**

This study investigated central and peripheral route factors to assess the impact of Google Advertisements on how these factors contribute to users' call-to-action (CTA) and electronic word-of-mouth (e-WOM) behaviors. We explored the persuasive effects of Google Advertisements on consumers by using a dataset of 483 valid empirical samples from Taiwan. We employed structural equation modeling (SEM) to examine the hypotheses. The empirical results of this study indicate that both peripheral (image appeal) and central (information completeness) routes positively lead to the persuasion effect. This finding confirms that the peripheral and central routes increase the persuasion effect. The empirical results indicate that the most effective pathway was image appeal to the persuasion effect and, ultimately, to call to action. Image appeal was also determined to be a secondary pathway that enhances the persuasion effect, ultimately leading to e-WOM. These findings have valuable implications for companies seeking to attract customers to purchase electronic products through the Google search engine. The novelty of our study is that it includes the peripheral route. Our study findings were derived from the symbolic value lens, rather than the central route based solely on the utilitarian and hedonistic value perspective.

*Keywords:* Persuasion effect, Image appeal, Social presence, Call-to-action, Electronic word-of-mouth

## 1. Introduction

This study demonstrates the antecedents of call-to-action (CTA) behavior and electronic word-of-mouth (e-WOM) in Google advertisements by investigating the link between what the audience considers (antecedent) and how audiences respond (coping behavior). This can help Google advertisement managers determine the most effective way to present advertisements to enhance the positive call-to-action behavior of users. Thus, the main research question of the present study is as follows: What type of approaches do Google advertisement operators need to adopt to enhance the positive coping behaviors of the audience? According to the essence of this "perceived interactivity" with Google advertisements, given that Google advertisements are instantaneous and instantly attract consumer attention, coping behavior is typically an intuitive action (Manu, Shelly, and Pan 2021). This study indicates that Google advertisements are essential to consumers' emotional responses. We proposed that the effect can provide a new perspective on influencing call-to-action behavior, which is this study's critical concern (Chen, Yeh, and Chang 2020). Hence, this study examined the proposed expanded call-to-action and electronic word-of-mouth.

The Global Web Index (2020) reported that search engines were the primary source of finding new brands or products for internet users worldwide, even more than television advertisements. Search engines are typically the first choice for individuals intently exploring brands, products, or services to purchase by online consumers ranging from 16 to 64 years old. When consumers search for new products, they begin with search engines (Sun et al. 2019), which consistently rank among the most visited sites on the internet. Given their central role, search engines have become highly attractive options for online advertising and targeted marketing

(Stucke and Ezrachi 2016). According to Think with Google (2023), Google dominates the search engine market in Taiwan, with a significant market share of around 91% across all devices. Furthermore, Google's popularity among mobile phone users is even higher, with more than 96% of the search engine market share during the same period (Statista 2022). Google Ads is a valuable marketing instrument that assists businesses in promoting their products while attracting potential consumers. Therefore, investigating how Google advertisements attract consumers to click is essential for understanding industry market strategies and effective advertising techniques.

Google Ads include text, images, videos, keywords, and display ads. The definition of Google Ads in this study refers to Google's display ads. This form of advertising runs on the Google Display Network (GDN). GDN is a massive advertising platform that spans thousands of websites, apps, and video content, including Google's services (such as YouTube, Gmail, Google Play, etc.) and partner websites and apps. Google's display ads can reach more than 90% of Internet users (Google 2024). As such, this study used display ads as the research subject. Display ads typically appear in pictures, animations, and videos. The goals of these ads are to increase brand awareness, inspire user interest, increase conversion rates, etc. Therefore, image appeal is an essential variable in the peripheral route. Google's display ads can be targeted based on user interests, behavior, demographics, and other information, helping advertisers reach their target audiences more effectively. Display advertising also provides several advertising and tracking tools, enabling advertisers to evaluate and optimize advertising effectiveness.

Google's ads were originally text-based. However, due to the development of information technology and the popularization of artificial intelligence, this causes Google's ads especially Google display ads are presented in a non-text format and become bulky. This provides a variety of formats and media to allow advertisers to display their content better. This movement can meet the needs of different platforms and users. Therefore, this study is suitable for taking image appeal as an essential variable in the presentation peripheral route of Google ads.

According to the elaboration likelihood model (ELM), the central route traditionally becomes the primary consideration for consumers to evaluate appropriate products through related messages (Bhattacherjee and Sanford 2006; Clark and Evans 2014). Studies indicated that information accuracy and information completeness in the central route are the first choices for decision-makers regarding purchase decisions (Gao et al. 2021; Hussain et al. 2018; Kang and Namkung 2019; Thomas, Wirtz, and Weyerer 2019). Information completeness is the level to which each acceptable situation is external and related to the client population contextually within a saved message (Sun et al. 2019). Information accuracy refers to the level to which a message is accurate, intrinsically trustable, meaningful, unambiguous, and unchangeable (Gao et al. 2021). Past research has identified the central route or users' motivation concerning learning sharing (Cai et al. 2018; Chen and Lin 2018; Li et al. 2018; Park and Lin 2020; Sun et al. 2020). Researchers have also investigated user experience and product-oriented knowledge-sharing studies according to utilitarian values (Gao et al. 2021).

