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Health Consciousness and Consumers' Attitude towards Healthy Food Digital Advertising in Saudi Arabia: A Scoping Review

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Abstract:

This study was designed to propose a scope of work for quantitative research to examine the effect of healthy food digital advertising on the attitude of food consumers towards it in Saudi Arabia. It also proposed considering the moderating effect of Saudis' health consciousness on the previous relationship. This study employed both 4 Cs communication model and SOR model to plot the relationships between study's variables. The calculations of sample size showed that sample which should be surveyed by a self-administrated questionnaire is 385 participants from Saudi food consumers. This study concluded from investigating previous studies' findings that digital advertising has significant influence on the shaping the attitude of food consumers in Saudi Arabia. It also found that, the public health condition in Saudi Arabia is being monitored and maintained by authorities in the directions of Saudi Vision 2030.

Keywords: Healthy Food; Health Consciousness; Digital Advertising; Saudi Arabia.

1. Introduction

From public health perspective, statistics show that 73% of mortality in Saudi Arabia is caused by spreading of non-communicable diseases (NCDs) among people which urged the Saudi Food and Drug Authority (SFDA), to develop a healthy food strategy (HFS) to enhance healthy lifestyles and eliminate the intake of salt, sugar, saturated fatty acids (SSF) and trans fatty acids (TFA) (Bin Sunaid et. al, 2021). So that, One of Saudi Vision 2030 priorities is improving population health through healthcare transformation, preventive care, public health awareness and the promotion of healthy lifestyles (Al-Hazzaa & AlMarzooqi, 2018; Chowdhury et al., 2021). The digital transformation of food environments has emerged as a crucial yet underexplored determinant of dietary behavior (Granheim et al., 2021). Within this national initiative, digital channels increasingly influence decisions on how consumers source, select and buy food; young adults who are active users of social media and food delivery platforms are exposed to digital food communication (Parks et al., 2025); however, current evidence of how digital food communication impacts dietary responses is scarce. In the same context, structural dietary adjustments across sections of the Arabic world due to globalisation, economic openness and changes in trade, coupled by an increase in use and uptake of digital technologies, smart phones and social media have been most profound in Saudi Arabia (Al-Badri, 2023). In these matters, Saudi Arabia has witnessed some striking changes. The uptake of digital technologies and social media profoundly alters the dietary landscape and physical activity of youths when combined with rapid economic development and nutritional transition (Aleid et al., 2024).

In terms of food industry in Saudi Arabia, the Saudi food service industry was valued at about USD 27.8 billion in 2023, expected to grow at 11.57% during 2022-29 (Abdou et al., 2023). The restaurant industry on its own generated USD 59 billion-dollar revenue in 2021, an increase of 64% over income generated by 2013, in Jeddah and Riyadh (Pratiwi & Muslikhati, 2024). Interest in healthy foods in Saudi Arabia has grown given a high interest in knowing healthier food preferences and exploring the intentions of young populations in healthy consumption

choices, where advertising messages become crucial through digitalization and influencers affecting their healthy perception (Alissa, 2024; Toukabri & AL-Ghaswyneh, 2019). While studies are extensive and concentrated in Western countries, less research focuses on issues about the influence of digital food marketing on consumers' attitude towards healthy food in Saudi Arabia, whose evidence suggests some food advertisements towards young populations are energy-dense, nutrition-poor products, messages more frequently recalled than healthy choices (Alhudhaif et al., 2026; Alshahrani, 2024) (Molenaar et al., 2021). Despite this research evidence, little research has focused on the moderating effects of consumers' health consciousness and their attitudes on digitally advertised foods in Saudi Arabia.

Recent evidence illustrates substantial health consciousness among Saudis. One study found that 86% of the adult Saudis intended to transition towards a more nutritionally balanced diet, while 70% of surveyed Saudi adults expressed interest in learning more about nutrition (Alkhalaf et al., 2017; Tami, 2022). Nevertheless, interest might not translate into consistent healthy eating: social nutrition media content is frequently inaccurate, and it also obstructs young adults from having a balanced dietary (Alanzi et al., 2021). Inaccurate information impedes healthy eating especially in young adults as their recipe ideas and meal-planning guidance came from social food content by peers which advocates restrictive dieting, messages related to body shaming and weight stigmas than evidence-based food practice (Tang et al., 2026). So that, it is critical to assess the behaviour of Saudi adults towards health contents in social media and its impact on food choice to develop convincing persuading interventional plan in Saudis and other Middle Eastern contexts where this is growing at a faster rate (Friedman et al., 2022).

