The Attitude of Generation Z Consumers Towards Nutritional Supplements: Cognitive Aspects

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Abstract: The paper focuses on the segment of dietary supplements and Generation Z's attitudes toward them, with an emphasis on the cognitive aspect. The objective of the presented article is to examine the current attitudes and perceptions of dietary supplements among Gen Z in Slovakia, specifically emphasizing the cognitive dimension. The study is supported by primary research involving 188 Gen Z respondents from Slovakia. The methodology employs an exploratory approach using descriptive statistics. To identify latent factors, exploratory factor analysis is utilized, with an evaluation of the applicability and quality of its outputs. The findings indicate a generally high level of cognitive engagement in attitudes, suggesting good awareness of dietary supplements within the studied cohort. Typologically, offline communication emerges as the most trusted source of information for this cohort in the given area.

Keywords: Nutritional Supplements, Attitude, Generation Z, Cognitive Aspects

JEL Classification codes: D91; M31

INTRODUCTION

Nutritional supplements can simply be understood as concentrated sources of nutrients or other substances with a nutritional or physiological effect, which serve to supplement and enrich the normal diet in order to improve health and physical and/or psychological balance. Currently, a trend of increasing interest in these products can be observed (Lordan, 2021); therefore, it is necessary to pay more attention to them.

Within attitudes, the cognitive and affective components are important. While the affective component is oriented towards emotions, the cognitive component is oriented towards knowledge and rationality, with both components achieving a high degree of nexus (Čvirik, 2020). Cognitive aspects such as awareness of health benefits, trust in brands, and understanding the composition and effects of products play a key role. In our article, we focus on the knowledge base, which is quite fragile in the era of hoaxes, distorted information, and fake news (Soon, 2020). It is Generation Z that can be subject to false information, which can also have significant health risks in the case of nutritional supplements.

The aim of the presented article is to investigate the current attitude and perception of Generation Z in Slovakia toward nutritional supplements with an emphasis on the cognitive aspect. In more detail in the article, we focus on understanding the differences between nutritional supplements and drugs, understanding the use/benefits of selected categories of

nutritional supplements, and also the information sources that Generation Z uses in the field of supplementation.

The presented paper bases its results on primary research. This primary survey has the character of basic research, while it can be described as a pilot, which will bring basic knowledge and direction for further scientific research. The results indicate the awareness and information of Generation Z, while the source of this information is primarily personal contact and not online communication. This difference from the expected results can be explained primarily by the specificity of the investigated product and its direct impact on health, as well as possible changes in the behaviour and thinking of consumers after COVID-19.

1 LITERATURE REVIEW

In recent years, it is possible to observe a trend where nutritional supplements are often perceived as an alternative to drugs (Webb, 2007), especially as part of prevention. Motivated by the desire to avoid the side effects of medication, many people turn to supplements in the hope of a more natural solution. This phenomenon is also supported by intensive marketing, which sometimes presents nutritional supplements as almost miraculous products for solving various health problems. On the other hand, drug consumption as a whole continues to grow (Ransley et al., 2001; Thompson, 2004). The reason may be macro-trends, such as the ageing of the population, increased diagnosis of chronic diseases, and greater availability of medicines. The substitution of drugs for nutritional supplements is also complicated by regulation and supervision, when drugs are subject to significantly higher standards, which can increase the risk for some consumers that their health problems will not be adequately addressed, which can lead to a worsening of the condition (Eichhorn et al., 2011; White, 2020). In this context, the perception of Generation Z, which can be described as a generation with better access to information, is questionable (Dolot, 2018).

The text implies the need to investigate the research question:

- RQ1: How do consumers of Generation Z perceive the conceptual nexus between nutritional supplements and drugs?

