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An Advertising Policy Model in Digital Marketing Using Eye Tracking

Seyed Hamid MirMotahari | Ph.D. Candidate of Business Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran

Sina Nematizadeh ∗ | Assistance Professor, Department of Business Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran

Seyed Abbas Heydari | Associate Professor, Department of Business Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran

Abstract

Purpose: This research aims to develop an advertising policy model in digital marketing based on eye tracking.

Method: The research method is qualitative and based on grounded theory. Semi-structured interviews were used to collect information, and data analysis was performed using the Strauss and Corbin method and the paradigm model. Sampling was theoretical sampling using targeted (judgmental) techniques, based on which 15 interviews were conducted with managers and marketing and advertising experts.

Findings: The findings of the research show that during the process of open, central and selective coding, the advertising policy model based on the use of eye tracking consists of Causal categories that include Advertising content, Quality of environmental advertising and Promotional features; contextual categories consist of advertising slogans, billboard elements, analysis of customer eye movements; intervening categories consist of online advertising, advertising costs, advertising through media and mass

communication; Central categories that consist of environmental advertising status, development of advertising influence, effective advertising on customers' intentions; category of strategies includes advertising message attractions, evaluation of target environmental advertising selection process, advertising based on customers' taste; consequence category includes competitive advantage, currency innovation, Promotion of strategic marketing decisions.

Conclusion: The study concludes that the eye tracking-based advertising policy model provides a comprehensive framework for enhancing advertising strategies. The model emphasizes the importance of considering various factors such as advertising content, consumer behavior, and contextual elements in developing effective advertising campaigns. The research highlights the potential of eye tracking in optimizing advertisements and gaining a competitive edge in the market. From a managerial perspective, the model offers actionable insights for marketers to improve customer engagement and increase advertising effectiveness by leveraging eye tracking data. It also suggests that advertisements should be tailored to consumer preferences and the context in which they are viewed. The study advocates for further research in this area to broaden the application of eye tracking technology in other marketing domains and service sectors. From an academic standpoint, this research contributes to the limited body of knowledge regarding environmental advertising and the use of eye tracking in marketing. It provides a foundation for future studies to explore the relationship between visual marketing and consumer behavior, offering insights that could foster innovative advertising strategies in the digital marketing field.

Introduction

The importance of hearing, tasting, and smelling and movement stimuli in attracting customers may be overstated, but visual stimuli have a significant impact on advancing research and people are mainly visual oriented (Casado-Aranda et al., 2020). As consumers, we are exposed to hundreds of advertisements daily on television, newspapers, magazines, yellow pages, retail advertisements, and websites. Additionally, implicit advertising in the form of product categories in stores and homes, visual messages on vehicles, road signs, food packaging in restaurants, and uniforms of service providers, T-shirts, CDs, and electronic devices attract our attention. Also, the eyes guide consumers between the shelves and aisles of stores, shopping centers, and websites when searching and deciding on products and brands, all of which are related to "visual marketing"; In other words, commercial and non-commercial companies use visual signs to communicate with consumers to create and maintain mutually beneficial relationships (Kong et al., 2019). If it is true that "observation equals confidence" and "confidence equals purchase", it is important that management is based on what the consumer sees. This issue is increasingly recognized in commercial activities (Guitarto et al., 2018).

Although there has been research on eye movements, researchers focused print ads prior to the late 1990s Radach et al. (2003). The effort of recent studies is to focus on the analytical knowledge of how the aspects and dimensions of advertisements and the purpose of the advertisement to interact with the visitor affect the visual behavior and the amount of attention devoted to different parts of an advertisement (Marois et al., 2020). Eye tracking is the process of measuring attention (gaze) or the movement of an eye in relation to the head (Hosp et al., 2020). Eye tracking is a tool for measuring eye position and movements (Marois et al., 2020). This technique can be a useful method for analyzing behavior and cognition (Muñoz-Leiva et al., 2019). By using the eye tracking technique, behavioral evidence can be obtained (Guitart et al., 2018). Eye tracking is very sensitive to the processes of attention and alertness (Javora et al., 2020) and this technique can be used to improve teaching and learning (Wang and Day, 2007), and the eye tracking tool is capable of recording FOVEA (Manhartsberger, Martina, 2005).