The definition of digital advertising is “the practice of delivering promotional content to users through various online and digital channels” (McStay, 2016). It influences how customers feel in a number of ways, such as by eliciting favorable sentiments and actions, which causes consumers to become devoted to a company's brands (Guo, 2017). Saudi Arabia is not an exception to the Gulf Cooperation Council's (GCC) relatively low per capita advertising spending (Statista, 2019). Saudi Kingdom recorded a 3.5% increase in the use of digital advertising between 2016 and 2020. With 8 million consumers using websites and applications to buy totalling 29.7 billion (SAR), the number of people using these technologies is rapidly increasing (Alotaibi, 2021). The reason is marketing by using social media significantly impacts consumers’ attitudes and purchasing behavior in Saudi Arabia. Studies have found that social media marketing positively influences consumers' cognitive, affective, and behavioral attitudes towards tourism (Bahurmuz & Al-Kubaisy, 2022). Factors such as online advertisements, social networking sites, and digital “word-of-mouth” significantly affect shaping these attitudes (Bahurmuz & Al-Kubaisy, 2022). Research also indicates that social media marketing explains 92.4% of consumer purchase intention in Saudi Arabia (Alfeel & Ansari, 2019). Moreover, social media platforms significantly influence consumers’ behavior and brand development in Saudi Arabia, particularly in the food industry. Instagram and Snapchat positively influence purchasing decisions among young female users and generate electronic word-of-mouth (Alghamdi & Bogari, 2020). According to Alharbi et. al (2026), digital advertising significantly and positively influences the consumer attitude towards dairy products in Saudi Arabia.

The definition of healthy food is not only in terms of nutrient content but also consumers perception of food choice on fruit and vegetables, natural ingredients, containing many nutrients, appropriate portions and balanced eating (Alissa, 2024; Paquette, 2005). According to the guidance of WHO, a healthy diet has several characteristics that people often overlook; firstly, it includes fruits, vegetables, legumes like lentils and beans, nuts and wholegrains such as unprocessed maize, millet, oats, wheat and brown rice, with at least 400 g of five portions for fruits and vegetables daily, without potatoes, sweet potatoes, cassava and other starchy roots (Haddad et al., 2016); secondly, total fat not exceeding 30% of total energy intake to avoid unhealthy weight gain, along with a shift in fat consumption from saturated fats to that of unsaturated fats and towards the elimination of industrial trans fats; thirdly, limiting the amount of free sugar intake to less than 10% of total energy intake with a further reduction in intake to lower than 5% for additional health benefits being advised; lastly, salt intake should be below 5 g per day, so that hypertension could be avoided and the risk of heart disease and stroke for adult population lowered (Haddad et al., 2016) . Also, for the recommendations of WHO recently, approximately 2,000 kcal per day along with less than that of 10% of total calories from free sugars should be consumed by a healthy person (Růžičková

& Kohout, 2023). More importantly, healthy diets not only should have sufficient nutrient for nutritional adequacy, but should also consider avoiding or limiting foods, food groups and nutrients leading to unhealthy diets when eaten in excess; these food, food groups and nutrients are free sugars, saturated and trans fats, salt, red and processed meat and ultra-processed foods (Brouwer et al., 2021). Thus, the healthy diet should be safe for consumption with no or minimal harmful levels of pathogens, toxins and other similar agents that cause foodborne diseases

