

THE EFFECT OF COGNITIVE FACTORS ON CONSUMER BEHAVIOUR: A BUSINESS STRATEGY CONTEXT STUDY

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Abstract

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Health behaviour research is mainly based on the evaluation of the consequences of the behaviour. However, observing the worsening state of public health naturally raises questions about the causes of these trends. There are many factors influencing consumer health behaviour (legal, fiscal, demographic, political, etc.). It is agreed, that the consumer alone can hardly influence all of these mentioned factors (de Vries et al., 2018; Hilz et al., 2019). However, there are social cognitive psychological constructs (e.g., consumer attitudes), that can be partially or fully controlled or managed by the individual. In this article, the cognitive factors that influence consumer health behaviour are evaluated (pharmacy business context). The problem arises, what is the impact of cognitive factors on consumer health behaviour? The quantitative empirical research approach was chosen to reflect the attitudes of the Lithuanian population about health, research sample — 1,000 respondents. The interview was based on the computer-assisted web interview (CAWI). Results suggest, that the information from internet portals, has the most statistically significant impact on the formation of attitudes towards health. A similar tendency is reflected in health behaviour. The results of the study have practical value for pharmacy business companies and medical service companies.

Keywords: Cognitive Components, Attitude Towards Health, Consumer Behaviour, Health Behaviour

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1. INTRODUCTION

Health literacy studies conducted in Europe (Sørensen et al., 2015) also assume the importance of determinants of cognitive attitude formation factors to health behaviour, and confirm the fact, that insufficient health literacy is characteristic of every second surveyed respondent (in eight studied European countries). The need to increase the health

literacy of the European population is emphasized. It is clear that consumer health education and literacy are inseparable from external stimuli in these communications times. In the course of globalization, the development of media and internet channels, as well as the growth of social networks, there are scientific studies on the impact of external environmental stimuli on health behaviour (de Vries et al., 2018; Grossman, 2000), which assume the human capital importance on

consumer health. Some assumptions are made, that consumer education (in media, social media), and consumer medical education programs (such as publicizing certain risk factors, publicizing research results, and social campaigns) could significantly increase consumer health literacy and have a significant impact on health behaviour. At the same time, it is agreed that social networks, social influencers, and information on the internet (factors that shape cognitive attitudes) play a significant role in this context. Some researchers (Wang et al., 2021; Rajshri & Malloy, 2023) confirm the influence of influencers on social networks on consumer attitudes, because today, social media influencers are becoming opinion leaders in various fields. It is agreed, that social media not only provides a powerful platform for exposure to new information and diverse perspectives but also enables consumers to share ideas, opinions, news and experiences with each other (Heinonen, 2011; Hallikainen, 2015). In this 'social-networked communication' rise one more 'trend' — social media influencers as opinion leaders in various fields. They not only spread and explain information, but they also might affect consumer decisions and behaviours. Social media influencers have become strong opinion leaders in today's social media. They create authentic connections with their personal profile followers and use their influence to promote brands, products and services to their audience. Studies on influencer marketing suggest, that social media influencers can have a significant effect on consumer behaviour. Another study by GlobalWebIndex (2019) has found, that 58% of social media users follow influencers to discover new products. However, some recent studies (Rounsefell et al., 2019; Zhao & Zhou, 2020; Blanchard et al., 2023) already emphasize the negative influence of social network information on user attitudes about health (for example, false, distorted perception of the body) and health behaviour (for example, disordered eating). Based on the fact, that some controversial aspects raised in the scientific literature, the question is about the impact of the information, received from internet portals, social networks, and influencers on consumer attitudes towards health and health behaviour. Because researchers have different opinions, the question is, how the cognitive factors actually influence consumers' health behaviour in order to achieve health-protecting, health-strengthening behaviour (HSB) and avoidance of harmful behaviour (AHB).

In research of factors, influencing consumer health behaviour, prevail, researchers, analyse different economic, social, demographic, legal, and political aspects — individual consequential aspects on consumer health behaviour (Arendt, 2005; Cutler & Lleras-Muney, 2006; Abraham & Sheeran, 2015; Elsborg & Elbe, 2018; Hilz et al., 2019; Kalaj & Kalaj, 2023; Korn et al., 2023), the influence of attitudes on some individual health behaviours (for example, for nutrition, Conner and Norman, 2020), of the influence of socio-cognitive factors on the behaviour of COVID-19 vaccinations (Han et al., 2023), COVID-19 behaviour (Patitsa et al., 2022). There is a consensus, that there are many factors influencing consumer health behaviour (legal, fiscal, demographic, political, etc.). It is agreed, that the consumer alone can hardly influence these legal,

demographic and economic factors (Chen et al., 2017; de Vries et al., 2018; Hilz et al., 2019). However, there are social cognitive psychological constructs (e.g., consumer attitudes) that can be partially or fully controlled or managed by the individual (e.g., perception of illness, desire to know about and to know about illness). So, consumer attitudes are among the social cognitive factors, that are largely under the consumer's own control and management. Another trend observed in the aforementioned studies is, that most systematic health behaviour researches are focused on consequential evaluations: doing-not doing, carrying out-not carrying out, etc., but there is a lack of the causal evaluation of these behaviours. However, there is not only a lack of systematic research, analysing the causes of health behaviour, not only the consequences. In the context of declining public health and negative health trends (World Health Organisation reports), there is a need for deeper research, that helps understand the consumer segment's behaviour and the reasons for the consumer health behaviour. A created attitude formation towards health behaviour model (MODEL) (Bakanauskas et al., 2022) reveals not only the causes but also the consequences of consumer attitude and health behaviour. It also reveals the cognitive attitude formation components — (like media information, advertising, the internet, social networks, etc.). The model presents, that those cognitive factors can impact consumer attitudes towards health (causes of attitude formation). The expression of the attitude in action is consumer health behaviour (consequences of formed attitudes, attitudes expression). This causal-consequential relationship enables us not only to research the consequences of consumer health behaviour but also to understand the reasons (causes) for such behaviour. This article aims to bring a more in-depth understanding of the causal motives of consumer health behaviour, using attitude formation towards health MODEL, by presenting the results of empirical research.

