

NUTRITIONAL MARKETING AND SOCIAL NETWORKS AS MARKETING TOOLS¹

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ABSTRACT

To determine all the key determinants that influence consumer behavior, comprehensive research methods are needed. Human purchasing behavior, despite its complexity, can be presented as a complex system, consisting of structural and functional characteristics. Knowing all the influencing factors grouped in determinants and discovering the correlations between them will lead to obtaining a large amount of information on the influences and consumer behavior and then, based on that, creating a successful marketing strategy. Nowadays, social media are extremely popular (Facebook, Instagram, Pinterest, etc.) and information on nutrition, diet, gastronomy and eating habits is published daily. Apart from these there are gastroblogs and influencers as channels used in marketing and which have an impact on consumer behavior. The subject of research of this paper is the theoretical development of a new methodology of the so-called Nutrition marketing based on several principles (5N), mainly aimed at the nutritional determinant with set benefits for human health and well-being and the use of social media as a marketing tool. In the research of this paper as one of the concepts of Nutritional marketing, a survey research was conducted in the R.N. Macedonia on the impact of social platforms as a marketing tool detecting a determinant of impact called social media. The results of the survey were obtained with advanced IT and statistical analysis. The

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principles of nutrition marketing and the developed methodology will enable companies to create a successful marketing strategy for food products. The benefit can be threefold: a benefit for companies through greater profits, a benefit for citizens through the consumption of healthy, quality and safe food products, and finally, a benefit for the country.

Keywords: nutrition marketing, nutrition, nutritional determinant, consumer behavior, social media

INTRODUCTION

The best business model or idea can fail if companies do not thoroughly research consumers from multiple perspectives to answer a few important questions: what consumers want to buy, where they buy, how much they buy, when they buy and why they buy. Consumer behavior, despite its complexity and diversity, can be presented as a system, consisting of structural and functional features, which can be effectively simulated with the help of dynamic modeling and model creation. The use of consumer behavior models is an important segment in the marketing strategies of companies (1) and through them the nature of human purchasing behavior can be explored, in all its parts by analyzing all the dynamic behaviors in a series of assumptions and conditions. In the analysis it is necessary to include scientific methods using modern information technology such as: database management system (DBMS), for consumer database management; advanced analysis of databases using data mining methods, such as: Association Rules and the Apriori Algorithm, classification and cluster analysis, (2, 3), methods that will enable discovering of purchasing rules and clustered customer profiles; geographic information system (GIS), (4, 5, 6), which will create thematic consumer maps and business areas, models that can describe the current situation and project future strategies.

Our research on Nutrition shows that the number of consumers of food products who pay attention to their diet and think more about the nutritional properties of food products is increasing (7, 8, 9). This information is important for companies in the food industry because the increased nutritional quality of the food product can stimulate the purchase, and all this to contribute to the development of existing products and the creation of new ones, which will be more successful in the market. The inclusion of a new marketing concept, the so-called nutrition marketing of companies, will enable the creation of a successful marketing strategy related to the impact of the determinant - nutritional components (vitamins, minerals and other

components important for the human body) on consumer behavior (10, 11). The ways of highlighting the health benefits obtained by consuming the product and the ways of reporting it are part of the principles of nutrition marketing.

If we understand the Internet as a global revolution, then social networks (media) are a revolution within the Internet. Social media, as one of the most popular services on the Internet platform, integrate technology, telecommunications, and social interpersonal relationships. Nutrition marketing as one of the principles includes social media as a marketing tool, because through them information is placed daily about nutrition, diets, gastronomy and eating habits.

The pandemic caused by the corona virus has changed consumer behavior when choosing food and how they perceive their diet in general. Similarly, during the pandemic, a number of questions were raised about disease prevention which is one of the important topics in medicine and nutrition through the consumption of high-quality nutritional food. This information is increasingly transmitted through all media, which also includes social media, and that is why they are a significant factor influencing the choice of food products.

NUTRITION MARKETING

Nutrition is a multidisciplinary, scientific, and applied field based on food science and nutrition, and studies the composition of food, the nature of nutrients and their impact on the human body (12, 13). Nutrition marketing is an innovation based on a few our studies. This concept should be included in the planning process and marketing concepts of companies, to achieve success in the development of existing and new food products, greater consumer awareness by promoting healthy eating habits, as well as all the benefits gained from consuming quality and safe food products.

Just for comparison, the modern marketing mix is based on several principles, for example the 4P principle (1.Product, 2.Place, 3.Price, 4.Promotion), (14) and nutrition marketing is based on five principles or the so-called 5N:

1N-Nutrition related consumer behavior. Advanced analysis of consumer databases and marketing research databases such as surveys. The results obtained from those analyzes, which include advanced information technology and scientific methods, will contribute to the detection of factors influencing consumer behavior.