According to the mentioned cases, the importance of eye tracking for consumer behavior studies can address marketing research which cannot be done through self-reporting methods. Studying the effectiveness of environmental advertising by applying neuroscience techniques is

considered an ideal goal that seeks to determine the effectiveness of environmental advertising by examining visual indicators .

The current research aims to answer the following questions:
What are the success factors in environmental advertising? And what is the appropriate model of advertising policy based on the use of eye tracking?

Literature Review

Especially in the 20th century, and involves messaging in both broad and specific terms (such that it appeals to the audience or aligns them with the advertiser's message). Advertising is the process of providing specific awareness and exerting influence to direct public opinion, using tools such as language, writing, images, and display(Guitarto et al., 2018).This awareness-raising and direction-setting by advertising can be accurate, precise, and transparent, contributing to intellectual and cultural elevation by enhancing information, enlightening thoughts, and refining emotions. Conversely, it can be inaccurate, ambiguous, a mixture of truth and fiction, or even entirely false and purposefully misleading, playing a destructive and debasing role (Casado-Aranda et al., 2020).

Graphic design, as one of the most important elements of advertising, messaging, and dissemination of political, social, and cultural knowledge, plays a key role in advanced societies. It is an essential component of social life. Graphic design is utilized in television and cinema advertisements, product packaging, road signs, shop windows, street and public decorations such as in hotels, airports, metro stations, restaurants, parks, shopping centers, sports, art, and cultural venues, advertisements on building facades, and transportation such as buses, trains, and airplanes, as well as large-scale billboards, murals, pictograms, and symbolic signs. Environmental graphics, as a branch of graphic design, plays a significant role in achieving these goals and is a major part of commercial and advertising activities (Marois et al., 2020).

Our surrounding environment—our homes, the streets we travel on, the parks we walk through, and the public spaces we visit—all require logical formal relationships and precise organizational relations based on visual communication principles (Hosp et al., 2020).

Furthermore, Javora et al. (2020) in their study titled "Creativity in Environmental Advertising with Emphasis on Billboards for Food Products (Case Study: Bizhan Food Products)" stated that the installation of advertising billboards in cities, when done correctly, significantly increases the attention and desire of the audience to purchase a product.

Billboards are the most effective tool in terms of visibility for product promotion in urban spaces. Additionally, Marois et al. (2020), in their study "Real-time Eye Tracking for Mobile Systems in Support of Security Monitoring for Environmental Advertising," stated that environmental advertising is one of the most widely used forms of advertising media, encompassing a wide range of application areas in mobile environments. Environmental advertising on mobile devices was analyzed based on eye-tracking indicators, identifying factors influencing customer acquisition and retention.

However, the theoretical foundation of the study indicates the lack of exploratory research methods in marketing and the absence of qualitative research approaches such as grounded theory, ethnography, case studies, phenomenology, discourse analysis, and others. Marketing research often relies on quantitative research methods, typically using Latin-based articles and collecting data through questionnaires to test non-native theories, resulting in a gap in research that is indigenous and based on theories derived from within the target communities. In relation to the current research topic, the absence of a similar study that presents both positive and negative views together on the role and function of marketing intelligence and new product development in chain restaurants creates the theoretical gap for this research among Persian and local studies. Therefore, given the absence of a coherent and practical model for determining the factors affecting marketing intelligence and new product development, the researchers were able to achieve an inductive theory in a real-world domain through systematic data analysis. Consequently, the necessity of recognizing a comprehensive marketing intelligence model based on new product development in this field is undeniable. Thus, the literature review and the models examined indicate that the theoretical literature lacks research that addresses the current research problem in detail.

Method
This research is qualitative research. According to the existing theoretical gap, the grounded theory approach has been employed to provide an advertising policy model based on the use of eye tracking. The grounded theory approach is a type of qualitative research method that inductively applies a series of systematic procedures to create a theory about the phenomenon under study. In this research, non-probability sampling methods are used to specifically purposive sampling, to select participants.