However, whether the peripheral route presents a feasible choice for decision-makers has rarely been investigated (Cyr, Hassanein, and Head 2007; Li et al. 2018; Zha et al. 2018), thus creating a research gap. Social presence is referred to as the level to which a medium permits the individual to experience other people for a psychological presentation (Cyr, Hassanein, and Head 2007). Image appeal is the level to which an image on an internet site is considered suitable and fits into user beliefs, satisfaction, or fascination (Wang et al. 2014). Related discussions are evident in studies on parasocial interaction (Chung and Cho 2017; Corrêa et al. 2020; Ferchaud et al. 2018; Gong and Li 2017). The peripheral route is derived from the perspective of hedonistic value (Cai et al. 2018) and symbolic value (Wongkitrungrueng and Assarut 2020), which is the contribution of our study to the related literature.

Note that this study advances hypotheses for Google Display Ads, surpassing the existing frameworks of prior scholars by integrating the central route of information completeness and information accuracy, along with the peripheral route of social presence and image appeal, tailored to the specific features of display advertising. Through a comprehensive analysis of the above studies, a novel hypothesis framework is constructed, with a primary emphasis on the distinctive traits of display advertising. This framework accentuates the significance of social presence and image appeal within multimedia advertising, diverging from merely reiterating hypotheses from prior studies.

The ELM is frequently cited when exploring the persuasion effect (Chang, Lu, and Lin 2020; Cyra et al. 2018; Gao et al. 2021; Zha et al. 2018). Information completeness and information accuracy proposed by Chang, Lu, and Lin (2020) and Gao et al. (2021) are often considered two indicator variables of the central route. Thus, previous studies have studied the above variables using the ELM. This is because these two variables represent the overall quality of

information and provide viewers with a basis for rational interpretation (Zha et al. 2018). Viewers often screen advertisements based on experience and memory. Therefore, if the information is incorrect, viewers might question it and skip the advertisement, leading to a loss in advertisement performance. As such, the present study selected information completeness and information accuracy as the indicator variables of the central route.

Moreover, the social presence proposed by Cyra et al. (2018) and Sun et al. (2019, 2020) represents the peripheral route in the ELM. Cyra et al. (2018), Gao et al. (2021), and Park and Lin (2020) also examined image appeal in peripheral routes. Social presence and visual appeal are essential elements that capture a viewer's attention while causing them to stay with an advertisement and think about it repeatedly (Sun et al. 2019, 2020). The most essential aspect of Google advertising is to catch the audience's attention. As such, social presence and image appeal are the most critical variables. Therefore, it is possible to prevent viewers from skipping a particular advertising message. This is why the present study selected social presence and image appeal as peripheral route variables.

However, considering the above-mentioned central route of information completeness (IC) and information accuracy (IA), as well as the peripheral route of social presence (SC) and image appeal (IA), scholars have yet to examine these variables simultaneously, leading to a critical research gap. Therefore, the present study is to fill the research gap while augmenting the literature. Finally, in Google Advertisements, judging the trustworthiness or credibility of an advertising source typically takes time. However, Google advertisement viewers typically decide whether to read an advertisement within a very short time. As such, we did not include source credibility as a peripheral route factor in this model. However, some scholars have considered this variable within live-streaming settings (Sun et al. 2019; Zha et al. 2018).

Based on the above, this study sought to answer two research questions: (1) How do Google Ads affect consumer decisions regarding call-to-buy action? (2) How does the peripheral route directly attract consumers and lead to the persuasion effect? Based on the above questions, this study investigates how Google Ads attract consumers, leading to e-WOM and CTA.

## 2. Literature review and hypothesis development

Petty and Cacioppo (1984) indicate that the ELM can be used to explore how user attitudes about effective communication can change over time. In ELM, the information procedure is conducted using two paths: the central route and the peripheral route. Regarding the central route, an individual considers information-related disagreements and reviews their most significant path (e.g., recognizing the advantages and significance) before deciding (Bhattacherjee and Sanford 2006; Hussain et al. 2018). The ELM literature has typically employed argument quality to declare a central route factor that incites changes in understanding and attitude (Bhattacherjee and Sanford 2006; Thomas, Wirtz, and Weyerer 2019). The peripheral route promises less rational work. An individual depends on heuristic cues regarding targeted actions as opposed to argument quality, such as the likability of the proponents (Bhattacherjee and Sanford 2006; Zha et al. 2018), source credibility (Li, Liu, and Zhang 2020), or a message's environmental attributes.

ELM has been extensively employed in various fields to investigate transforms in attitude toward or awareness of associated problems (Kang and Namkung 2019; Meng and Choi 2019). Recent literature has primarily used the ELM model to explore two diverse study objects. First, some studies used ELM to investigate how attitudes regarding or the understanding of a message content alters (e.g., attitudes regarding convincing message systems (Cyra et al. 2018) and the acceptance of an established information technology system (Bhattacherjee and Sanford 2006)). Second, recent studies have explored individual message-processing mechanisms of issue-related messages extensively using ELM. For example, online verifications and announcements in the second-hand market (Chang, Lu, and Lin 2020). Currently, ELM is being adopted to investigate convincing conditions in e-commerce and social media, such as e-WOM on e-commerce internet sites (Thomas, Wirtz, and Weyerer 2019), persuasive messages within e-marketing, and information usage in the internet community (Filieri and McLeay 2014).