In order to solve the research problem at the theoretical level, a review of some performed studies and scientific literature is carried out. The quantitative research approach was chosen to determine the relationship between two independent variables — *attitudes* and *behaviours* — in a certain population, based on individual empirical experience and individual observations (Creswell & Poth, 2017). Quantitative research provides opportunities to search for averages between variables, make predictions, test causal relationships generalize results to a wider population, and compare one variable with another, which is related to the goals and objectives of this dissertation (Creswell & Creswell, 2018). The selection of the research sample was carried out using a stratification sampling method, where the entire population was divided into layers (called strata) according to the relevant characteristics. The selection of the study sample was carried out in two stages. In the first stage, the total adult population was divided into layers (strata) — five big Lithuanian cities and 10 counties. The number of respondents in each stratum was determined according to the population data of the Lithuanian Statistics Department. In the second stage, the quota method of selecting the study sample was applied according to age and gender.

Quota sampling was applied as a type of non-probability sampling method when members of the population are not randomly selected from the population (the number of participants is planned according to gender and age: 500 men and 500 women in certain age categories, N = 1000) and all members of the population do not have equal opportunities to be selected into the sample group. The sample size was determined using the sample size calculator.

It was decided to survey 1000 Lithuanian respondents aged 18-65, which would allow analysis of the results with 99% reliability, within $\pm 4\%$ error limits. The respondents were selected using the Norstat panel, the survey questionnaire was distributed from September 1, 2021 to October 31, 2021. The survey method is a computer-assisted web interview (CAWI).

The statistical non-parametric correlation method has been used to analyse the results of the empirical study. The application of this statistical method is related to the topic of the article: it provides opportunities to compare not only attitudes with health behaviour (one different variable with others) but also to determine relationships between different variables (*attitudes and behaviour*).

The structure of this paper is as follows: Section 2 reviews the relevant literature and hypotheses development. Section 3 analyses the methodology, that has been used to conduct the empirical research on the effect of cognitive factors on consumer health behaviour. Section 4 presents the results of the research. Sections 5 and 6 introduce some discussion and conclusions.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

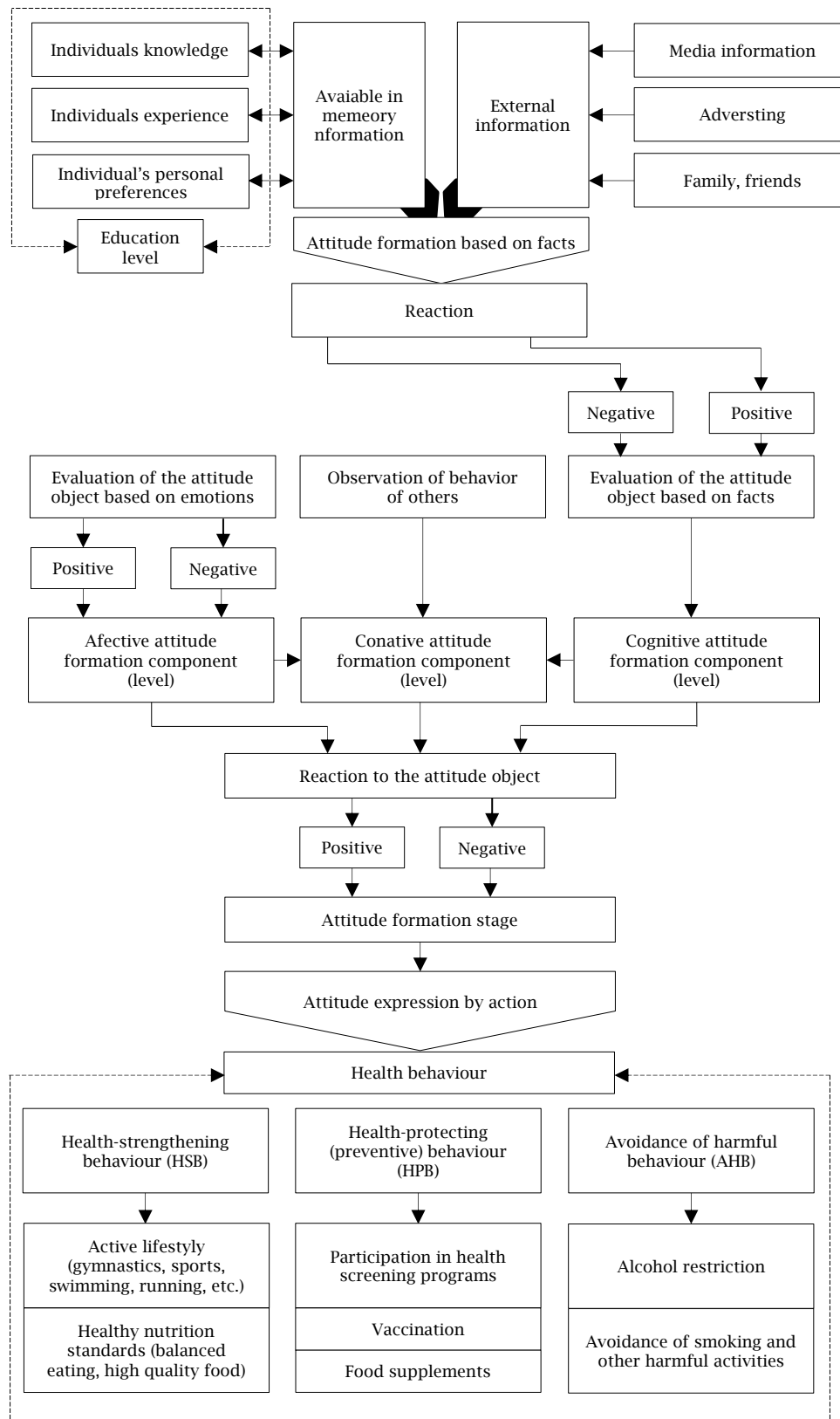
2.1. The cognitive factors

In the attitude behaviour cognition (ABC) (Eagly & Chaiken, 1993, 2007), named as a model of three components of attitudes, the formation of attitudes is represented by the process of three component connections: affective (affect — feelings, emotions), conative (behaviour — behavioural) and cognitive (cognition — experience, knowledge).