The concept of purposive sampling which is used in qualitative research means that the researcher selects the possible subjects for the study which can be effective in understanding the research problem and the central phenomenon of the study. Therefore, data were collected through in-depth semi-structured interviews with experts. The statistical population consists of marketing and advertising management experts. All the interviews were recorded and used for coding, correction, and feedback. A total of 15 people were interviewed. Data collection continued until the theoretical saturation of the categories. Table 1 briefly shows the typology of the current research:

Table 1. Research Typology

Dimension	Current Study	Description
Philosophical foundations	Interpretive paradigm	It is based on the discovery of different dimensions of presenting the advertising policy model based on the use of eye tracking.
Orientation	Applied-developmental	Practical, because it examines the presentation of the advertising policy model based on the use of eye tracking and provides practical suggestions to reduce such risks. Developmental, because it increases knowledge by presenting a model with new variables.
Approach	Induction	First, data is collected, and then related hypotheses are presented. This approach seeks to theorize.
Data collection	Qualitative	Understanding the phenomenon in its context and understanding the meaning that exists in the minds of the subjects is considered, not the quantity of data.
Target	Exploratory	The goal is to design and compile a comprehensive model that shows more aspects of the phenomenon of providing an advertising policy model based on the use of eye tracking.
Strategy	Grounded theory	According to the goals and research questions.
Data collection tools and methods	Interview	To implement data-based theorizing, face-to-face, semi-structured and unstructured, anthropological and in-depth interviews are usually used to collect data.

Determining the theory's validity based on the proportionality and applicability indicators was investigated, and interviewees' opinions were studied. On the other hand, three interviewees discussed the fit index correlation of the research findings with the experimental world. Regarding the naming, revisions were made in several categories. In addition, regarding the applicability index, a comparison of the data was done with the background and theoretical foundations of the research. In this direction, the compilation of semi-structured questions in each stage of the interviews, by removing the problems from them, should cover the applicability of the research.

Findings
The data collection tool has been interviews with specialists and experts. The participants were marketing and advertising managers of different companies. By the interview protocol, interviews were conducted with a sample of marketing and advertising managers, and the necessary information was extracted from the interviews. The data analysis was done using the grounded theory approach, coding, and categorization. So that in the initial phase of the research, knowledge is gained through open interviews with marketing and advertising managers. Also, observing the behavior of company managers will help the researcher to understand in depth. Then, based on this and after coding and categorization, the conceptual model of the research is drawn. In addition, after each interview, the researcher has extracted and coded the texts from the interviews. Three stages of open, central, and selective coding were performed on the data. For this purpose, first, the data was read line by line, and open codes (which are the participants' own words) were extracted. The resulting codes were compared with the previous codes, and the codes that were conceptually similar to each other were placed in the same category and categories were formed gradually. The categories were also compared with each other and merged if needed, or in some cases, one category was separated into two or more categories, or the location of the code was changed from one category to another until finally a central category was obtained. The basis of the communication process in coding is based on one of the categories expansion, such as the one chosen as the central category in the current research, that is, the advertising policy based on the use of eye tracking is derived from causal conditions and has an effect on the process and strategy that leads to the final result. Selective coding also revealed the relationship between categories.

However, after conducting scientific interviews with scientific and executive experts in the organization, the model of the advertising policy using eye tracking based on the grounded theory emerged.

Causal Conditions

In this model, causal conditions are events that create situations and issues related to a phenomenon and describe why and how individuals and groups respond in certain ways. Causal conditions include cases of categories that directly affect environmental advertising or perhaps these factors create and develop the phenomenon. In this research, three categories of advertising content, environmental advertising quality, and advertising features are experimental factors that can create the causal conditions of advertising policy using eye tracking. The categories related to causal conditions are shown in Table 2.