When exploring the persuasion effects, the ELM is frequently cited (Chang, Lu, and Lin 2020; Cyra et al. 2018; Gao et al. 2021; Zha et al. 2018). The central route and the peripheral route are the main considerations; thus, we focus on four independent variables (e.g. information accuracy) rather than other factors. The ELM holds that there are numerous specific processes of change on the "elaboration continuum" ranging from low to high. When the operation processes at the low end of the continuum determine attitudes, persuasion follows the peripheral route. When the operation processes at the high end of the continuum determine attitudes, persuasion follows the central route. Under the central route, persuasion will likely

result from a person's careful and thoughtful consideration of the true merits of the information presented in support of an advocacy. On the other hand, under the peripheral route, persuasion results from a person's association with positive or negative cues in the stimulus or making a simple inference about the merits of the advocated position.

Brkić (2022) provided an in-depth understanding of the CTA use within search engine advertising on the advertisement's effectiveness. Freeman and Dardis (2022) added insight surrounding the role of CTA messages in the context of sponsored advertising. Oltra, Camarero, and Cabezudo (2022) investigated the synergistic impact of CTA and visual content in Instagram (IG) communication, thus examining the illuminating effect of social media (IG) on consumer behavior. Chen, Yeh, and Chang (2020) explored the effects of different advertising presentation formats and CTA on advertising recognition to evaluate Facebook's native advertising on mobile devices. Finally, Taylor (2022) then examined the advertising impact of CTA in virtual reality (VR) and the metaverse. Amongst, a call to action (CTA) is an image or line of text that prompts visitors, leads, and customers to take action. It is a 'call' to take an 'action'. A CTA is typically a region of the screen that drives the reader to click through to engage further with a brand. This could either be an image, a button, or a reserved section of the digital asset. It is often created to drive viewers to action and to produce some type of immediate, measurable result. A CTA can also involve a request to receive more information about a product or service, and this approach identifies the visitors as having an interest in or need for what the advertisers are offering. The most popular manifestation of the CTA in web interfaces comes in three forms. The first is a link to a web page with additional and further information (e.g. 'Learn more'). The second is a request to the user to take action after browsing the web (such as 'Contact us'). The third is the use of buttons that, when clicked, act (e.g. 'Shop now'). Fig. 1 illustrates the framework of this study.

### 2.1. The relationship between central route factors (information completeness and information accuracy) and the persuasion effect

Information completeness has been well-established and documented. It is the relationship between needs and information completeness. The internet is one source consumers use to seek information regarding products and services. Information completeness fulfills consumer needs when they search for information (Khasawneh 2010). To fulfill consumer needs, information readiness means that it is available and necessary (Hurley et al. 2015). Moreover, persuasion can affect belief adjustment, which indicates how persuasion depends on readiness when searching for information (Ehrig and Schmidt 2017). Therefore, we suggest that information completeness affects the persuasion effect (Gao et al. 2021). Based on the above, we posit the H1 hypothesis:
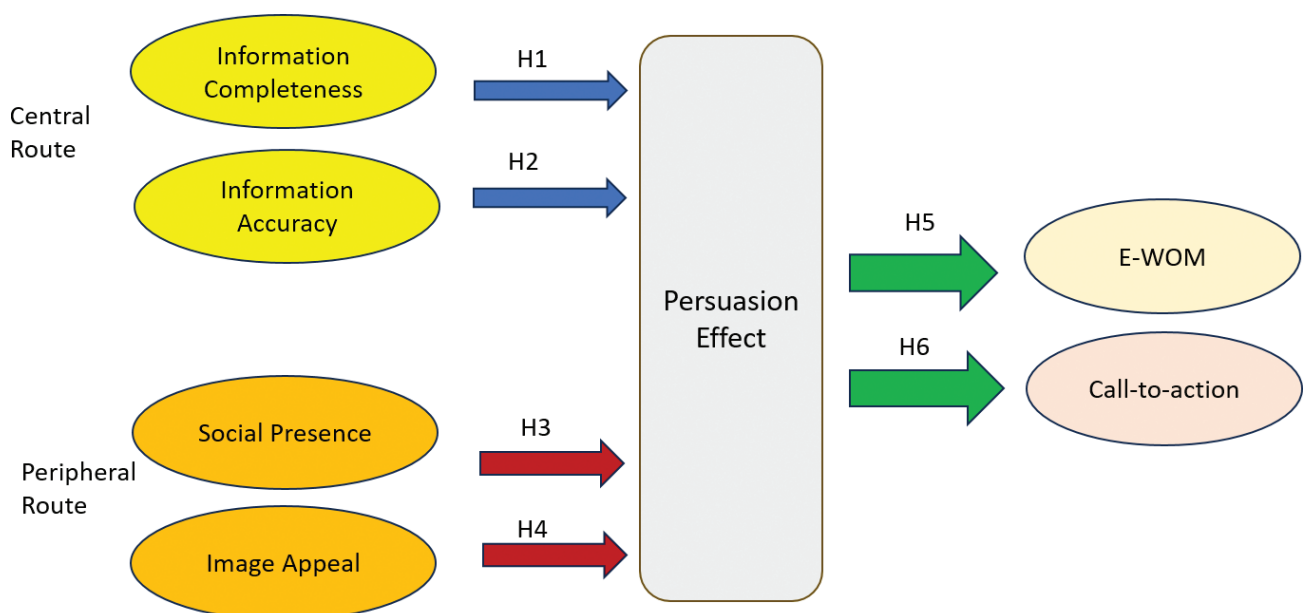