Information and knowledge, i.e., cognitive aspects of consumer behaviour, play a key role in attitudes as well as in perception (Čvirik, 2020). For the best findings in connection with certain elements, it is advisable to use association tests using the recall method (Carlson, 1954). In the case of nutritional supplements, it is an examination of the associations that are associated with those supplements. Vitamins, minerals, and healthy fats—omega acids—can be identified as the most frequently used dietary supplements: fat burners, amino acids, proteins, and creatines, collagens, and probiotics (Mueller & Hingst, 2013; Alamgir, 2018; Tirla et al., 2022), with each group of supplements responsible for different effects and benefits for human health. It is crucial that consumers understand the basic benefits that the product (nutritional supplement) brings when buying, which is largely influenced by their cognitive base, which serves as a subsequent decision-making element about the need and eventual purchase.

The text shows the need to examine the research question:

- RQ2: What cognitive elements are associated with the selected types of nutritional supplements in the studied cohort?

It can be concluded that Generation Z communicates and obtains information differently than previous generations (Bencsik et al., 2016; Raslie, 2021), which must also be reflected in the cognitive basis of their attitudes. Within the framework of information sources, several potential ones can be identified (Shankar et al., 2022), while in the context of behavioural intentions and the subject of the problem, these sources can change; therefore, it is important

to examine these information sources in specific situations. It is also important to realise that Generation Z is overwhelmed by information sources, and therefore, a certain categorisation of these sources may arise based on prioritisation, when a certain category may be perceived as more important in fulfilling the cognitive aspects of attitudes (Čvirik, 2020).

The text implies the need to examine the research question:

- RQ3: What typologies of information sources does the studied cohort use?

2 METHODOLOGY

The literature review was conducted based on scientific and professional articles predominantly indexed in the SCOPUS and WOS databases to ensure a high level of knowledge base using analysis and research methods. The paper is supported by primary research involving 188 respondents. These respondents were from Slovakia and belonged to the Generation Z cohort, defined as individuals born between 1995 and 2009 (Naďová Krošláková et al., 2024). The survey was carried out between Q3/2023 and Q1/2024 using online data collection (CAWI), with social media platforms, commonly frequented by the studied cohort, being the primary distribution channels (Elkatmış, 2024). The average age of respondents was 22 years, with the majority being women (approximately 75%). Women represent the main segment of dietary supplement purchases due to higher health consciousness and greater attention to personal health (Čvirik, 2021; Louca et al., 2021; Topolska et al., 2021). The questionnaire consisted of three main sections. The first section focused on exploring the potential substitution of the terms "medicine" and "dietary supplement," investigating respondents' perceptions using four statements assessed on a five-point Likert scale, a significant tool in attitude research. These statements targeted key areas, namely the perceived differences between these terms, the need for a medical prescription, and the user framework. The second section examined the association of selected types of dietary supplements with their benefits. The final section explored the significance of communication and information sources in the domain of dietary supplements.

It is necessary to note that the sample is a convenience sample, which presents certain limitations. However, even such a sample in basic research can contribute to advancing science and the knowledge base (Doebel & Frank, 2024; Sherman, 2024). A range of statistical methods is applied in the paper to better understand the current situation, with the aim of providing objective results. The results were processed primarily using an exploratory approach, which is appropriate for the sample and the research objectives and conclusions. Descriptive statistics were employed, with an emphasis on measures of central tendency to explain the state of the studied phenomena (Csenkeyová & Čvirik, 2023). Frequency analysis was also emphasised to better understand respondents' choices. Exploratory factor analysis (EFA) was used to investigate latent variables. The study follows professional guidelines and best practices (Watkins et al., 2018; Čvirik, 2024). Initially, the suitability of EFA was evaluated using the Kaiser-Meyer-Olkin test (KMO) criterion, which is recommended to exceed 0.6, and Bartlett's Test, which is expected to be significant (Field, 2018). Parallel analysis was employed to determine the number of factors, and it currently has the best simulation results (Hayton et al., 2004). Additionally, the quality of the model was assessed using indices such as the Standardised Root Mean Squared Residual (SRMR — recommended value below 0.06) and the Comparative Fit Index (CFI — recommended value above 0.9), both of which are widely used in structural equation modelling (Xia & Yang, 2019; Pavlov et al., 2021; Kita et al., 2024).