Table 2. Causal Categories (Main, Secondary)

The Main Category	Subcategory	Codes
Causal conditions	Advertising content	Advertising aesthetics Promotional content related to the brand Desirable advertising message Use the right color
	Quality of environmental advertising	A conceptual approach to environmental advertising The use of existing tracking potentials and its impact on advertising design and production Considering the opinions and wishes of customers Use of distinguishing features
	Promotional features	Attractiveness of the desired advertisement Video images Graphic images Advertising performance standards

Contextual conditions

Contextual conditions represent a specific set of characteristics related to the phenomenon, which generally refers to the place of events and related events. Contextual characteristics include factors without which the realization of environmental advertising based on the use of eye tracking is not possible and provide the context of special conditions in which

strategies for managing, controlling, and responding to the phenomenon are made. These conditions are made up of a set of concepts, categories, and contextual variables. In this research, advertising slogans, billboard elements, and analysis of customer eye movements are the main contextual factors of the advertising policy using eye tracking, which are shown in table 3.

Table 3. Contextual Categories (Main, Secondary)

The Main Category	Subcategory	Codes
Contextual conditions	advertising slogans	Attention to the audience's taste Analyzing customer sentiments Customers' tendency for environmental advertising
	billboard elements	Advertising plan Writing text Visual stimuli Advertising format Selection of advertising letters
	analysis of customer eye movements	Spontaneous response to colors Spontaneous response to bugs Spontaneous response to the makeup of brands

Intervening Conditions

Intervening conditions include more general conditions such as time, space, and culture that act as facilitators or limiters of strategies. These conditions work in the direction of facilitating or restricting action/reciprocal action in a specific context. Each of these conditions forms a spectrum whose influence varies from very far too very close. In this research, three categories of online advertising, advertising cost, advertising through media and mass communication have been considered as categories of intervening conditions based on the advertising policy based using eye tracking, which is shown in Table 4.

Table 4. Intervening Categories (Main, Secondary)

The Main Category	Subcategory	Codes
Intervening conditions	online advertising	Identifying related advertising tricks Providing services through websites Creating club brand ads from electronic ads Advertising through websites Using virtual space for advertising

| | advertising cost | Audience understanding of spending on advertising
High cost of advertising
Funds |
| | advertising through media and mass communication | Making advertising animation Movie ads
Making advertising animation Advertising through the press TV commercials |

Central Phenomenon (Category)

The phenomenon in question must be central, that is, all other main categories can be related to it and appear repeatedly in the data. In the sense that in all or almost all cases, there are signs that point to that concept. The central phenomenon refers to the idea or phenomenon that is the basis and center of the process to which all other main categories are related. In this research, three categories of environmental advertising status, development of advertising influence, and effective advertising on customers' intentions have been considered the central categories of advertising policy using eye tracking, which are shown in Table 5.

Table 5. Central Categories (Main, Secondary)

The Main Category	Subcategory	Codes
Central phenomenon (category)	environmental advertising status	Eye tracking techniques Data processing technique Machine learning approaches Agile response to the needs of the environment The effectiveness of print advertising
	development of advertising influence	Mental and physical effectiveness Mental engagement with advertising Persuasiveness of advertisements The intensity of the message
	effective advertising on customers' intentions	Technical analysis of customers Analysis of time spent staring at banners Because of the existing brand association Eye movement scan Recognizing blind spots

Strategies

Strategies are actually plans and actions that are the output of the central category of the model and end in consequences. Strategies are a set of measures that are adopted to manage, administer or respond to the phenomenon under study.

In this research, three categories of advertising message attractions, evaluation of target environmental advertising selection process, and advertising based on customers' taste are considered strategies based on the central categories of advertising policy using eye tracking, which is shown in Table 6.

Table 6. Category of Strategies (Action/Reaction, Main, Secondary)

The Main Category	Subcategory	Codes
Strategies	advertising message attractions	The moral attractions of the message The logical gravity of the message Message entertainment attractions Visual attractions of the message
	evaluation of target environmental advertising selection process	Behavioral characteristics of customers of different market segments Thoughtful and thoughtful advertisements Comprehensive and systematic evaluations of eye tracking technique development
	advertising based on customers' taste	Customization of visual creative ads Receiving customer feedback from designed advertisements Creating intelligent and differentiating features of new advertisements

Consequences

Consequences are the outputs or results of actions and reactions. The last part of the model of consequences of advertising policy is related to the use of eye tracking. According to open coding, the concepts related to the consequences of the model have been extracted, then according to the back and forth between themes and concepts, the main categories have been extracted and named, and based on this, the consequences in three sections related to competitive advantage, currency innovation, and promotion of strategic marketing decisions as the consequences of the advertising policy

using eye tracking is classified. Table 7 deals with categories and concepts related to consequences.