Consumer health consciousness refers to the awareness, concern, and proactive actions taken by individuals to prioritize and promote their health and well-being, as well as the health and well-being of the environment and society at large (Delgado et al., 2022). It also refers to awareness of concepts which are related to nutrition and health such as adequate food intake, diet-related diseases, foods representing major sources of nutrients, as well as dietary guidelines and recommendations (Zarnowski et al., 2022). Also, health conscious refers to the consumer who prefers to purchase green or healthy products that address both healthy and sustainable concerns (Ali-Alsaadi et al., 2023). Health consciousness is a key factor in consumer behavior, influencing purchasing decisions and lifestyle choices. It involves awareness of health impacts, active efforts to maintain well-being, and consumption of health-enhancing products (Hayakawa, 2017). Health-conscious consumers often seek functional foods and are interested in healthy nutrition, though barriers like time and cost can hinder implementation (Szakály et al., 2011). The COVID-19 pandemic significantly increased health consciousness levels, with demographic factors playing a role in its variation (Čvirik, 2020). From an economic perspective, health consciousness affects consumer choices by adjusting the perceived value of goods based on their health impacts (Hayakawa, 2017). Understanding and promoting health consciousness can have implications for public health, consumer behavior, and economic outcomes, particularly during health crises (Čvirik, 2020).

1.1 Underpinning Theories

In a similar context of digital advertising and food industry in Saudi Arabia, the study of Alharbi et. al (2026) employed both 4 Cs communication model and SOR model in one framework. So that, this study will adopt the same models accordingly in its framework..

4Cs Communication Model

Clarity, consistency, credibility, and competitiveness are the four variables that make up the Four Cs model, which was developed by John Fahy and David Jobber (2019) in their book "Foundations of Marketing (2009)." 4Cs communication model is a customer oriented methodology which is dedicated for developing relations with customers by adopting convenient and customer friendly communication techniques (Lim & Guzmán, 2022).

According to Barratt et. al (2019), when audiences understand the conveyed message and feel that the message was clear and lucid that is the definition of clarity. So that, the message is required to be concise, clear and understandable in order to eliminate the uncertainty of potential customer about marketed messages. While credibility refers to what extend potential customers trust and believe the advertised message. Companies are usually known by credible and trusted by customers when their communications are trusted and believed by them (Jobber & Fahy, 2019).

According to Kline (2022), consistency refers to that the potential customers are consistently exposed to the core advertising messages to establish the company's visual brand and enhance the brand recognition in their minds; and competitiveness refers to the attempt made by businesses to focus on what makes their products unique and superior in the market by focusing on what makes them different from other similar products.

4Cs marketing communication model is a customer-oriented approach for marketing communication so that digital advertising should be customer oriented in order to create an effective and positive way to reach customers, not to be seen as intrusive and annoying (Mittal & Kumar, 2022). In the same context, some of potential customers prefer personalized advertisements because they are related to their personal requirements (De Keyzer et al., 2022), while other customers may feel that their privacy is being hacked. Moreover, consumers' attitude is usually impacted by the advertisements' quality and the company's credibilty (Kurdi et al., 2022). Businesses should also

give customers easily comprehensible information that is clear and succinct. In order to help customers taking right decisions based on real information, they can also rank the most crucial information. It is possible to prevent flooding consumers' heads with too much irrelevant information by filtering data according on their choices (Qian, 2023).

SOR (Stimulus-Organism-Response) Model

Mehrabian and Russell first developed the SOR model in 1974 as illustrated below in Figure 1.

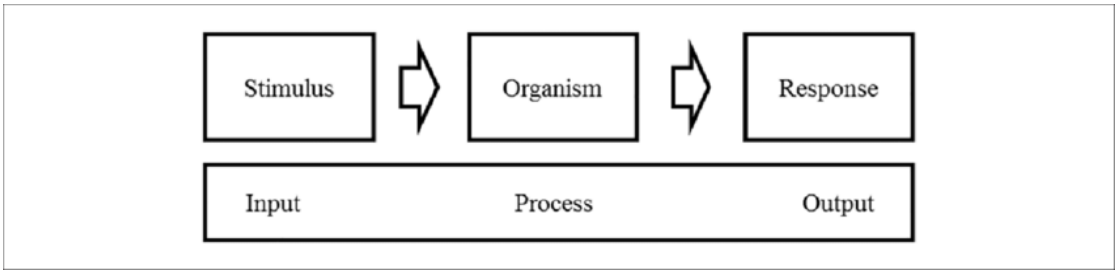


Figure 1: SOR Model Mehrabian and Russell (1974)