*Fig. 1. Research framework.*

**H1.** *Information completeness positively influences the persuasion effect.*

Information should be accurate to ensure there are no doubts. To remove doubt, information should be as truthful or reliable as possible (Regoniel 2021). Source reliability can generate various effects on complete reliance and convincing reliance upon the situation of an advocate (Clark and Evans 2014). When information becomes more refined, complete, and accurate, it can persuade consumers more directly (Friestad and Wright 1994). Therefore, we suggest that information accuracy affects the persuasion effect (Gao et al. 2021). Based on the above, we posit the H2 hypothesis:

**H2.** *Information accuracy positively influences the persuasion effect.*

### 2.2. The relationship between peripheral route factors (social presence and image appeal) and the persuasion effect

Research indicates that social presence provides awareness information and the attraction that individuals experience (Huijnen et al. 2004). However, a background theme can also create visual attraction (Olby 2000). Regarding the effect of a background theme on persuasion, studies have confirmed such a relation between the variables (Li, Liu, and Zhang 2020). Therefore, we suggest that social presence affects the persuasion effect (Li, Liu, and Zhang 2020). Based on the above, we posit the H3 hypothesis:

**H3.** *Social presence is positively associated with the persuasion effect.*

Image appeals contains moving images, such as animation in the form of pop-ups that appeal directly to consumers (Buijzen and Valkenburg 2002; Nelson 2007). Advertisers design pop-up ads that are user-friendly and enable consumers to draw comparisons between products that they are searching for and the pop-up ad products (Wang et al. 2014). A decision must be made regarding which product is preferred while comparing different products (Putnam-Farr and Morewedge 2019). Furthermore, judgment begins when consumers decide whether to be persuaded or not (Daly and Thompson 2017). Thus, we suggest that image appeal affects the persuasion effect (Nelson 2007). Based on the above, we posit the H4 hypothesis:

**H4.** *Image appeal is positively associated with the persuasion effect.*

### 2.3. The relationship between the persuasion effect and call-to-action and e-WOM

The persuasion effect impacts thinking, feeling, and acting with narrative understanding or engagement led by narrative information (Walter, Murphy, and Frank 2017). The persuasion effect is particularly high when preference satisfaction increases; this link will evolve with related activities. Customer satisfaction is critical for a vendor to retain a customer genre related to preferences, expectations, and desires. Moreover, if a consumer's expectation is higher than predicted, it can lead to a call-to-action (Wessel 2016). Thus, we suggest that the persuasion effect affects call-to-action (Gao et al. 2021). Based on the above, we posit the H5 hypothesis:

**H5.** *The persuasion effect is positively associated with call-to-action.*

Based on Hennig-Thurau et al. (2004), e-WOM is a positive or negative comment about a product, company, or commercial activity regarding the people involved. The persuasion effect can elicit the user experience after the consumer buys a product or uses a service (Broin 2021). Furthermore, user experience is evident when consumers provide feedback on their personal user experiences (Roth 2017). Consumers who provide feedback through e-WOM can specifically affect potential users (Manu, Shelly, and Pan 2021). Thus, we suggest that the persuasion effect affects e-WOM (Gao et al. 2021). Based on the above, we posit the H6 hypothesis:

**H6.** *The persuasion effect is positively associated with electronic word-of-mouth.*

### 2.4. The persuasion effect mediates the link between what the audience considers (antecedent) and how the audience responds (coping behavior)

The causal framework in this study is audience consideration (central and peripheral routes) and how the audience responds (e-WOM and call-to-action), and the persuasion effect is deemed a mediation mechanism. The central route includes information completeness and information accuracy through the information-related context within an entire saved message that deems each acceptable situation as external. A central route also includes information accuracy through accurate and unambiguous messages. The audience then undergoes a persuasion effect because they consider the information-related arguments while recognizing the linked benefits and importance of the advertisers (Gao et al. 2021; Sun

et al. 2019). In contrast, the peripheral route includes a social presence on a platform that enables the audience to learn about other people's experiences in a specific presentation field. A peripheral route also consists of the image appeal on an internet platform that attracts the audience to feel entertained and satisfied. For instance, this encourages the audience to worship or appreciate a celebrity's success, imitate them, then switch their understanding and attitude, thus exhibiting the persuasion effect (Thomas, Wirtz, and Weyerer 2019; Wang et al. 2014). Therefore, the persuasion effect indicates that an audience is convinced by the advertiser's endorsement, which impacts the audience's responses (e-WOM and call-to-action) (Cyra et al. 2018). In this sense, the audience considers the central and peripheral routes to significantly influence their response behavior. Thus, the following hypothesis is proposed:

**H7.** *The persuasion effect mediates the link between the audience considerations (i.e., antecedent: the central route and peripheral routes) and how the audience responds (coping behavior: e-WOM and call-to-action).*

## 3. Research method

### 3.1. Measurement

In this study, information completeness (InC) has 9 measurable items from 3 latent constructs: complete breadth and depth, data collection, and output information (Nelson, Todd, and Wixom 2005). Information Accuracy (InA) has 9 measurable items from 3 latent constructs: assured, correctness, and recorded value (Filieri and McLeay 2014). Social presence (SP) has 6 measurable items from 2 latent constructs: human contact and temporal distance (Bar-Anan, Liberman, and Trope 2006). Image appeal (IA) has 6 measurable items from 2 latent constructs: image display and visual design (Nelson 2007). The persuasion effect (PE) has 9 measurable items from 3 latent constructs: awareness effect, psychological effect, and reminiscence effect (Cho, Shen, and Wilson 2014). CTA has 6 measurable items from 2 latent constructs: reply message and add to cart (Kukar-Kinney and Close 2010). E-WOM has 6 measurable items from 2 latent constructs: recommendation and content (Hwang and Zhang 2018). The questionnaire statements are listed in the Appendix.