The cognitive component in the ABC model represents an individual's knowledge, and information about the object of attitudes. Analysis of the literature of other scientists who have studied this cognitive component of attitudes (Conner, 2018; Conner & Norman, 2020; Sanborn, 2022) verifies, that the cognitive component of attitudes is based on consumer's experience, knowledge and available

information about the object of the provisions. Also, it has been identified, that all these aspects are extremely individual. Therefore, it can be concluded, that cognitive aspects should be studied for each individual separately, which presupposes this kind of research. At the same time, it can be concluded that the cognitive aspects, which include the individual's knowledge about the object of attitudes, cannot be separated from information, where information from external stimuli plays a very significant role. However, when assessing the impact of external environmental stimuli, it is observed that extremely significant changes are taking place here. In recent years, an extremely significant role has been played by the interactive interaction of individuals — the influence of social networks, social groups and opinion leaders (so-called influencers) in shaping the attitudes of consumers in various contexts (Bowen & Bowen, 2016; Pyle et al., 2021; Ming & Salman, 2023). Thus, the role of social media and the internet is extremely significant when it comes to the formation of consumer attitudes because when interacting on virtual platforms, individuals are exposed to a lot of information, attitudes and experiences of other individuals (Bazarova & Choi, 2014; Cialdini & Goldstein, 2004; Rajshri & Malloy, 2023; Zozaya-Durazo et al., 2023). In the scientific literature of other authors, the term eWOM is used to define this cross-network interaction, which defines interactions between individuals in the electronic space (Broniarczyk & Griffin, 2014; Pyle et al., 2021). In the cognitive component of attitudes, the individual evaluation of the object is based on the available information and facts about the evaluated object by evaluating various factual aspects, as well as evaluating the advantages and disadvantages of the object of attitudes, often taking into account the opinions of other eWOM subjects (for example, influencers, internet portal reviewers) recommendations (Filieri, 2015). An example of such a cognitive-based evaluation would be actual ('measurable') evaluation criteria, such as the fuel consumption of a car, the strength of a drug, etc. It is obvious, that during these factual evaluations, objects (things, phenomena, products, services) are identified and separated from each other. Thus, understanding the interaction between consumers in real and virtual space is necessary for a better understanding of the behaviour of consumers and to identify the causes of this behaviour with the help of attitude components. The attitude formation towards health MODEL (Bakanauskas et al., 2022), illustrates some cognitive attitude formation factors and their connections with consumer behaviour and health behaviour (Figure 1).

Figure 1. Attitude formation towards health behaviour model (MODEL)



Source: Authors' elaboration.

In the attitude formation towards health MODEL, at the cognitive attitude formation stage, there are some external cognitive factors illustrated (information from media, advertising, family, and

friends). Information from the internet and social media belongs to external cognitive factors. In the attitude formation towards health MODEL, health behaviour refers to actions and habits, that

individuals use to promote or maintain their physical, mental and emotional well-being and is grouped into three dimensions: HSBs, HPBs and AHBs (Bakanauskas et al., 2022). Each dimension has specific health behaviour actions, like active lifestyle, healthy nutrition (health improving behaviour), participation in health screening programmes, vaccination (HPB), alcohol restrictions and avoiding smoking (AHB). There is established a direct causal-consequential relationship between the formation of consumer attitudes and health behaviour in that attitude formation towards health MODEL (Figure 1). It is obvious, that consumer behaviour is the expression of attitudes in action. The question arises about the impact of cognitive factors on consumer health behaviour.

2.2. Impact of cognitive factors: Research hypotheses

The MODEL (Figure 1) suggests, that some consumer attitudes can be affected by cognitive factors of attitude formation (new information from the media, advertising, information channels, social networks, etc.). It is assumed, that consumer education through the media, social media and consumer medical education programmes (e.g., posting information about certain risk factors on social media, publishing research results, publishing statistics, implementing public health campaigns with opinion leaders, etc.) could affect the formation of consumer attitudes towards health and health behaviour and — not always in a positive way. It raises the question of how the new information from the internet, social media and social influencers affects consumer attitudes towards health and health behaviour. How correct could be the assumption, that new information from external stimuli (the internet, social networks and influencers) has a significant impact on consumer attitudes towards health and health behaviour, and that consumers consider this information extremely reliable? Looking from a causal-consequential point of view (Figure 1), external information from the internet, social media and influencers (cognitive factors that form attitudes towards health) could be the cause of certain health behaviours, and certain health behaviours could be the consequence of formed attitudes. These insights have served as a basis for the research hypotheses and results of the empirical study on the impact of the cognitive component (the internet, social media and influencers) on the formation of consumer attitudes towards health and health behaviour. The presented below hypotheses have been built on the basis of the MODEL (Figure 1) and on the insights from before mentioned scientific literature and then tested using the results of the empirical research.

Taking into account the insights from the reviewed scientific literature and the MODEL (Figure 1), the following research hypotheses have been formulated:

H0: Information received from the internet, social media and influencers has an equally significant impact on both the formation of attitudes towards health and health behaviour.

H1a: Information received from the internet, social media and influencers has a significant impact on the formation of consumer attitudes towards

health, but no significant impact on consumer health behaviour.

