ISSN 1648-0627 / eISSN 1822-4202

VILNIUS TECH
Vilnius Gediminas Technical University

BUSINESS: THEORY & PRACTICE

2025
Volume 26
Issue 2
Pages 435–449
https://doi.org/10.3846/btp.2025.23387

INTENTIONS TO CONSUME DIETARY SUPPLEMENTS AMONG GEN Y: EXTENDED PLANNED BEHAVIOUR MODEL

Chutima CHAICHANA[1], Sebastian KOT[2, 3], Bilal KHALID[1], Singha CHAVEESUK[1]✉

[1]*KMITL Business School, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*
[2]*Faculty of Management, Czestochowa University of Technology, Czestochowa, Poland*
[3]*Faculty of Economic Sciences and IT, North-West University, Vaal Triangle, South Africa*

Article History:
- received 23 February 2025
- accepted 19 August 2025

Abstract. The attention drawn by COVID-19 in terms of health improvement has included usage of dietary supplements; it is viewed as a means of boosting immune systems and hence supporting a better overall physical condition, The research intends to establish the determining aspects of the intention to consume dietary supplements among those of Gen Y. Extended theory of planned behavior was adopted to develop the framework for this study. The empirical study used primary data generated from Gen Y individuals aware of their consumption. A total of 449 respondents were collected and data were analyzed using structural equation modeling (SEM). The results indicated five positive and significant influences on the consumption of dietary supplements by Gen Y: the perceived behavioral control over the use of supplements; need for supplement consumption; health information-seeking behavior; perceived social pressure; and trust in the supplement brand. It is evident that attitude toward dietary supplements significantly mediates the relationship between the social media subjective norm and health information seeking and the intention to consume the dietary supplements. Despite increasing studies on dietary supplement consumption, not much has been done on the aspects influencing intention to consume dietary supplements on the part of Gen Y.

Keywords: dietary supplements, Gen Y, health supplements, health information, planned behavior model, dietary supplement consumption, structural equation modeling.

JEL Classification: D91, I12, M31.

✉Corresponding author. E-mail: ***singha.ch@kmitl.ac.th***

1. Introduction

The utility of dietary supplements such as minerals, probiotics, and vitamins, has exponentially grown among Generation Y (Millennials); since the start of the COVID-19 pandemic, nearly half of Millennials globally, especially in developed societies (Leap, 2023), increasing their consumption of dietary supplements post-pandemic as immune boosters and support their overall physical health (Dimitrova & Ilieva, 2021; Fanzo et al., 2023). The global sales of dietary supplements were said to have increased by approximately 22% during 2020 – the pandemic year-while growth was slowing to only about 4.1% in 2022 (Council for Responsible Nutrition [CRN], 2016). Generation Y is believed to be increasingly drawn to dietary supplements on account of an increasing awareness about health issues. The pandemic acted as a negative to the consumers but at the same time stimulated paradigm shifts to how people look at their health (Albarracin et al., 2024; Rizwan Khan et al., 2024). We now see many interest-driven Millennials moving toward dietary supplements aimed at the physical and mental well-being space with mood-enhancement ingredients (Dabija et al., 2023; Dogra & Kaushal, 2024; Sharma et al., 2014).

An increasing number of adults are taking nutritional supplements, as for most of them, preventive care comes up with the use of supplements. As Aliyu explains, "healthy nutrition and body weight are health protective concerns for individuals" (Aliyu et al., 2020). Today, many of these are health-conscious adults who have developed new habits because of COVID, and it will be those therapies and dietary supplements intended to prevent infections (Dabija et al., 2023; Dogra & Kaushal, 2024). The heightened consumption of dietary supplements by the millennial generation has turned several health considerations into center stage as health, in general, has gained importance (Rossi