Given that some studies investigate reactions to advertising through recall (Chen and Wang 2019; Chen, Yeh, and Chang 2020; Cyra et al. 2018; Sun et al. 2019; Zha et al. 2018). Thus, this study is appropriate to investigate reactions to advertising through recall. The questionnaire asked respondents to recall a mem-

orable Google search engine experience as follows: "Please recall, have you ever used the Google search engine to search for a product you want to buy in the past? These include electronic products. In the process of using, have you been attracted by Google Ads and placed an order? We also provide an example: I was searching on Google for a watch I wanted to buy, and I was attracted by a pop-up advertisement and bought the watch shown in the advertisement."

We collected data by using an internet survey of responders from random Google users who were Instagram users in Taiwan. Thus, we have not intentionally selected responders who are the most obtainable, nor do we omit those who are not easy to communicate or refused to join.

We collected 600 questionnaires and obtained 483 valid questionnaires in March 2022; thus, the effective recovery rate was 80.5%. Because we set up the questionnaire numbers online until the 600 numbers are sent out. The responders are classified by region, age, and gender. Amongst, there were 312 male and 171 female respondents. Among the age groups, 15 were older than 55 years old, 104 were 45–54 years old, 132 were 35–44 years old, 129 were 25–34 years old, 67 were 18–24 years old, and 36 were 13–17 years old.

Within the cross-section survey, common method variance (CMV) will be investigated. This study employed the unrotated principal components approach of Harman's single-factor testing to examine for CMV. Within this examination, when a single factor can mostly explain the covariance, common method variance has been verified. The outcomes found that the variances illustrated by the 1st loading factor were 41.57% (i.e., <50%), confirming that CMV shows doubt to affect results (Podsakoff et al. 2003). In practice, we bypassed the possibility of false relationships between dependent and antecedent variables by adding a cover photo at interludes within them.

## 4. Empirical results

### 4.1. Reliability and validity testing

We computed Cronbach's $\alpha$ for InC, InA, SP, IA, PE, CTA, and e-WOM (0.696, 0.746, 0.791, 0.675, 0.837, 0.964, and 0.826, respectively), which were larger than 0.6. This showed the presence of internal consistency (Fornell and Larcker 1981). We further calculate the composite reliability (CR), which was 0.832, 0.856, 0.795, 0.755, 0.902, 0.908, and 0.920 for InC, InA, SP, IA, PE, CTA, and e-WOM, respectively. Each construct showed sound reliability for the CR, exceeding 0.6. The average variance extracted (AVE) was computed for convergent validity, which was 0.622, 0.665, 0.826,

*Table 1. Empirical results of reliability and validity analysis.*

| Variables | Constructs | Cronbach's $\alpha$ | $\alpha$ if item deleted | Item-total correlation | Loading | CR | AVE |
|---|---|---|---|---|---|---|---|
| Information completely (InC) | | 0.696 | | | | 0.832 | 0.622 |
| | Breadth and depth | | 0.528 | 0.561 | 0.827 | | |
| | Data collection | | 0.621 | 0.495 | 0.779 | | |
| | Output information | | 0.647 | 0.477 | 0.759 | | |
| Information accuracy (InA) | | 0.746 | | | | 0.856 | 0.665 |
| | Assured | | 0.707 | 0.537 | 0.885 | | |
| | Correctness | | 0.515 | 0.688 | 0.790 | | |
| | Recorded value | | 0.733 | 0.500 | 0.767 | | |
| Social Presence (SP) | | 0.791 | | | | 0.795 | 0.826 |
| | Human contact | | — | — | 0.909 | | |
| | Temporal distance | | — | — | 0.907 | | |
| Image appeal (IA) | | 0.675 | | | | 0.755 | 0.861 |
| | Image display | | — | — | 0.869 | | |
| | Visual design | | — | — | 0.857 | | |
| Persuasion effect (PE) | | 0.837 | | | | 0.902 | 0.754 |
| | Awareness effect | | 0.805 | 0.664 | 0.881 | | |
| | Psychological | | 0.759 | 0.710 | 0.877 | | |
| | Reminiscence | | 0.753 | 0.719 | 0.847 | | |
| Call-to-action (CTA) | | 0.964 | | | | 0.908 | 0.966 |
| | Reply message | | — | — | 0.983 | | |
| | Add to cart | | — | — | 0.978 | | |
| e word-of-mouth (e-WOM) | | 0.826 | | | | 0.920 | 0.852 |
| | Recommendation | | — | — | 0.923 | | |
| | Content | | — | — | 0.910 | | |

0.861, 0.754, 0.966, and 0.852 for InC, InA, SP, IA, PE, CTA, and e-WOM, respectively. Convergent validity holds when the AVE is larger than 0.4. As to discriminant validity, this study tested AVE for each dimension two of a kind surpass the square of the phi magnitude on the matched set, and these inner construct correlations (the phis) were all notably below unity (Batra and Sinha, 2000). In addition, construct validity was verified by calculating the loading magnitudes, when it surpassed 0.4 (Fornell and Larcker 1981). Table 1 presents the outcomes.