H2a: Information received from the internet, social media and influencers has a significant impact on consumer health behaviour, but no significant impact on the formation of consumer attitudes towards health.

For this purpose, the significance testing method (significance testing) was used to confirm the hypotheses with statistically significant research results or reject them with statistically insignificant research results (Poletiek, 2013).

3. RESEARCH METHODOLOGY

3.1. Research methods

Adopting the quantitative methodological approach and using an online survey, the current research ran from September 1, 2021, to October 31, 2021. After determining the purpose of this research and formulating hypotheses, the questionnaire consisted of 22 blocks of questions. Respondents were asked to express their opinions on each statement. A five-point symmetrical Likert scale was used to select the answer, which provided opportunities to assess the range of attitudes. In the scientific literature, it is distinguished that the Likert scale is a psychometric measurement instrument used to evaluate psychological constructs (for example, emotional evaluations, motivation, users' attitudes about specific attitude objects by measuring expression) and allows easy collection of this type of data (Norman, 2010; Nemoto & Beglar, 2014; Joshi et al., 2015; Amidei et al., 2019; Bacon-Shone, 2013) using a response range such as 'definitely no' to 'definitely'. The interview was based on the CAWI method. The target respondents were selected using the Norstat panel.

In order to represent the health attitudes of the entire population of Lithuania, a relatively large quantitative research sample (1000 respondents) was chosen. The study was undertaken in the Lithuanian population. The total sample of the survey consisted of 1000 respondents, Lithuanian residents aged 18–65 was conducted.

The quantitative (vs qualitative) methodological approach has been chosen, with a view of presenting the results to a wider population. Analysing the literature of authors, dealing with quantitative research (Denzin & Lincoln, 1998; Goodwin & Goodwin, 2016; Cooper & Schindler, 2006; Creswell, 2007, 2014; Creswell & Creswell, 2018; Creswell & Poth, 2017; Babbie, 2010; Muijs, 2011; Vogt et al., 2012; Rovai et al., 2013; Bacon-Shone, 2013; Islam et al., 2022) it was identified, that quantitative research provides opportunities to find averages between variables, make predictions, test causal relationships and generalize results to a wider population. It allows precise measurements of variables and the ability to generalise findings to larger populations, capturing consumer experiences rather than facts. It also enables to control of extraneous variables, making it easier to establish cause-and-effect relationships between variables and research averages between different variables involves collecting and analysing numerical data to test the hypotheses. It focuses on the breadth of the sample rather than the depth, which was

necessary for this research to reflect the experiences and attitudes of the entire population of Lithuania about health, based on individual empirical experience and individual observations (Creswell, 2007). The quantitative research was chosen to determine the relationship between two independent variables — *attitudes* and *behaviours* — in a certain population.

4. RESULTS RESULTS AND FINDINGS

Evaluating all the cognitive factors, shaping consumer attitudes towards health, the comparison of correlations between Lithuanian consumers' attitudes towards health and information from some external environmental stimuli was made (Table 1).

Table 1. Statistically significant correlations and the correlation strength between Lithuanian consumers' attitudes towards health and external environmental stimuli

<i>Attitudes towards health behaviour</i>	<i>K4r1: From TV, print, radio</i>	<i>K4r2: Outdoor advertising, posters, screens</i>	<i>K4r5: Doctors, pharmacists</i>	<i>K4r6: Internet portals</i>	<i>K4r7: Social media</i>	<i>K4r8: Influencers</i>	<i>K4r9: Conferences, health lessons</i>
K3r1: You need to move and exercise to prevent disease	0.127**	-0.020	0.218**	0.219**	0.077*	-0.149**	0.052
K3r2: A balanced, wholesome diet is extremely important for human health	0.172**	0.030	0.214**	0.272**	0.135**	-0.082**	0.086**
K3r3: You need to learn not to stress to avoid stress	0.157**	0.023	0.175**	0.175**	0.113**	-0.066*	0.079*
K3r4: Preventive diagnostics helps diagnose disease at an early stage	0.140**	0.050	0.271**	0.147**	0.059	-0.077*	-0.025
K3r5: You need to take food supplements to prevent disease	0.190**	0.232**	0.147**	0.174**	0.233**	0.176**	0.216**
K3r6: You need to avoid bad habits to prevent disease	0.139**	-0.001	0.175**	0.182**	0.096**	-0.113**	0.022

Note: ** correlation is significant at the 0.01 level, * correlation is significant at the 0.05 level, the values in bold mean the strongest correlations according to correlation coefficient *r*.

The evaluation of common statistically significant correlations has identified statistically significant correlations ($p < 0.01$, $p < 0.05$) in all attitudes towards health behaviour (Table 1, K3r1-K3r6 statements).

Evaluating one of the cognitive attitude shaping factors — information from internet portals and its correlations with attitudes towards health behaviour, it was found, that internet portals information (K4r6) has a statistically significant impact ($p < 0.01$) on all consumer attitudes towards health (Table 1, K3r1-K3r6). The strongest correlations were found between information from the internet and consumer attitudes about exercising, and a balanced diet (K3r1; K3r2). It means that internet portal information has a statistically significant, but very weak impact on following consumer attitudes towards health: positive attitudes about movement and exercise, and positive attitudes about balanced diets.

The evaluation of the correlations between social media (K4r7) and attitudes towards health has found, that social media has a statistically significant ($p < 0.01$, $p < 0.05$) impact on the following attitudes towards health: positive attitude to movement, need for healthier nutrition, need to avoid stress, need for food supplements and avoiding bad habits. Social media has no statistically significant impact on attitudes towards preventive diagnostics. The strongest correlations were found between social media information and food

supplement usage. Thus, it follows that social media has a statistically significant, but very weak impact on positive consumer attitudes about supplements usage.