3 RESULTS AND DISCUSSION

- RQ1: How do consumers of Generation Z perceive the conceptual nexus between nutritional supplements and drugs?

In order to answer the research question, the respondents responded to four statements using a Likert scale (1 - completely disagree, 5 - completely agree). We evaluated the results with the help of descriptive statistics in Tab. 1.

Tab. 1 Perception of the differences between a drug and a nutritional supplement

Descriptive Statistics	Valid	Median	Min	Max
There is a difference between a nutritional supplement and a drug.	188	5	2	5
I can get a nutritional supplement without a doctor's prescription.	188	5	2	5
A nutritional supplement is not a medicine.	188	5	1	5
A nutritional supplement should only be used by a healthy person.	188	2	1	5

Source: Own processing

The results indicate that the respondents have very good information and knowledge base. As we can see, respondents reflect differences in concepts. It can also be expected that the respondents perceive the nutritional supplement as a tool for prevention, as they do not think that it serves only to maintain health, but can also serve as a tool to support treatment. In practice, one may encounter a confusion of these concepts, which leads to a disparity in expectations as well as possible risks of health deterioration and low health awareness (Bischoff-Ferrari et al., 2020; Kamarli Altun et al., 2021). However, the respondents demonstrated a good cognitive level, while Generation Z is characterised by good information (Szymkowiak et al., 2021).

- RQ2: What cognitive elements are associated with the selected types of nutritional supplements in the studied cohort?

Within the selected nutritional supplements, we examined seven groups (vitamins, minerals, healthy fats — omega acids, fat burners, amino acids, proteins, creatines, collagens, probiotics). The first group represented vitamins. It can be concluded that a considerable majority of respondents (95%). This reasoning is logical and taken as a general fact, while it is this supplement that primarily demonstrates the given benefit, and especially after COVID-19, there has been more talk about prevention in the context of vitamin D (Vyas et al., 2021). Respondents associated minerals equally with prevention (33.5%) but mainly with fatigue and exhaustion (47.3%), while this may be mainly due to the general awareness of Generation Z, which suffers from a lack of minerals that are consumed in the event of persistent stress and by default mainly recommends magnesium supplementation (Akram et al., 2020). Respondents associate healthy fats mainly with prevention within the framework of immunity support (39.4%) but also with digestion and improvement of metabolic functions (28.2%). It is interesting that the respondents do not associate fat burners with weight loss (2%) but mostly with digestion and metabolic systems (44.2%) and improvement of sports performance and beauty (38%). Amino acids, proteins, and creatine are mostly associated with sports performance (67.6%). Collagen has the primary function of protecting joints, but given the current trend, it is perceived by respondents as a means of improving appearance (55.9%) rather than as an element of physical performance (17%). Probiotics are associated with digestion (48.5%), which is again a logical association. In general, it can be stated that the respondents have a good cognitive base. The associations are logical and correspond to the expected state.

- RQ3: What typologies of information sources does the studied cohort use?

When researching information sources oriented to nutritional supplements, we examined thirteen possible information sources, namely e-mail, teleshopping, telemarketing, leaflets, influencers, sponsorship, competitions, tastings, discounts, social networks, internet, places of sale, product packaging and recommendation from a friend (word of mouth).

First of all, it is worth noting that, considering the median values, the most important sources are recommendations from a friend and the Internet. It is logical that Generation Z uses the Internet to a large extent as a source of information (Szymkowiak et al., 2021). Also, the reference potential in the form of word of mouth represents an important source of information (Pillay, 2021; Salsabila et al., 2023), which also applies within the framework of nutritional supplements.

However, our effort was to understand the typology of resource use. Therefore, we used EFA according to general recommendations for the analysis of the identification of latent factors. The verification of the assumptions of the use of the analysis can be documented both by the KMO criterion (MSA = 0.788) and by the significance of Bartlett's Test (alpha = 0.05; p-value = 1.16x10-126). For the purposes of factor analysis, we used the principal axis factoring (PAF) method, which is appropriate given the nature of the data. In the paper, we use an automated criterion in the form of parallel analysis to determine the number of factors. Since the initial solutions were not sufficient, we used rotation. Due to the expected correlation of the factors (their connection and continuity), we used oblique rotation (promax). We recorded the results in Tab. 2.