### 4.2. Results of structural equation modeling

The empirical outcomes are conducted by SEM. We obtain: $\chi2/df = 2.537$, GFI = 0.967, AGFI = 0.934,

CFI = 0.986, IFI = 0.987, NFI = 0.978, RMSEA = 0.056, and RMSR = 0.021, therefore, model fit is verified.

Empirical results are reported in Table 2. As for H1, information completeness guides to an obvious persuasion effect, putting forth a significant effect ($\beta1 = 0.303$, t = 2.332, p < 0.05). As for H2, information accuracy does not positively affect the persuasion effect, which was not found strong ($\beta2 = 0.037$, t = 0.198, p > 0.05). As for H3, social presence does not lead to a higher persuasion effect, putting forth a nonsignificant effect ($\beta3 = -0.005$, t = -0.016, p > 0.05). As for H4, the obvious effect of image appeal on the persuasion effect is shown ($\beta4 = 0.925$, t = 2.809, p < 0.05). H5 and H6 show similar outcomes, revealing that the persuasion effect obviously and positively affects the call-to-action ($\beta5 = 0.936$, t = 15.269, p < 0.05), and the

*Table 2. Results of hypothesis testing.*

| Hypothesized path | Coefficient | T-value | Testing | $R^2$ | $f^2$ | VIF |
|---|---|---|---|---|---|---|
| H1: Information completely → Persuasion effect | 0.303 | 2.332 | Non-reject | 0.212 | 0.269 | 1.269 |
| H2: Information accuracy → Persuasion effect | 0.037 | 0.198 | Reject | 0.302 | 0.433 | 1.434 |
| H3: Social presence → Persuasion effect | −0.005 | −0.016 | Reject | 0.468 | 0.880 | 1.880 |
| H4: Image appeal → Persuasion effect | 0.925 | 2.809 | Non-reject | 0.512 | 1.050 | 2.051 |
| H5: Persuasion effect → Call-to-action | 0.936 | 15.269 | Non-reject | 0.426 | 0.742 | 1.742 |
| H6: Persuasion effect → e-WOM | 0.818 | 14.639 | Non-Reject | 0.423 | 0.733 | 1.733 |

Model fit    $\chi^2/df = 2.537$, GFI = 0.967, AGFI =0.934, CFI = 0.986, IFI =0.987, NFI = 0.978, RMSR = 0.021, and RMSEA =0.056.

*Notes*: *, **, and *** are significance at $\alpha = 0.05$, $\alpha = 0.01$, $\alpha = 0.001$, respectively.

persuasion effect obviously and positively influences e-WOM ($\beta 6 = 0.818$, t = 14.639, p < 0.05), respectively.

Additionally, the variance inflation factor (VIF) values are between 1.269 and 2.051, that shows smaller than 3, indicating that a multicollinearity issue does not stand. We further compute that the coefficient of determination ($R^2$) is between 0.212 and 0.512, which indicates explanatory power in our work since the slight, medium, and huge magnitudes of $R^2$ are 0.02, 0.13, and 0.26. We compute the effect sizes ($f^2$), $f^2 = [R^2/(1 − R^2)]$ are between 0.269 and 1.050, which indicates the middle and huge effects. The intensity of the relations within related variables was evaluated as 0.35, 0.15, and 0.02, which are recognized as huge, medium, and small effects. The above criteria were referred from Hair et al. (2019); see Table 2.

### 4.3. Mediating effect analysis

We adopted the bootstrap approach to evaluate the mediation effect (Lau and Cheung 2012). As for case 1 (information completeness—call to action), we found that the confidence interval (0.152 to 0.739) of the indirect effects is positive magnitude and significant (p < 0.05); the confidence interval (−0.069 to 0.219) of the direct effect is from negative to positive magnitude and insignificant (p > 0.05). Our outcomes show that the persuasion effect owns a full mediating effect within information completeness and call to action. In case 2 (information completeness—e-WOM), the confidence interval (0.147 to 0.732) for the indirect effects is positive magnitude and significant (p < 0.05); the confidence interval (−0.139 to 0.176) of the direct effect is from negative to positive magnitude and insignificant (p > 0.05). This outcome shows that the persuasion effect owns a full mediating effect within information completeness and e-WOM. In case 3 (image appeal—call to action), the confidence interval (0.160 to 0.338) for the indirect effects is positive magnitude and significant (p < 0.05); the confidence interval (−0.086 to 0.165) of the direct effect is from negative to positive magnitude and insignificant. We then show that the persuasion effect owns a full mediating effect within image appeal and call-to-action. Similar results were obtained in cases 4 through 6 (see Table 3).