The evaluation of the correlations between information received from influencers (K4r8) and attitudes towards health, has revealed, that influencers have a statistically significant, but inverse impact on the following attitudes towards health: the more often consumers receive information from influencers about health, the less often they agree with the need for movement, healthier nutrition, avoiding stress, preventive diagnostics and avoiding bad habits. The only exception is the need for food supplements: the more often consumers receive information from influencers about food supplements, the more they agree with the need for food supplements as a means of preventing disease. This trend confirms the marketing tendency of food supplements in Lithuania, where influencers have profitable e-shops of their name (e.g., Shop by Siegel, Shop by NB) for selling food supplements. These food supplements, however, are positioned for beauty, rather than medicinal purposes. Although the evaluation of the correlation strength coefficient *r* shows, that the correlations between the impact of information received from influencers on attitudes towards health behaviour are reverse and very weak in all attitudes ($r = -0.2-0$; $r = 0-0.2$), the strongest correlation is found between influencers information

and positive attitudes to food supplements usage. It follows, that the impact of influencers on consumer attitudes towards health is statistically significant, negative and very weak, suggesting, that beauty and aesthetics-related behaviour could be more significantly affected by influencers than health behaviour.

To evaluate the impact of the internet, social media and influencers on consumer health behaviour, the correlations between these cognitive

factors (the internet, social media and influencers) and all three health behaviour dimensions — HSBs, HPBs and AHBs — have been analysed.

The evaluation of the external stimuli, as a source of information about HSBs (Figure 1) has included the comparison of the correlations between information from some external stimuli and HSBs, finding, that HSBs and information received from some external stimuli have statistically significant correlations ($p < 0.01$, $p < 0.05$, Table 2).

Table 2. Statistically significant correlations and the correlation strength between Lithuanian consumers' HSBs and some external environmental stimuli

	<i>K4r1: From TV, print, radio</i>	<i>K4r2: Outdoor, posters, screens</i>	<i>K4r6: Internet portals</i>	<i>K4r7: Social media</i>	<i>K4r8: Influencers</i>	<i>K4r9: Conferences, health lessons</i>
HSBs	0.123**	0.032	0.198**	0.063*	-0.029	0.214**

Note: ** correlation is significant at the 0.01 level, * correlation is significant at the 0.05 level, the values in bold mean the strongest correlations according to correlation coefficient r .

The evaluation of statistically significant correlations ($p < 0.01$, $p < 0.05$) has found the strongest correlations between HSBs and information from conferences and health lessons, meaning, that HSBs are often affected by the information consumers get at conferences and health lessons. The evaluation of the correlations between internet portals (K4r6), and social media (K4r7), is statistically significant ($p < 0.05$), but very weak. Meanwhile, no statistically significant correlation has been found between HSBs and influencers. The impact of internet portals on HSBs is more statistically significant compared with the impact of social media on HSBs. This means, that

comparing HSBs and the influence of internet portals and social media, internet portals have a statistically significant impact on the following HSB behaviours (Figure 1): active lifestyles, and healthy nutrition standards. To sum it up, influencers do not have any statistically significant impact on HSBs (active lifestyles, healthy nutrition standards), and the impact of internet portals and social media is statistically significant but very weak.

Evaluation of another health behaviour (HPBs) and the correlations between information from external stimuli, some statistically significant ($p < 0.01$) correlations between HPBs and external stimuli information were found (Table 3).

Table 3. Statistically significant correlations and the correlation strength between Lithuanian consumers' HPBs and some external environmental stimuli

	<i>K4r1: From TV, print, radio</i>	<i>K4r2: Outdoor, posters, screens</i>	<i>K4r6: Internet portals</i>	<i>K4r7: Social media</i>	<i>K4r8: Influencers</i>	<i>K4r9: Conferences, health lessons</i>
HPBs	0.201**	0.114**	0.252**	0.139**	-0.014	0.294**

Note: ** correlation is significant at the 0.01 level, * correlation is significant at the 0.05 level, the values in bold mean the strongest correlations according to correlation coefficient r .

The evaluation of statistically significant correlations ($r < 0.01$) has found, that the strongest correlation is between HPBs and conferences/health lessons and internet portals. The correlation between social media (K4r7) and HPBs is statistically significant ($p < 0.01$), but very weak and there is no statistically significant correlation between HPBs and influencers. It means, that HPBs are often affected by the information consumers get from conferences/health lessons and internet portals. Evaluating the internet, social media and influencer information and HPBs, the strongest correlation is found between HPBs and internet portals. This means, that the internet portals have a statistically

significant impact on the following HPBs: participation in health screening, vaccination, and food supplements. This impact is positive: the more information consumer gets about health screening programs, vaccination, and food supplements from internet portals, the more often they are addicted to health screening behaviour, vaccination behaviour, and food supplement usage.

Evaluating the third health behaviour dimension (AHBs) (from Figure 1), some statistically significant correlations ($p < 0.01$, $p < 0.05$) between AHBs and external stimuli have been found (Table 4).

Table 4. Statistically significant correlations and the correlation strength between Lithuanian consumers' AHBs and some external environmental stimuli

	<i>K4r1: From TV, print, radio</i>	<i>K4r2: Outdoor, posters, screens</i>	<i>K4r6: Internet portals</i>	<i>K4r7: Social media</i>	<i>K4r8: Influencers</i>	<i>K4r9: Conferences, health lessons</i>
AHBs	0.142**	-0.024	0.133**	0.073*	-0.071*	0.119**

Note: ** correlation is significant at the 0.01 level, * correlation is significant at the 0.05 level, the values in bold mean the strongest correlations according to correlation coefficient r .

The strongest statistically significant correlation has been found between AHBs and information from TV, print and radio. It means that

AHBs are often affected by the information consumers get from TV, print and radio.