2N-Nutritive properties. Defining the nutritional properties of food products and their selection. Nutritional determinant is defined (Table 1).

Then it is analyzed which of the nutritional properties of the nutritional determinant are important for food products, i.e. which nutritional properties make them stand out.

Table 1. Nutrition determinant.

Nutrition element	Content and quantity	Importance rank for a certain group of products (from 1 to 5) *
Proteins	Quantity and origin: vegetable or animal	
Carbohydrates and energy value	Content and quantity in the form of: monosaccharides (glucose, fructose, sucrose), disaccharides, oligosaccharides, etc.	
Organic acids	Content and quantity of: ormic, oxalic, citric, tartaric, lactic, malic, pyroglutamine, glucose, valerian, benzoic and other higher fatty acids, etc.	
Salts	Content and quantity of: phosphates, chlorides, sulfates etc.	
Vitamins and minerals	Content and quantity	
Amino acids	Content and quantity of: lysine, histidine, arginine, aspartic acid, threonine, serine, glutamic acid, proline, glycine, cystine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, tryptophan, etc.	
Lipids	Content and quantity of: triglycerides, sterols, phospholipids, free fatty acids, fatty acid esters, etc.	
Enzymes	Content and quantity of: invertase, diastase (amylase), catalase, acid phosphatase, glucose-octase, polyphenol oxidase, peroxidase, esterase and proteolytic enzymes, etc.	
Fibers	Content and quantity	

Nutritional health claims	Certificates	
Sensory characteristics	Color, taste, smell, hardness, etc.	
Product safety	Security standards	
Certification	Organic food, for quality etc.	

* The importance of the nutritional properties contained in the food product is determined, as follows: 1-It does not matter, 2-A little significant, 3-Moderately significant, 4-Significant, 5-Very important

3N-Nutritional quality. Defining nutritional quality of food products and emphasizing it. This principle defines the ways of emphasizing the nutritional quality of food products and informing consumers. This principle is aimed at adding value to food products by increasing and maintaining the nutrition quality by using creative and innovative solutions. Emphasis on nutritional quality and safety is a key element that can influence consumer behavior, i.e. its perception of quality and safe food and decision to buy.

4N-Nutritional benefits. Promoting healthy eating habits and their benefits through media, social networks, and other ways. This principle is aimed at informing consumers about: nutritional benefits; promoting health through diet; on human nutritional needs and the effects of food on health; and the way food can be used. Packaging design is very important, but even more important is the declaration where the nutritional properties will be clearly set, which would influence consumers in buying the product. One way of informing consumers about nutritional benefits is through the mass media using mass-media techniques such as advertising and propaganda. Another way is through educational programs of educational institutions. A third option is social media, which is increasingly used (Facebook, Instagram, blogs, forums, gastroblogs and influencers as channels used in marketing) because today they have a great influence and are used as marketing tools, and through them information is placed about nutrition, diet, gastronomy and eating habits.

5N-Nutritional awareness. Creating awareness and attitudes about the nutritional value of food products. Marketing concepts should be applied here to develop awareness and create attitudes as much as the product can offer. This principle should enable the creation of awareness and the formation of attitudes through:

- Continuous introduction of consumers to healthy food and nutrition.
- Using educational methods with comparative analysis between healthy and unhealthy foods.

- Continuous conveying of messages to consumers about the benefits of using food products that have nutritional quality and all the health benefits they offer with special reference to honey.

SOCIAL NETWORKS AS MARKETING ASSETS IN NUTRITIONAL MARKETING

Social media as one of the most popular tools on the Internet is characterized by easy availability, relative simplicity in publishing information and high dissemination of the same. It is the speed, width and depth of such communication that make social media so popular. Information on the number of social media users shows that nowadays, about 2,800,000,000 users are monthly on Facebook, 2,291,000,000 users are monthly on YouTube, and 1,386,000,000 users are monthly on Instagram (15), of which 55% of all users are young people from 18 up to 34 years of age (16). During the Covid-19 pandemic, the number of Facebook users has drastically increased, from 2019 to the second quarter of 2021 the number of monthly Facebook users has increased by about 400,000,000 (17). This shows how important it is to include social media in companies' marketing strategies.