According to this model, environmental stimulation (S) causes an emotional reaction (O), which in turn encourages a behavioral response (R). Many academics from a variety of fields, including decision-making about purchases (Demangeot & Broderick, 2016; Lucia-Palacios et al., 2016), impulsive buying (Chang et al., 2013), and service fairness (Namkung & Jang, 2010), have discussed its significance in retail environments. Based on this theory, environmental stimuli (S) will stimulate cognitive and affective (O) reactions, which in turn will drive certain psychological reactions (R) such as attitudinal and behavioural reactions. More specifically, environmental stimuli can be described as external contextual attributes that would attract individuals' attention and influence their internal state (Yang et al., 2021).

The SOR model (Stimulus-Organism-Response) explains how stimuli in the environment (S) influence internal processes (O) in an individual, resulting in a response (R). Nutritional information can act as a stimulus that impacts the organism's internal processes and subsequent responses (Sultan et al., 2021). Environmental inputs, both social and physical, are considered stimuli since they have an impact on an individual's internal moods (Ulrich, 2001). In order for people to be stimulated when choosing what to eat, nutritional information is provided. It gives them knowledge about a product's nutritional value, which affects their opinions. An organism is described as internal structures and processes that stand between an individual's ultimate responses, actions, or reactions to external inputs. Perceptual, physiological, affective, and cognitive processes make up the intermediate processes and structures (Bagozzi, 1986).

Response represents the final outcomes and the final decisions of consumers, which can be approach or avoidance behaviours (Chang et al., 2011). Based on their internal processes and evaluations, individuals respond to nutritional information through their food choices, consumption patterns, and dietary behaviours. Positive perceptions may lead to a purchase or consumption decision, while negative perceptions may result in avoidance or rejection of a product. Jacoby (2002) claims that the SOR model proved effective in illuminating the ways in which consumers' behaviors change in response to diverse marketing cues and cognitive factors. The main advantage of the SOR model is its adaptability, which allows for the examination of a range of internal and external stimuli, as well as tangible and intangible stimuli, experiences, and responses, such as consumers' attachment to virtual reality and their intention to visit in the context of food tourism (Kim et al., 2019).

Moreover, S-O-R model has been widely used in investigating and explaining human behaviours, it is proved to be useful in providing a better comprehension of why and how customers make decisions (Molinillo et al., 2021). These contextual attributes would serve as cues that pierce consumers' consciousness and motivate them to act (Loureiro et al., 2020). The response structure, on the other hand, refers to the behavioural outcomes following exposure to the external environment. It can be broadly divided into avoidance behaviours, such as discontinuous intention (Cao & Sun, 2018), and approach behaviours, such as purchase intention (Kaur et al., 2021) or customer

loyalty (Yuan et al., 2020). The organism reaction is an internal structure that includes psychological concepts that indicate functions of the organismic component, such as perception, emotion, or judgement (Islam & Rahman, 2017).

1.2 Study Gaps

Social media have also become important drivers in forming such perceptions as users commonly encounter nutrition messages on daily bases, especially young adults (Al-Bisher & Al-Otaibi, 2022). In Saudi Arabia, young adults mention that exposure to social media influences food choice and reading labels on food but also raise concerns over misleading content and advice from non-experts (Tami, 2022). This distinction is important since knowledge may not translate into healthy choices; for example, most of youths in the Riyadh sample have proper information about fruits and vegetables' usefulness in diet but their fruit and vegetable consumption remained low (Albrahim et al., 2023).

Moreover, while digital food marketing is increasingly ubiquitous, there is a scarcity of explicit research demonstrating the link between data-driven promotional tactics like emotional appeals or leveraging social influence and the dietary choices of Saudi adolescents and young adults (Maksi et al., 2024). Also, whether the proliferation of conflicting nutritional advertisements that confuses users or makes them disillusioned with scientific evidence and dietary guidelines, needs further evaluation (Chung et al., 2021). The effectiveness of marketing tools designed to promote healthy food needs future research (Folkvord & Hermans, 2020). Longitudinal surveys that can show the cause-effect relationship between algorithmic marketing platforms and long-term metabolic health in Saudi youth may be necessary before food policy interventions based primarily on research literature.