## 5. Conclusions and implications

### 5.1. Research conclusions

The empirical results of this study indicate that both peripheral (image appeal) and central (information completeness) routes positively lead to the persuasion effect. This finding confirms that the pe-

ripheral and central routes increase the persuasion effect. Furthermore, we identified the most effective pathway, namely, image appeal to the persuasion effect and, ultimately, to call to action. This pathway exhibited the highest ranking, with a magnitude of 0.866 (0.925 × 0.936). Furthermore, image appeal is another significant pathway that enhances the persuasion effect, ultimately leading to e-WOM. This pathway had the second-highest aggregated value, 0.757 (0.925 × 0.818). This finding suggests that a peripheral route can more easily attract consumers contributing to the persuasion effect. Viewers must react quickly to Google ads. Therefore, viewers directly identify advertising messages based on the image appeal of the peripheral route; they have less time and effort to consider the information accuracy and completeness of the central route. Viewers are easily attracted by image appeal and tend to develop their comments or ideas according to the information they obtain. They are more likely to trust messages that come from relatives, friends, or peers. This reliance on messages from trusted sources contributes to the persuasion effect. The results of this study highlight the importance of e-WOM in shaping the persuasion effect on customer views. Our findings indicate that the peripheral route was better than the central route. These findings have valuable implications for companies seeking to attract customers to buy electronic products through the Google search engine.

This study has made significant contributions to the existing literature by applying ELM to Google Ad marketing, which has received limited research attention in past research. To explore the impact of the persuasion effect, we investigated how consumers process searching-related information in search results.

### 5.2. Theoretical contributions

This study has yielded several theoretical contributions to the field. Firstly, it enhances the comprehension of the audience's response to Google advertisements through the lens of the ELM. Previous research on Google advertisements has predominantly concentrated on the practical utility of advertisements, with limited analysis of audience coping behavior (Chen, Yeh, and Chang 2020; Manu, Shelly, and Pan 2021). This study advances the ELM by delving deeply into the underlying causes of response behavior to Google advertisements, particularly elucidating how the persuasive effect can engender coping behaviors that surpass individuals' conscious decisions. In comparison to the study by Cyra et al. (2018), this study further subdivides the central route into completeness and accuracy, thus refining the

*Table 3. Empirical results of mediating effects as mediator.*

| Effects | Contents | Estimate | p-value | Confidence interval | Mediation effects |
|---|---|---|---|---|---|
| **(Case 1)** | | | | | |
| Indirect effect | IC → PE → CTA | 0.295 | 0.001 | 0.152~0.739 | Full mediation effect |
| Direct effect | IC → PE | 0.369 | 0.001 | 0.175~0.666 | |
| | PE → CTA | 0.983 | 0.001 | 0.867~1.109 | |
| | IC → CTA | 0.068 | 0.413 | −0.069~0.219 | |
| Total effect | IC → CTA | 0.363 | 0.001 | 0.106~0.885 | |
| **(Case 2)** | | | | | |
| Indirect effect | IC → PE → EWOM | 0.354 | 0.001 | 0.147~0.732 | Full mediation effect |
| Direct effect | IC → PE | 0.376 | 0.001 | 0.180~0.678 | |
| | PE → EWOM | 0.941 | 0.001 | 0.818~1.080 | |
| | IC → EWOM | 0.031 | 0.767 | −0.139~0.176 | |
| Total effect | IC → EWOM | 0.385 | 0.001 | 0.008~0.908 | |
| **(Case 3)** | | | | | |
| Indirect effect | IA → PE → CTA | 0.038 | 0.001 | 0.160~0.338 | Full mediation effect |
| Direct effect | IA → PE | −0.039 | 0.735 | −0.393~0.147 | |
| | PE → CTA | 0.969 | 0.001 | 0.861~1.090 | |
| | IA → CTA | 0.044 | 0.543 | −0.086~0.165 | |
| Total effect | IA → CTA | 0.082 | 0.001 | 0.252~0.325 | |
| **(Case 4)** | | | | | |
| Indirect effect | IA → PE → EWOM | 0.037 | 0.001 | 0.156~0.316 | Full mediation effect |
| Direct effect | IA → PE | −0.039 | 0.758 | −0.383~0.145 | |
| | PE → EWOM | 0.948 | 0.001 | 0.824~1.075 | |
| | IA → EWOM | 0.014 | 0.829 | −0.095~0.119 | |
| Total effect | IA → EWOM | 0.051 | 0.001 | 0.221~0.275 | |
| **(Case 5)** | | | | | |
| Indirect effect | IP → PE → CTA | 0.717 | 0.001 | 0.508~1.072 | Full mediation effect |
| Direct effect | IP → PE | 0.729 | 0.001 | 0.581~0.981 | |
| | PE → CTA | 0.983 | 0.001 | 0.875~1.093 | |
| | IP → CTA | 0.051 | 0.317 | −0.032~0.147 | |
| Total effect | IP → CTA | 0.768 | 0.001 | 0.476~1.128 | |
| **(Case 6)** | | | | | |
| Indirect effect | IP → PE → EWOM | 0.751 | 0.001 | 0.536~1.129 | Full mediation effect |
| Direct effect | IP → PE | 0.749 | 0.001 | 0.601~0.995 | |
| | PE → EWOM | 1.003 | 0.001 | 0.892~1.135 | |
| | IP → EWOM | −0.086 | 0.118 | −0.193~0.005 | |
| Total effect | IP → EWOM | 0.665 | 0.001 | 0.343~1.134 | |

ELM. Secondly, we introduced two-dimensional variables for the central route, encompassing information completeness and information accuracy, and two-dimensional variables for the peripheral route, including social presence and image appeal. This novel framework offers a fresh research perspective on audiences influenced by the persuasive effect based on rational and emotional paradigms. Compared to the central route studies by Chang, Lu, and Lin (2020) and Gao et al. (2021), and the peripheral route studies by Cyra et al. (2018) and Sun et al. (2020), our approach contributes more comprehensively to scholarly discourse. Thirdly, this study delved into its mediating role in shaping audience coping behavior through both the central and peripheral routes. This examination unveils the intricate dynamics among Google advertisement strategies, marketing persuasion initiatives, and coping behaviors, thus fostering a more nuanced comprehension of consumer behavior.