In our research focused on social media in the field of food and nutrition, their influence is increasingly described as a determining factor in the adoption of any form of human behavior. Among the popular topics of interest are lifestyle, food and everything related to it, diet, eating habits, popular diets, healthy food (junk food), GMO food, etc. There are popular gastrobloggers and food influencers that are expected to be in constant contact with the audience and constantly post interesting food-related content. Apart from an interesting recipe, it is important to have a tempting photo, because the visual is what first attracts us to food ("The first taste is always with the eyes"). Today and future there is an explosion of gastrocreations that culminates with the launch of Instagram. Through Instagram and Pinterest, food photos have become an integral part of people's daily lives, and they further enhance food marketing. Kotler, one of the leading marketing experts, attaches great importance to social media, describing them as a marketing revolution. He points out that social media has enabled the consumer not to be a passive consumer but to actively participate in brand building (14). Research in the field of marketing shows that through the majority of users trust their immediate acquaintances and friends when it comes to buying a certain product or service, they also believe in the experiences of people they do not know personally (14). All the principles used in traditional marketing are applicable to the marketing that is practiced

through social media, but the speed and scope of disseminating information here is much higher. Social media marketing is a strategy that is aimed at encouraging potential buyers to voluntarily exchange information, for free, about a product or to like and comment, and thus enable a better position of the product in the market. Several marketing activities are applied through social media, such as: "word of mouth" marketing; market research for new or existing products; obtaining (source) of ideas; improving communication with potential buyers; way of promotion, etc. However, nowadays we find inaccurate or semi-accurate information about nutrition (pseudo nutrition) on social media more and more frequently, which contributes to the development of improper eating habits and eating disorders. We can say that information about food and nutrition that is found on social media, ranges from complete untruths and unhealthy information to high quality, accurate and scientific claims. However, we feel that social media nutritionism cannot be considered a science. More and more nutrition tips are emerging on social media, stemming from the "personal experience" of so-called instant experts. Similarly, there are cases of so-called food and nutrition experts (influencers without proper education) who want to convey a message, but this is done with a lack of theoretical basis and scientific approach, which shows incompetence and unprofessionalism. Finally, it can be safely concluded that the influence of social media on the formation of attitudes about food and nutritional claims about food is very big.

SURVEY ON THE IMPACT OF SOCIAL MEDIA ON EATING HABITS AND NUTRITIONISM ON THE YOUNG ADULT POPULATION

In order to determine the impact of social media on the eating habits of the young adult population, a descriptive research was conducted - a survey of Macedonian citizens of legal age, from the age of 18 to 35. The survey was conducted electronically with 400 target respondents. The surveyed questionnaire contains a total of 16 questions divided into two parts: a general part where demographic questions are listed; the second part presents thematic questions related to marketing research in order to see how many respondents use social media and what is the impact on them in terms of eating habits and nutrition. A number of advanced analyses have been performed, the most significant being the Chi-Square and Cramér's V tests for determining association between two nominal variables and the clustering method. This paper presents some of the results obtained from the analysis of the survey.

To question 8 (Q8)-"When you need advice (or already have advice) on a diet, you should first contact" (1.family doctor, 2.Nutritionist 3.through social media (Facebook, Instagram, Online food-blog, etc.), 4.via Internet search), 40.18% answered "via Internet search", 36.16% answered "Nutritionist", and 11.83% answered "family doctor" and "via social media (Facebook, Instagram, Online food -blog, etc.) ".

To question 10 (Q10)-"Do you consider the diet information posted on social media to be credible?" (1.yes, 2.no, 3.partially, 4.I don't know), 69.75% answered "partially", 16.25% answered "no", 8.25% answered "yes" and 5, 75% answered "I don't know".

To question 11 (Q11)-"Do you think that Pinterest, Instagram, Facebook and other social platforms offer information on nutritionally valuable meals?" (1.yes, 2.no, 3.partially, 4.I don't know), 57.75% answered "partially", 20% answered "yes", 14.75% answered "no" and 7.5% they replied, "I don't know".

To question 12 (Q12)-"Are you inspired by the photos of prepared food posted on Instagram and recipes for food preparation posted on gastro blogs or Facebook?" (1.yes, 2.no, 3.partially), 53.75% answered "yes" and 29.5% answered "partially".

To question 14 (Q14)-"I respect gastrobloggers and food influencers" (1.yes, 2. no, 3.partially), 43.25% answered "partially" and 24% answered "yes".

To question 15 (Q15)-"I actively follow more than three gastrobloggers or food influencers on social platforms." (1.yes, 2.no), 27.25% answered "yes" and 72.75% answered "no".

The analysis used the Chi-Square and Cramér's V tests to determine the association between two nominal variables, and the paper presents questions 11-12 (Table 2) and questions 14-15 (Table 3).

Table 2. Frequency of questions 11-12 and results from Chi-Square and Cramer's V tests.

Q11	Q12			Total
	Yes	No	Partially	
Yes	64	1	15	80
No	20	23	16	59
Partially	117	39	75	231
I don't know	14	4	12	30
Total				400

Chi-Square	df	α	p	Cramer's V
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49.43	6	0.05	0.0001	0.2486
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Explanation: $p < \alpha$ which means that the null hypothesis (H0) for independence is rejected and **statistically there is a interdependence** between the two categorical variables (questions 11 and 12) or that Pinterest, Instagram, Facebook and other social platforms offer information about nutritionally valuable meals and the answers to inspiration from photos of prepared food posted on Instagram and recipes for food preparation posted on gastroblogs or Facebook, are **statistically dependent**, and the value of Cramer's V is 0.2486 and shows that it dependence is close to moderate.