1.3 Research Questions

RQ1: Does the clarity of healthy food digital advertising influence consumers' attitude by considering the moderating effect of health consciousness?

RQ2: Does the credibility of healthy food digital advertising influence consumers' attitude by considering the moderating effect of health consciousness?

RQ3: Does the competitiveness of healthy food digital advertising influence consumers' attitude by considering the moderating effect of health consciousness?

RQ4: Does the consistency of healthy food digital advertising influence consumers' attitude by considering the moderating effect of health consciousness?

2. Methodology

2.1 Study Theoretical Framework:

Based on 4Cs model, SOR model and previous studies, the theoretical framework shown in Figure 2 plots the relationship between healthy food digital advertising as independent variable and consumers' attitude towards this digital advertising as dependent variable. Health consciousness is moderating the relationships between IV and DV.

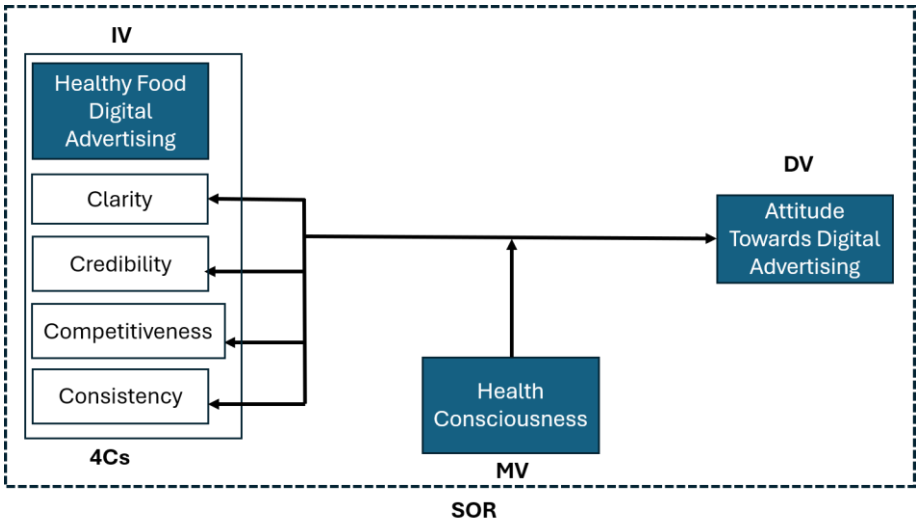


Figure 2: Study Theoretical Framework

2.2 Population and sampling:

The targeted population in this study consists of Saudi food consumers. Convenience sampling will be adopted by this study due to the lake of information related to the statistics of Saudis food consumers. A population usually stands for a large group of people or objects which researchers are intended to analyse. However, considering the limitation of cost, time and energy, researchers rarely include the whole population in the study, instead, they usually study a sample consisting of the members selected from the whole population (Sekaran & Bougie, 2016). According to Craig (2013), the Raosoft sample size calculator asks the user to enter a number of parameters, such as the size of the population to be surveyed, the allowable margin of error, the confidence level, and the response distribution. After that, it can offer an estimate of the "sample size," or the bare minimum that is advised for the survey. Therefore, this study recommends Raosoft sample size calculator to determine the minimum sample size because it achieves the needed confidence level with a margin of error of usually 5%. Also, it is highly encouraged by McCrum-Gardner (2010) when considering large population. The calculated sample size is 385 after the assumptions that 50% of the population would have good information with a 5% margin of error and a confidence interval of 95%.

2.3 Study Instrument

This study recommends using a self-administrative questionnaire as a primary research instrument in order to investigate the link between each variable. Among the survey strategy's most popular data collection tools is the questionnaire (Saunders et al., 2009). Respondents are required to provide written responses to a series of assertions or questions. Since every responder is required to answer the same set of questions, questionnaires offer an effective means of gathering data from a large sample prior to doing quantitative analysis (Sekaran & Bougie, 2016). The selection of five points on a scale was deliberate because, studies examining the attitude of consumers have frequently employed five points. Also, it was found that there were three reasons why respondents liked a five-point rating scale in most polls. First, respondents felt that the five option points were sufficient to cover the gamut of answers. Secondly, using five points was simple, and finally, it offers a midpoint (Chyung et al., 2017).