## 5.3. Managerial implications

The conclusions of this study provide valuable insight regarding the marketing and promotion of Google advertisements: Firstly, Google Advertisements should adjust their promotional efforts by developing image appeal. Since brand stories can influence consumers' preferences regarding how a product is received, product brands should be elaborated before promotion. Subsequently, differentiated and precise recommendations should be made based on the uniqueness of the image appeal of their target consumers. However, buying for oneself and buying for others will elicit different persuasion effects, which should be further explored. Atypical stories can be publicized to emphasize the humanistic and historical value of Google advertisements, while typical stories can highlight the utilitarian value function of certain products. Secondly, companies should

leverage paid Google Ads to promote their products. Google Ads can be combined with compelling marketing text and videos that effectively attract customers to call to action. Companies must develop appropriate Google Ads, such as image advertisements or display advertisements, that can be used to promote electronic products. Additionally, generating positive e-WOM can be profitable, as social networks facilitate the quick, widespread dissemination of e-WOM (Kimmel and Kitchen 2014). Thirdly, from a customer perspective, when browsing or viewing items on Google based on endorsements of celebrities, pages, or recommendations, individuals are willing to place trust in products with images. A central route is unlikely to attract more consumers. However, factors such as information accuracy and information completeness can provide valuable insight while contributing to building trust when customers use Google search to purchase electronic products.

### 5.4. Limitations and future research

Finally, it is imposing to acknowledge the limits of this work. First, regarding the sample structure, budget constraints limited the study to 483 respondents. While human or time constraints limited the sample size, analyzing a larger dataset, including 1000 questionnaires would have effectively reduced bias and increased precision. A larger sample size would also enhance the representativeness and effectiveness of the results. Second, the data were collected in Taiwan. It would be valuable to conduct cross-cultural research, as different countries have distinct cultures and cognitive behaviors. Third, this study focused on the electronic product industry. Future research should explore other specific industries. Fourth, the study focused on viewers who employed the Google search engine, which restricts the generalizability of the findings to only Google users in Taiwan. This limitation highlights the need for future research to include other search engines, such as Baidu or Yahoo, to examine similar situations and behaviors.

### Conflict of interest

The authors declare that there is no conflict of interest.

### Appendix: Questionnaire statements

*Information completeness*

1. There is no missing information.
2. The scope of information stored is complete in the data.

3. Every value of a specific variable has been documented.
4. The level of data coverage within the data collection is complete.
5. The dataset encompasses all pertinent data.
6. The data collection was complete.
7. The extent or thoroughness of the output information is complete and sufficient.
8. The data expressions are sufficient.
9. The data output was complete and sufficient.

*Information accuracy*

1. This pertains to the consistency between a real-world entity, a value stored in a different database, or the outcome of a mathematical calculation.
2. The data are verified to be free of errors, precise, accurate, and reliable, and exhibit integrity.
3. It lacks significant bias.
4. Quantification of the alignment or correspondence with a specifically identified source is accurate.
5. Accurately represents the fundamental reality.
6. The accuracy of the output information is verified.
7. The occurrence rate of errors within the data is verified.
8. The expected degree of precision from the system is verified.
9. The recorded value aligns with factual or real-world information.

*Image appeal*

1. The images featured on the website are suitable.
2. The images featured on the website are gratifying.
3. The images featured on the website are captivating.
4. The images displayed on the website are interesting.
5. The images displayed on the website enhance the visual appeal of the content.
6. The images used on the website were displayed to me emotionally.

*Social presence*

1. Images of people on the website provide the website with a sense of human contact.
2. Images of people on the website provide the website with a personal touch.
3. Pictures of people on the website provide the website with a sense of sociability.

4. Pictures of people on the website provide the website with a sense of human warmth.
5. Pictures of people on the website provide the website with a sense of human sensitivity.
6. Pictures of people on the website allow users to experience others as being psychologically present.

*Persuasion effect*

1. An advertisement gains consumers' attention when its features are such that it attracts them to watch it.
2. Audio and visual attributes, message appeals, and content are among the key features that gain consumers' attention.
3. Attract reflects a number of views.
4. The advertisement is likable.
5. The advertisement was helpful.
6. The advertisement is memorable.
7. Generally, the advertisement lingers in the head.
8. I can remember the detailed information about the discounts.
9. I can remember the catchphrase.

*Call-to-action*

1. Incentive design for the person initiating the referral (hereafter, the sender) and the person receiving the referral (hereafter, the recipient) is worked.
2. Call to action for online referral to the sender is worked.
3. Message design to the recipient is worked.
4. Consumers put the items in an online shopping cart.
5. Consumers are predicted to delay their purchasing to search for more information.
6. Customers would abandon their shopping cart without making a purchase.

*E-WOM*

1. I am likely to say positive or negative things.
2. I would recommend it to my friends and relatives.
3. I would mention others through online platforms.
4. I am likely to say positive things about the content of the company or personnel.
5. I am likely to say positive things about the content of the product.
6. I would mention this content to others through online platforms.

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