et al., 2022). So, different dietary supplements contain different nutrients which may help improve health. Calcium in some dietary supplements is said to enhance bone health while vitamins, for example, C and E, serve as antioxidants and therefore prevent cell damage, enhancing health in general. Dietary supplements are also thought to improve physical performance by way of muscle development, exercise, and delaying fatigue (Brzezińska et al., 2020; Stevens et al., 2017). The enhancement of cognitive function and lowering cardiovascular disease risk are some other benefits of dietary supplements for individuals (Stavrinou et al., 2020). However, lots of considerations should be made while consuming dietary supplements since they can be potentially hazardous for persons with some medical problems. Use of some supplements may sometimes counteract the therapeutic effect of various medications, especially where an individual has already been prescribed certain medication (Chiba, 2023; Barretto et al., 2024; Jabbari et al., 2024).

The Theory of Planned Behavior (TPB) can be applied to accounting for the behavioral tendencies of Generation Y individuals' intention to use dietary supplements; all factors of an individual's behavioral aspects, such as attitudes, subjective norms, and perceived behavioral control, determine how one behaves (Pawlak et al., 2008; Bosnjak et al., 2020; Li et al., 2024; Tan et al., 2022; Veckalne et al., 2023). This is confirmed by El Khoury et al. (2023) in that attitude toward comparatives underlies subjective norms and perceived behavioral control when it comes to intent toward the use of dietary supplements, whereas Millennials are likely to associate intake of those supplements or tablets with looking and feeling good. It is one of the determinants of the high intention rate to consume these nutrients as typical representatives of commitment toward consumption among Gen Y individuals. While numerous studies have over the years examined individuals' intentions to use dietary supplements (McDonald & Nicholson, 2005; Alami et al., 2019; Lenssen et al., 2022; Ha et al., 2023; Bayır et al., 2024), there is a dearth of research that specifically explores Generation Y's intentions within the Theory of Planned Behavior (TPB) framework. Yeo et al. (2023) explored the intention to purchase dietary supplements among young people; it does not explore the determinants within the TPB theory. The objectives of this study explored the intentions of Millennials to consume dietary supplements within the TPB framework and to analyze the determining factors such as attitude, social media norms, perceived need, information-seeking behavior, and perceived behavioral control. The objectives are codified thus;

1. To explore the intentions of Millennials to consume dietary supplements within the Theory of Planned Behavior (TPB) framework.
2. To analyze the determining factors (attitude, social pressure, perceived need, information-seeking behavior, and perceived behavioral control) influencing these intentions.

The Gen Y population of Thailand is a significant demographic that make up about 40% of the Thai population, hence making the study very critical. Walker (2024) informs that they prioritize their career and personal life which includes wellness and health. However, few researches have quantitatively examined dietary supplement consumption among Thailand's Generation Y (Bundechanan & Fongsuwan, 2017; Wongthahan et al., 2024). Furthermore, most past dietary supplement research has focused on Western supplement intake (Lenssen et al., 2022; Szot et al., 2022; Dabija et al., 2023; Dogra & Kaushal, 2024). Thus, there is a scarcity of research on the dietary supplement utilization of Thai Gen Y consumers. By virtue of cultural variations, Thai Gen Y demographics should vary from those from the West. Prior studies are in concordance regarding the influence of Gen Y as the population with the largest consumer purchasing power in Thailand (Cichocka et al., 2020; Teangsompong & Sawangproh, 2024; Waiyachote, 2024). The study will benefit several stakeholders, including, healthcare professionals, including physicians, registered dieticians, and other providers, who will use the results to provide evidence-based recommendations to young people about dietary supplements.

The organization of the rest of the paper follows the following structure: firstly, a literature review that explores the use of dietary supplements among Gen Y and applies the theory of planned behavior in health research and the conceptual framework, adapting the extended theory of planned behavior to this study's context. The methodology follows, which includes a detailed survey approach to test the study hypotheses. The results and analysis which include descriptive statistics, model fitness, and hypothesis analysis follows, before the discussion of the key findings. Finally, we conclude the paper by summarizing the key findings and their implications for understanding Gen Y's intentions to consume dietary supplements.