The evaluation of the correlations between AHBs and internet portals (K4r6) has shown

a statistically significant ($p < 0.01$), but very weak correlation ($r = 0-0.2$). A similar tendency is observed between HPBs and social media (K4r7), where the correlation is statistically significant ($p < 0.05$) but very weak, and between HPBs and influencers, where the correlation is statistically significant ($p < 0.05$) but very weak and inverse ($r = -0.2-0$). It means that the more often consumers get information about AHBs from influencers, the more AHBs are relevant to them. Comparing the correlations between internet portals, social

media and influencers, the strongest positive (not reverse) correlation is between AHBs (Figure 1) and internet portals: AHB (alcohol restriction, avoidance of smoking, etc.). This means, that the more information consumer gets about AHB from internet portals, the more often they are addicted to alcohol restriction behaviour, and avoidance of smoking behaviour.

All the empirical research results according to statistically significant correlation and correlation strength are represented in the table below.

Table 5. Summary of research results

<i>Cognitive factors of attitude formation</i>	<i>Correlation significance (p)</i>	<i>Correlation strength (r)</i>	<i>Result</i>	<i>Conclusions</i>
Impact on attitude formation towards health				
Internet portals	$p < 0.01$	$r = 0-0.2$	Statistically significant but very weak impact	The strongest impact on attitudes about exercising, balanced diet
Social media	$p < 0.01$	$r = 0-0.2$	Statistically significant but very weak impact	Strongest impact on attitudes about food supplement usage
Influencers	$p < 0.01, p < 0.05$	$r = -0.2-0; r = 0-0.2$	Statistically significant but inverse (negative) and very weak impact	1. Reverse negative impact. 2. Strongest positive impact on food supplements usage
Impact on HSBs				
Internet portals	$p < 0.01$	$r = 0-0.2$	Statistically significant but very weak impact	Strongest impact on HSBs
Social media	$p < 0.05$	$r = 0-0.2$	Statistically significant but very weak impact	
Influencers	0	0	No statistically significant impact, no impact	No impact in HSBs
Impact on HPBs				
Internet portals	$p < 0.01$	$r = 0.2-0.5$	Statistically significant but weak impact	Strongest impact on HPBs
Social media	$p < 0.01$	$r = 0-0.2$	Statistically significant but very weak impact	
Influencers	0	0	No statistically significant impact, no impact	No impact on HPBs
Impact on AHBs				
Internet portals	$p < 0.01$	$r = 0-0.2$	Statistically significant but very weak impact	Strongest impact on AHBs
Social media	$p < 0.05$	$r = 0-0.2$	Statistically significant but very weak impact	
Influencers	$p < 0.05$	$r = 0-0.2$	Statistically significant but inverse (negative) and very weak impact	Reverse negative impact on AHBs

As illustrated in Table 5, information from internet portals, as a cognitive factor of attitude formation, has a statistically significant impact on the formation of attitudes towards health in Lithuania ($p < 0.01; p < 0.05$), but this impact is very weak ($r = 0-0.2$). The same trend is observed in the health behaviours of Lithuanian consumers: internet portals (a cognitive factor of attitude formation) have a statistically significant but very weak or weak impact on health behaviour (in all health behaviour dimensions — HSBs, HPBs and AHBs).

5. DISCUSSION

If evaluating the results about ABHs, the results show, that the internet portals have the strongest correlations with attitudes about harmful behaviour formation (Table 1): to avoid stress, to avoid bad habits, compared with information from social media and influencers. The same tendency is reflected in correlation with internet portals information and AHBs: comparing correlations between internet portals, social media and influencers, the strongest positive correlation is found between internet portals and AHBs. Evaluating

from the causal-consequential perspectives (illustrated in Figure 1), the information from internet portals and their content form consumer attitudes about AHB, and this is reflected in real health behaviour (AHBs). The information from the internet is the cause of formed attitudes and health behaviour — results of formed attitudes, and expression of attitudes in action. The same tendency is reflected in HSBs — strongest correlations are found with exercising and a balanced diet and information from internet portals. So, information from portals is the cause, that forms attitudes towards health, and health behaviour is the result of formed positive attitudes. By increasing the influence of internet portals, as a factor that forms cognitive attitudes, providing as much information as possible not only about exercising and balanced food but also about other HSBs: overweight, water consumption habits, rest and sleep regime, etc. Internet portals could be good options for following business advertising: sports clubs, nutrition clinics, and dietologists services.

The current study revealed, that the strongest positive impact of internet portals information and social media is for food supplements. Food supplement usage belongs to another health

behaviour dimension — HPBs. The strongest correlations between positive attitudes about food supplements were found with social media and internet portals (Table 1). Thus, this tendency is partially reflected in health behaviour: social media correlations are weaker, comparing food supplement usage (HPBs) correlations and correlations with internet portals, results show a more significant internet portals influence on food supplement usage (HPBs), and the correlation is stronger, comparing with social media and influencers impact. This means, that influencers and social media influence on positive attitudes about food supplements is statistically significant but very weak. The same tendency is reflected in health behaviour (HPBs). Evaluating from the causal-consequential perspectives (illustrated in Figure 1), the strengthening of social media and influencer's information about food supplements, could impact the strongest correlations with health behaviour (HPBs).

6. CONCLUSION

The study evaluated the impact of internet portals, social media and influencers on consumer attitudes towards health behaviour. The results show the strongest internet portal information impact on the following positive consumer attitudes towards health: positive attitudes about movement, and positive attitudes about balanced diet. The study reveals the inverse and negative impact of influencers on attitudes towards health behaviour formation. The exception is consumer attitudes towards food supplements, there the study results show the positive impact of influencers and social media. The results (Table 5) show the strongest impact of internet portals and social media on health behaviour dimensions HSBs: active lifestyles, healthy nutrition; HPBs: health screening, vaccination, food supplements; AHBs: restriction of alcohol, smoking, etc. Results show no statistically significant impact of influencers for HSBs, and HPBs, and inverse negative impact for AHBs.