Table 7. Consequence Category (Main, Secondary)

The Main Category	Subcategory	Codes
Consequences	competitive advantage	The development of modern advertising Product and service advertising strategy design Identifying market advertising opportunities and threats Knowledge-based structures to improve advertising development compared to competitors Development of customers' perception of environmental advertising Finding the point of view and maximum attention of the advertising audience
	currency innovation	Create a good mindset in the customer with eye tracking ads The importance of audience behavior Identifying effective advertising factors from customers' point of view
	Promotion of strategic marketing decisions	Providing executive solutions in the development of visual advertising Developing a road map for the development of advanced technologies and their application in environmental advertising Providing different advertising models based on eye tracking

The Paradigm Model

The paradigm model of this research was designed based on the paradigm model of Strauss and Corbin. Despite these factors and conditions, the advertising policy model and process were designed based on the use of eye tracking. Explaining the factors that cause this issue has also been the main concern of this research. The research paradigm model is shown in Figure 1.
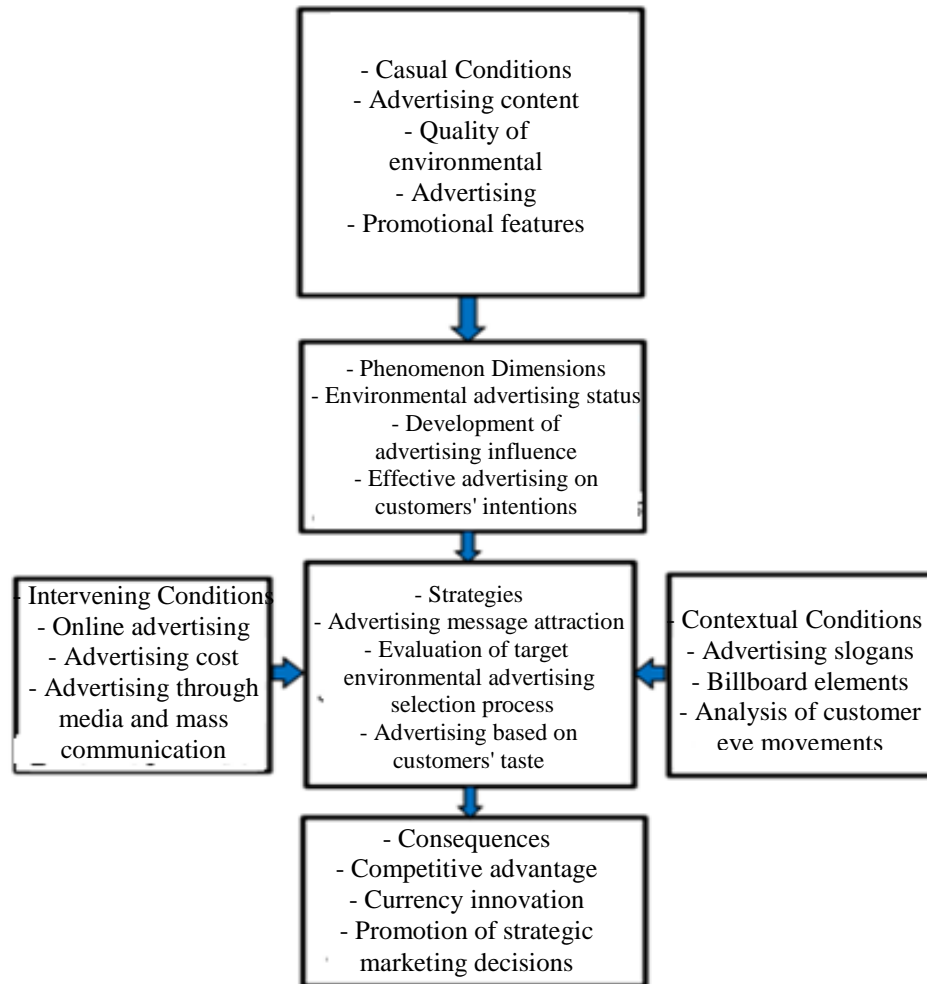
Figure 1. Research Paradigm Model