Questionnaires will be self-administered for the following reasons: First of all, a self-administered questionnaire approach may guarantee a response rate of around 100%, claims Sekaran (2003). Second, as noted by Elanain (2003), it is appropriate for gathering information regarding attitudes and opinions. The third reason it could cover a large area at lower cost; additionally, respondents can take their time and reflect before responding; furthermore, the questions are standard and the respondents are kept anonymous (Zikmund, 2013)

2.4 Data Collection

Direct field collection will be employed. Data will be gathered from the sample population using an online survey that will be disseminated among Saudi food consumers, electronically through various social media platforms, including Facebook, Twitter, Snapchat, and WhatsApp communities' groups. Data collected from filled questionnaires will be directly reflected in the data base of the file and will be ready for statistical analysis processes

2.5 Data Analysis

For analysing the collected data, SPSS software will be utilized for the first stage of data analysis to conduct descriptive analysis about the demographic factors in the respondent's profile. In addition, data screening is also performed by SPSS to check missing values, dealing with potential non-response bias and common method bias problems. Since missing value and bias are all common issues that need to be properly dealt with in quantitative research (Wang & Singh, 2021). After that, Smart-PLS software will be used to analyse and test the hypotheses and the research model. Smart-PLS is a software that is adopting the Structural Equation Modelling (SEM) method. SEM is one the most commonly used statistical technique that simultaneously evaluates relationships between different constructs represented by multiple variables (Morin et al., 2020). PLS-SEM technique is proven to be competent in dealing with complicated modelling issues such as non-normal data or highly complex models that commonly existed in studies (Hair et al., 2014). Besides that, the PLS-SEM technique has several advantages in social science research, such as its high efficacy in coping with a complex model, establishing dominant latent variable reliability and informatively assessing specified measurement models (Ghasemy et al., 2020; Sarstedt et al., 2020). Therefore, Smart-PLS software which adopts a PLS-SEM technique is deemed appropriate and chosen for this study.

3. Discussion

3.1 Implication of Study

This study has combined both 4 Cs Communication model and SOR model in one framework as it follows the deductive approach. This model is supposed to guide marketers to understand Saudi food consumers' attitude toward digital advertisements of healthy food and provides valuable insights into how health consciousness moderates these relationships.

In addition to that, the results of this study may contribute in multiple issues, such as, it will may provide the marketing decision makers by a useful guideline by which they can understand which factors have vital impacts in digital advertisement. It will also provide healthy food busniesses in Saudi Arabia with a model by which they will be able to understand how their digital advertisement could influence food consumers. Moreover, the findings of this study will highlight the importance of health consciousness of Saudi food consumers in moderating the effect of healthy food digital advertisement on consumers' behaviour which may lead to restructuring for healthy food marketing strategies.

3.2 Limitations and Further Research Directions

One of the main limitations of this study is the wide range of surveyed population which may affect the accuracy of study's findings. So that, future research is advised to limit the size of population demographically, by focusing on particular age group, gender, region or income level for example. Also, future research should use similar variables and theories to focus on different industries to enrich the literature and findings. In addition to that, this study proposed only quantitative approach to gather data from respondents. So, future research is advised to consider qualitative research methodologies in the same context to investigate the inputs of industry's experts which may complete the overall image of marketing strategies.

4. Conclusion

This study was designed to scope from previous literatures the pattern of healthy food digital advertising could affect the attitude of food consumers towards healthy food in Saudi Arabia by considering the moderating effect

of health consciousness among Saudi food consumers. By investigating previous studies, it was found that the public health status of Saudis is focused by authorities in the directions of Saudi Vision 2030 which leads to the importance of embracing healthy food culture to improve the overall health conditions and eliminate spreading of non-communicable diseases (NCDs). In the same context, it was found that digital advertisement has a significant impact on reshaping food consumers' culture to direct them towards healthy food. So that, this study suggests considering health consciousness of Saudi food consumers as a moderating of the relationships between healthy food digital advertisement clarity, credibility, competitiveness and consistency; and consumers' attitude towards digital advertisement.

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