Based on the results, some conclusions are assumed.

Social media has a statistically significant, but very weak impact on such attitudes towards health as positive attitudes on movement, the need for healthier nutrition, the need to avoid stress, the need for food supplements and avoiding bad habits. This suggests, that social media can be used in shaping positive consumer attitudes towards nutrition, avoidance of bad habits and stress, and food supplements. Results show the strongest impact of social media on consumer positive attitudes about food supplements. Evaluating pharmacy marketing business contexts, means, that pharmaceutical companies can use social media as one of the alternative media tools for food supplement advertising while planning advertising and marketing strategies.

Influencers have a statistically significant, but weak impact on some attitudes towards health. But this inverse (negative) impact monitored on such attitudes towards health: positive attitude to movement, need for healthier nutrition, need to avoid stress, need for food supplements, preventive diagnostics and avoiding bad habits: the more often consumers get information from influencers,

the less they agree with attitudes towards health. No inverse impact is found only in a correlation between attitudes and food supplements. This means, that when planning marketing strategies for medical products, pharmacy companies should not include influencer advertising. Most influencers have their own shops in Lithuania and sell beauty and aesthetics supplements (for skin, nails, beauty, and hair) but these products are not for medical purposes, but for beauty. This suggests, that the advertising of influencers could not be recommended in shaping positive consumer attitudes towards movement, towards a need for healthier nutrition, avoidance of stress and bad habits, preventive diagnostics, and only influencer advertising is effective for food supplements. This fact implies that influencer advertising should not be used for social health promotion and advertising (e.g., health and nutrition, stress avoidance). The same influencer advertising should not be used for preventive diagnostics in the medical services business context.

Internet portals have the strongest impact on consumer's positive attitudes about exercising and a balanced diet. This should mean, that the more often consumers receive information about exercising, and a balanced diet from internet portals, the more often they are addicted to sports and balanced food (HSBs). This means, that internet portals could be a good option while planning marketing strategy for consumer information about exercising (sports clubs), balanced food or diet (medical clinics, dietologists).

If evaluating the strongest correlations (Table 5), internet portal information makes the strongest impact on following consumer's attitudes towards health: exercising, balanced diet, social media and influencers — the strongest impact towards attitude about food supplement usage. However, the influencer effect is more pronounced in the field of beauty, than in health. Internet portals have the strongest correlations with all health behaviour dimensions: HSBs, HPBs and AHBs. This means that consumers get the most information about health behaviour from internet portals, compared with social media and influencers.

Furthermore, Table 5 reveals, that information from social media, as a cognitive factor of attitude formation, has a statistically significant but very weak impact on the formation of attitudes towards health in Lithuania. The same trend is seen with health behaviour: social media (a cognitive factor of attitude formation) has a statistically significant but very weak impact on health behaviour (in all health behaviour dimensions — HSBs, HPBs and AHBs).

Finally, Table 5 shows that influencers, as a cognitive factor of attitude formation, have a statistically significant but very weak and inverse (negative) impact on the formation of attitudes towards health in Lithuania. Seeing as influencers have a weak and inverse (negative) impact on the formation of attitudes towards health, their impact on AHBs is also statistically significant but inverse (negative) and very weak, and they have no impact on the other two health behaviour dimensions (HSBs and HPBs) at all. This might be related to the fact that influencers have an inverse impact: the more consumers hear about influencers' attitudes towards health, the less positive attitudes

about health they form; and the more consumers hear from influencers about AHBs, the less AHBs are relevant to them (they are less likely to avoid bad habits, harmful behaviours, tobacco, alcohol, etc.). These trends are confirmed by the MODEL (Figure 1), where factors of attitude formation (here, cognitive factors of attitude formation) are the cause of consumer health behaviour and health behaviour is the expression of attitudes by actions. As illustrated by Table 6, when cognitive factors are weak at the attitude formation stage, this also reflects in health behaviour. As cognitive factors are inverse or negative at the attitude formation stage, the same trend is observed in health behaviour (inverse impact or no impact).

In summary, the *H0* has been partially confirmed. As stated in Table 6, the internet, social media and influencers have a statistically significant impact on both the formation of attitudes towards health (positive and negative) and health behaviour. But looking at the correlation strength (correlation strength coefficient r), the internet and social media have a weak or very weak impact on the formation of attitudes towards health, and the same trend is observed with health behaviour. Influencers, on the other hand, are an exception here: they have a statistically significant but very weak and inverse (negative) impact on the formation of attitudes towards health and AHBs, but no statistically significant impact on HSBs and HPBs. So, it follows that information received from the internet and social media has an equally significant impact on the formation of attitudes towards health and health behaviour, but information received from influencers has a statistically significant but very weak and inverse (negative) impact on the formation of attitudes towards health and AHBs and no statistically significant impact on HSBs and HPBs. It means that the *H0* has been confirmed only partially. Based on the findings above, *H1a* has also been partially confirmed, while *H2a* has been partially rejected.

Assuming the results of the study, it can be said, that the empirical research results have practical value for business and management strategies in pharmacy marketing, medical services business when planning social campaigns in public health areas (public health management), marketing managers of pharmaceutical companies (pharmacy marketing and sales management) when, planning food supplements, over-the-counter (OTC) drug advertising, consumer education strategies. The results of a study can be used in medical service and diagnostics management, as well as the healthcare management sector when planning marketing activities and strategies.

Another importance of the paper for future research is, that the presented results extended some individual studies of consumer attitudes about health and individual health behaviours conducted in Lithuania (Petronytė et al., 2017; Pilipavičienė & Vainauskas, 2017), which found a significant influence of health professionals on some health behaviours (nutrition, prevention programs). Therefore, the research, presented in this article, extended the systematic evaluation of the influence of other cognitive factors (internet portals, social networks, influencers) not only for all consumer

health behaviour dimensions (HPBs, HSBs and AHBs) but also for most attitudes towards health.