Tab. 2 EFA result based on factor loadings

Factor Loadings	Factor 1	Factor 2	Factor 3	Factor 4
E-mail	0.82			
Teleshopping, telemarketing	0.67			
Leaflets	0.64			
Influencers	0.46		0.71	
Sponsorship	0.43			
Competitions		0.91		
Tastings		0.68		
Discounts		0.65		
Social networks			0.92	
Internet			0.48	
Places of sale				0.92
Product packaging				0.7
Recommendation from a friend				0.4

Note: Only factor loadings with a value greater than 0.4 are shown for better clarity
Source: Own processing

As can be seen (Tab. 2), the existence of four factors can be established. Due to the nature of the sources of the first factor (e-mail, teleshopping, telemarketing, flyers and sponsoring), this source can be labelled as "supporting marketing channels." The second latent factor (competitions, tastings, and discounts) can be called the "sales promotion" factor. The third factor (influencer, social networks, Internet) can be described as the factor of "online

communication," and the last factor (place of sale, packaging, recommendation from a friend) represents the factor of "classic, i.e., offline marketing communication." The presented model explains 57.4% of data variability, which can be considered acceptable. Also, the Structural Equation Modeling (SEM) quality indicators point to a good explanatory power of the given model (SRMR = 0.03; CFI = 0.949). There are small to moderately strong positive correlations between the factors. This knowledge confirms the choice of oblique rotation. At the same time, it points to the connection of individual typologies. It is worth mentioning the source—influencer. As we can see, the influencer has a certain tendency to also belong to factor 1. It may be a certain oversaturation of influencers within the researched area when they are perceived in the context of sponsorship and thus lose a certain influence and importance in decision-making (Lee & Kim, 2020).

It can be concluded that, in terms of the identified latent factors, factor four has a significant effect (perceived importance), which indicates the trend of offline communication in the studied cohort. It is a rather surprising result when online communication, which is the basis of Generation Z (Duffett, 2020; Munsch, 2021), is only in second place. The nutritional supplements segment may be specific, where the studied cohort prefers recommendations from acquaintances and at the point of sale, as well as information on the packaging, while the offline world appears to be more trustworthy (Tolstikova et al., 2020).

CONCLUSION

As the literature review indicates, the issue of nutritional supplements is topical and needs to be addressed from different perspectives, as it represents an interdisciplinary topic. The paper aims to investigate the current attitude and perception of Generation Z in Slovakia toward nutritional supplements with an emphasis on the cognitive aspect.

The results of the paper focus on three areas: (1) understanding the difference between drugs and nutritional supplements; (2) understanding the effects/benefits that these nutritional supplements offer; and (3) understanding what communication resources can be used to educate and inform Generation Z in this area.

It can be concluded that the respondents generally have a good understanding of the differences between a drug and a nutritional supplement. Of course, in terms of variability in the data, it is necessary to state that we also register those who need to improve their cognitive base. Here, it is appropriate to mention the possibility of education and better informing consumers, which will be reflected in the increase of cognitive aspects of attitudes and thus the rationalisation and optimisation of their decision-making.

Also, most respondents associate nutritional supplements with their demonstrable benefits. Thus, consumers do not have exaggerated expectations and optimise the consumption of nutritional supplements. Within the typologies of information sources, we identified four categories, while offline communication appears to be the most effective, which includes personal communication with friends, family, and acquaintances, but also experts at the point of sale and self-evaluation based on the information on the packaging. It is therefore appropriate to recommend communicating with the help of these tools.

The article also contains certain limits. One of them is the sample itself, which has limited interpretation possibilities. However, the results offer the possibility of discussion and a direction for solving this problem in the future. We are also focusing only on Generation Z. Although this generation is vulnerable, in the future it would be appropriate to examine other generations as well, while older generations, such as baby boomers, can be vulnerable as well.

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