The paradigm model of this research was designed based on the process of open, central and selective coding, the advertising policy model based on the use of eye tracking consists of Causal categories consist of Advertising content , Quality of environmental advertising and Promotional features; contextual categories consist of advertising slogans, billboard elements, analysis of customer eye movements; intervening categories consist of online advertising, advertising cost, advertising through media and mass communication; Central categories consist of environmental advertising status, development of advertising influence, effective advertising on

customers' intentions; category of strategies consist of advertising message attractions, evaluation of target environmental advertising selection process, advertising based on customers' taste; consequence category consist of competitive advantage, currency innovation, Promotion of strategic marketing decisions.

Conclusion

The present research was conducted to develop an advertising policy model using eye tracking by the grounded theory. It is related to social networks with an emphasis on marketing, which is presented in the form of the final research model. The comparison of the model with the previous research indicates that the model of this research has a multiple process approach, it also deals with its factors and consequences and the causal relationships between the variables and solves the shortcomings of the past research. According to the model, in addition to the causal conditions of effective advertising, the central category, strategies and consequences, contextual, and intervening conditions are considered. This process shows a comprehensive approach to advertising policy based on the use of eye tracking. Also, environmental advertising conditions are emphasized in attracting and retaining customers. However, weaknesses in the application and use of these capabilities causes the necessary advertising to customers to face problems, and the restaurant managers are unable to gain profitability, improve related processes, and predict the future.

After extracting concepts and topics for the development of advertising policy based on the use of eye tracking, their categories were extracted separately. Also, the goals and capabilities of the restaurants and the components needed to implement the approach of this model were identified. The results of this research will be useful for policymakers in identifying indicators as well as planning to provide a suitable platform for the development of advertising policies based on the use of eye tracking. In addition, due to the lack of comprehensive research in the field of existing infrastructure, the findings of this research are considered an effective initial step for future research in this field. Considering the importance of advertising, it seems that the development of effective advertising creates a promising path and has the power to influence customers at different levels. It is also emphasized that the results correspond with the studies of Javora et al. (2020), Hosp et al. (2020), Casado-Aranda et al. (2020), Kong et al. (2019), Guitart et al. (2018), and Marois et al. (2020). In addition, the obtained results show that due to the

importance and application of the advertising policy based on the use of eye tracking, policymakers and managers should pay special attention to these two categories if they need to improve their level of competitiveness. It is better to provide this type of service to a group of famous people first, and after getting feedback, to provide it to all customers. Services should be provided in absentia and save time. Electronic services should be designed based on the characteristics of different demographic groups (social base, economic base, gender, etc.) and should be advertised in special social networks where these people are members. Trust and commitment, as well as the availability of restaurant services at any time, should be placed on the headlines of advertisements, and customer communication with companies and organizations should be facilitated to provide feedback on the quality of services, by creating special social networks with customers. From a practical point of view, the present research can be a good way for advertising managers to check their current situation and increase their favorable relationship with their customers. On the other hand, from an academic point of view, this research shows that there are many materials related to environmental advertising that researchers are unaware of, materials that can become the focus of their research in the future.

To evaluate the results, it is recommended for future research to measure the effects of environmental advertising according to the eye tracking approach in other service areas. This article is compiled with a qualitative approach and with the foundation's data theory method. One of the limitations of qualitative research is the possibility of different interpretations of the investigated phenomenon, and by nature, the interpretation of the phenomenon studied in this research is only one of the possible and acceptable interpretations of it.

CONFLICT OF INTEREST: The authors declare that they have no conflicts of interest regarding the publication of this manuscript.

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