The study and results, presented in this paper, expanded the results of foreign authors about the impact of external environmental stimuli on health behaviour as well (de Vries et al., 2018; Grossman, 2000), which assume that consumer education and training at the state and political level (in the media, social media), consumer medical education programs, could significantly increase consumer health literacy and have a significant impact on health behaviour. The study confirmed the negative influence of social network influencers on the individual attitudes analysed in previous foreign studies (Rounsefell et al., 2019; Blanchard et al., 2023), emphasizing the reverse negative influence of social network opinion makers. The same tendency is reflected in the Lithuanian population. According to the research, the correlations between influencer's information and all attitudes about health are statistically significant, but inverse (negative): the more often consumers receive information about health from influencers (about nutrition, movement, not succumbing to stress, health checks, avoiding bad habits), the less often they have these positive attitudes. Except for information about food supplements. This is the only provision for which the impact of influencers is direct and positive. This presupposes a tendency, that when choosing food supplements for the prevention of diseases, consumers evaluate the information more responsive, as choosing for beauty. It is clear that influencers do not have a significant positive influence on health decisions. These results of a study can be used in medical service and diagnostics management, as well as the healthcare management sector when planning OTC marketing activities and strategies.

The insights of this article and research results are extremely significant when evaluating the HPBs, related to preventive health checks, free tests, and vaccinations, which can significantly contribute not only to the more active involvement of the public in health prevention but also to the more active involvement of Lithuanian people using free health check-ups programs. There are five disease prevention programs in Lithuania. Thus, these are extremely significant insights, considering the fact that the participation of Lithuanian residents in the mentioned free screening programs is still insufficient. For example, according to the Lithuanian Heart Association, 26% of respondents do not even know what free health prevention programs they can use, and 42% heard about it, but don't know for sure. A study of population awareness and trust in the compulsory health insurance system and The National Health Insurance Fund (*Valstybinė Ligonių Kasa, VLK*) and involvement in disease prevention programs conducted by the market and public opinion research company "*Spinter tyrimai*" (Spinter research) showed that as many as eight out of 10 Lithuanian residents have heard about preventive programs financed by health insurance funds, and six out of 10 respondents have participated in one of them. However, 32% of Lithuanian residents have not participated in any of these programs. This fact confirms the insights of some researchers (de Vries et al., 2018; Grossman,

2000), which assume that consumer education and training at the state and political level (in the media, and social media) could significantly influence health behaviour. So it's a huge niche in engaging doctors, and pharmacists in the communication of these programs. As the study results show the biggest impact of internet portals, conferences, and health lessons for HPBs, these insights could serve the specialists of the Ministry of Health of the Republic of Lithuania, planning not only the education of the population about free screening programs but also encouraging more active involvement of the population in them.

The study has some limitations. It evaluates only data from research, made in the Lithuanian population. Analysing the relationship between attitudes and health behaviour (Chen et al., 2017; Hilz et al., 2019) it was found, that there are many factors, that influence consumer attitudes towards health and health behaviour (legal, tax, demographic, political, etc.). It is established, that there is a factor of social inequality in health behaviour area because the health of the population of each country differs depending on the economic, social, legal, and demographic aspects of the specific country (Lahema et al., 2004; Arendt, 2005; Cutler & Lleras-Muney, 2006; Bridger et al., 2023). Studies of economic aspects and health behaviour (Schechter et al., 1994; Chen et al., 2017) attempt to identify the relationship between family income, family health, and child health, especially in developing countries. Studies of socioeconomic determinants of health behaviour (evaluated HPBs — participation in preventive check-ups) indicate the extremely significant importance of education, and health literacy for health behaviour, which influences even better access to health services (Korn et al., 2023). These factors vary from each country. Studies of consumer health literacy indicate the importance of health literacy in forming consumer attitudes towards health, establishing the fact, that the health literacy in each country is different, and depends on the education, income, and other demographic characteristics of the population of a specific country. So, consumer attitudes towards health and health behaviour should be researched separately in each country (Vaillancourt & Cameron, 2021), in order to reflect the real situation in that country.

There are some perspectives for further research. It is found, that the impact of internet portals, social media and influencers on the formation of consumer attitudes towards health in Lithuania is weak according to the correlation strength. This may be explained by the fact, that health behaviour includes all behaviours related to the prevention of serious diseases. The definition of health behaviour presupposes, that health behaviour is generally defined as any individual behaviour or activity, actions and habits related to health care, health restoration and health improvement, health preservation and disease prevention (Alonzo, 1993; Stroebe & Stroebe, 1995; Grossman, 2000; Conner & Norman, 2005). It is obvious, that it is a matter of health and illness, not of beauty and aesthetics. A similar tendency reflected in health behaviour (causal — consequential relationship between attitude formation and health behaviour) — statistically significant, but weak or very weak impact of internet portals, social media and influencers is found on consumer health behaviour. Even more — when consumers deal with serious health risks, they are likely to verify all the information they get from the internet, social media, and influencers. The analysis of the results has shown, that consumers receive a lot of reliable information about health from doctors, pharmacists or in health seminars. This implies, that health behaviour is related to the consumer's responsible attitude towards health and the sensitivity of the topic. That is why the information channels — the internet, social media and influencers — are likely to have a more significant impact in other, not-so-sensitive, fields, e.g., in the fields of beauty, aesthetics and plastic surgery. It seems like specialists (doctors, pharmacists) might be more reliable attitude formators towards health. These are guidelines for further research.

Evaluating HPBs, a statistically significant strongest correlation is observed between HPBs and information from social media and influencers. Perhaps this would suggest more comprehensive research about the possibilities to use social media and influencers for consumer health education, and health literacy, that, possibly, could increase their influence on HPBs.

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