Table 3: Frequency of questions 14-15 and results from Chi-Square and Cramer's V tests.

Q14	Q15		Total
	Yes	No	
Yes	67	64	131
No	9	87	96
Partially	33	140	173
Total			400

Chi-Square	df	α	p	Cramer's V
59,03	2	0.05	0.0001	0.3842

Explanation: $p < \alpha$ which means that the null hypothesis (H0) for independence is rejected and **statistically there is an interdependence** between the two categorical variables (questions 14 and 15) i.e. respect for gastrobloggers and food influencers and the answers platforms (networks) that actively follow more than three gastrobloggers or food influencers, are **statistically dependent**, and the value of Cramer's V is 0.3842 and shows that this dependence is moderate.

The data obtained from the survey research was clustered, by using the Partitioning Clustering Method. Several clusters of respondents were obtained. Figure 1 shows two clusters. The first cluster of respondents who answered yes and partially to questions 10, 11, 14, covers 57% of the respondents, and the second cluster of respondents is for pattern 1: Q10 (par.)-Q11 (par.)-Q14 (par.) (who answered "partially" to questions 10, 11 and 12), covers 26.5% of respondents. These clusters show that there are significant clusters of social network users who are partially influenced by social media in the area of food, nutrition and nutritionism.

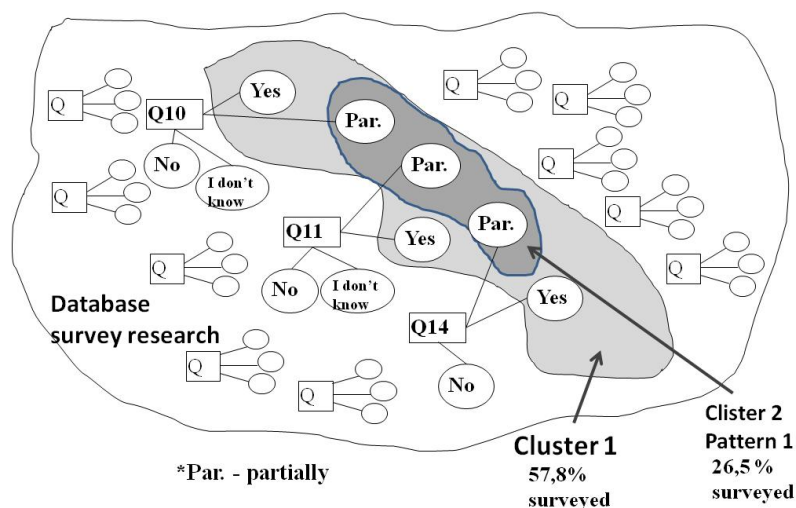


Figure 1. Cluster 1 of respondents who answered 'yes' and 'partially' to questions 10, 11 and 14, and cluster 2 for pattern1 Q10 (par.)-Q11 (par.)-Q14 (par.).

From the frequency of the answers to questions 8, 10, 11, 12, 14 and 15, the obtained dependence of the answers to questions 11-12 and 14-15 and the obtained clusters from questions 10, 11 and 14, it can be concluded that the answers to these respondents questions are not random, the influence of social media is partial, and people trust the content on food, diets and Nutrition.

It is often difficult to draw appropriate conclusions about the impact of social media in the context of the nutritional properties, quality and health benefits of food due to the rapid pace of change taking place on social media and in the world at large. Therefore, continuous marketing research is needed to detect the factors influencing consumers.

CONCLUSION

A novelty in the paper is the so-called Nutrition marketing based on five principles (5N). The main goal of the nutrition marketing strategy is to improve the marketing strategy of companies in the food industry by improving food products and developing new ones, by adding greater nutritional quality. The principles are aimed at the factors influencing consumer behavior in the field of food, improving nutrition, highlighting the

nutritional properties of products that affect the well-being and health of people. The principles of nutrition marketing include social media that today have a significant impact and are used as marketing tools, and through them are placed information on nutrition, diet, gastronomy and eating habits. Nutrition marketing can be presented as a concept for creating foundations that provide impact on consumers by emphasizing the nutritional properties of products in order to select better and healthier products, and thus, improve human health. Through the implementation of the principles of Nutrition Marketing, one of the main strategies of companies for better positioning of food products on the market is fulfilled. The benefits of using nutrition marketing can be threefold: benefits for companies; benefit to consumers through the selection of better quality and safer products; and benefit to the country. The further development of research should continue due to the rapid global changes that are taking place in the world, by setting new principles in Nutrition Marketing and by including new determinants that can significantly influence consumer behavior.

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