2. Methodology and theoretical framework

2.1. Understanding Gen Y relationships with dietary supplements

Food and dietary supplements have been used to support the general health and long-term well-being of individuals; dietary supplements are a general class of items including dietary components comprising mainly of minerals and vitamins either used alone or in combination (Yeo et al., 2023). Classed based on their nature or use, they are supposed to be eaten to augment one's diet and meet basic nutritional requirements (Jumriani et al., 2022; Hoang, 2023; Lordan, 2021). This could be some of the smaller reasons why people take nutritional supplements: for the right nutrition, for protection against diseases of aging, and to conserve important cells in the body (Djaoudene et al., 2023; Rautiainen et al., 2016); the pandemic that broke out in 2020 influenced people to turn toward dietary supplements, with many wanting to augment their immune systems. These developments have opened and

increased new entry markets and sales in the supplement business (Lin et al., 2024). About 2031, it is estimated that more than $70 billion would be generated from the dietary supplement market. This indicates a significant increase compared to the approximately $43 billion in 2022 (Mikulic, 2024).

The worldwide dietary supplements industry was worth $156.89 billion in 2022 and is expected to expand 7.5% (Emergen Research, 2023); Gen Y are increasingly using nutritional supplements due to their popularity (Alotaibi et al., 2024). Moreover, previous research indicated that the prevalence of herbal and dietary supplement use among young people is greatest among those engaged in high-risk behaviors, including smoking and alcohol consumption (Pacifici et al., 2016; Piórecka et al., 2022; Purba et al., 2023; Wirnitzer et al., 2022). Multiple research has shown that Gen Y engaged in athletics have a greater propensity for using dietary supplements (CRN, 2016; Conley & Lusk, 2019; Martinčić et al., 2022; Ireland, 2023; Mintel, 2023); consequently, dietary supplements are intended to fulfil the balanced nutritional requirements of Gen Y (Alfieri & Mazzeo, 2023; Huang et al., 2024).

Other studies have identified that individuals with a higher flexibility based on their monthly income are most likely to consume dietary supplements (Elsahoryi et al., 2023; Lwakatare & Mlimbila, 2023; Huang et al., 2024); this is keeping in mind that dietary supplement usage among affluent people is three times that of economically disadvantaged people (Piórecka et al., 2022; Amer et al., 2024). This indicates a positive correlation between income and the share of dietary supplement intake. Nevertheless, there is little data regarding the correlation between income and the Gen Y to buy dietary supplements. The motivations of Gen Y in acquiring dietary supplements are varied. Therefore, understanding their motivations for using dietary supplements will be beneficial in promoting a better lifestyle among this demographic.

2.2. Theoretical framework

Theory of Planned Behavior (TPAB) in health behavior research

The theory of planned behavior explains the intention of individuals to exhibit a particular behavior at a specific time and place (Ajzen, 1991); the theory is based on the idea of behavioral intent, where various other factors, including attitude, influence behavioral intentions. In healthcare, the theory of planned behaviour is often used to predict and explain various outcomes of health behaviors. The theory model comprises various constructs that highlight the individual's behavioral intentions, including attitudes, behavioural intentions, subjective norms, social norms, perceived power, and perceived behavioral control (Conner et al., 2001). Thus, the theory of planned behavior could be used to predict behaviour intentions to use dietary supplements.

Perceived social pressure

The perceived social pressure construct in the TPB theory involves the individuals' belief on whether a particular behaviour would be approved or disapproved by the public (Kan & Fabrigar, 2017; Ho et al., 2022). Masur et al. (2021) opines that social subjective norms are significant influences on human behaviour in both offline and online social environments. Misirlis et al. (2021) is of the view that social pressure behaviour can be modelled by the agreeable and subjective norms that eventually guide the belief of the user toward a particular behaviour. Physical interaction forms much less of social normative influences affecting dietary behavior as proposed by Leroy et al. (2021); these effects include social media, peer influence, and societal trends – recognized as very important in informing the attitudes and behaviors of the youths. The reason behind this popularity is that of the nature of social norms such as peer influences and societal trends which are usually perpetuated on social media. Thus, food companies and dietary supplement businesses use such platforms as Facebook and Instagram to advertise their products and sometimes create brands promoted by social media influencers and trends that specifically target the audience (Hamid et al., 2016; Marinova et al., 2022). Such market behaviour is likely to influence the Millennials' use of supplements, where they are marketed as healthy alternatives to wellness. The following hypothesis was developed as a result:

H1: Perceived social pressure significantly influences the intention to consume dietary supplements by Gen Y population.

Perceived behavioral control

The Theory of Planned Behavior considers the construct of perceived behavioral control consists of the individual's beliefs regarding the ease and difficulty with which a specific behavior may be performed (Rossi et al., 2022; Leong et al., 2023; Li et al., 2024). In this respect, Haubenstricker et al. (2023) discusses several factors causing perceived behavioral control in supplement use, including direct factors of purchase ease, availability, and affordability. The TPB thus allows for the prediction of the intention to use dietary supplements among Millennials through factors such as purchase ease, availability, and affordability of the supplements (Hoseini et al., 2021); hence, the following hypothesis:

H2: Perceived behavioural control has significant influence on intention to consume dietary supplements by Gen Y population.

Perceived supplement value

The perceived value is directly attached to the health benefits obtained from the supplements consumption (Azila Mohd Noor et al., 2014; Albornoz et al., 2024). Those who tend to believe that dietary supplements are intended to improve their wellness, energy, or performance usually buy and consume these products (Szot et al., 2022; Es-

peño et al., 2024). Chiou et al. (2011) suggest that the cost of taking supplements is often weighed against the expected benefits. The benefits seem to be overwhelming, if they really are, in which case the cost pales in importance. This applies especially to supplements with advertisements portraying them as essential for long-term health or for some specific health outcomes. As such, the following hypothesis was developed.

H3: Perceived supplement value significantly influence intention to consume dietary supplements by Gen Y (Millenials).

Attitude towards dietary supplements

According to the theory of planned behaviour, the construct of attitude includes the extent to which a positive or negative evaluation of an attitude object will be made by an individual. Wathanakom (2023) describes that dietary supplements are used by Millennials based on specific needs that range from cognitive function through beauty and immunity, among other needs. Thus, marketing-related dynamics would lead to the use of supplements for various reasons, including health-related concerns and personal well-being. Hence, depending on the benefits toward their underlying needs of concern from health issues and wellness improvement, one can thus develop a favourable or unfavourable attitude concerning such supplements (Lenssen et al., 2022; Sheeran et al., 2017). This review has led to the development of the following hypothesis:

H4: The attitude towards dietary supplements has significant influence on intention to consume dietary supplements by Gen Y (Millennials).

H9a-d: Attitude towards dietary supplements significantly mediated the effects of; perceived behavioural control, perceived supplement value, perceived supplement risk, health information seeking, and trust in supplement brand, on intention to consume dietary supplements.

Perceived supplement necessity

The perceived need for supplements falls under the perceived power construct of the theory of planned behavior (Chauhan et al., 2017; Chiba et al., 2021). The construct refers to a behavior pattern that is influenced by the presence of factors that promote or impede the depiction of a particular behaviour. Thus, while exploring the intentions for dietary supplement use among Millennials, the perceived need for supplements, including the need for health wellness, will act as the power that would contribute to their perceived behavior depictions. Scholars contend people who recognize and feel a need for dietary supplements, particularly for health purposes, are more inclined to aim to use them (Chauhan et al., 2017). Sobari et al. (2019) avers that the increased awareness about health among Millennials influences the intention to use dietary supplements. The following hypothesis was developed:

H5: Perceived supplement necessity has a significant influence on the intention to consume dietary supplements by Gen Y population.

Health information seeking

Generation Y individuals are highly informed and can access information regarding health and wellness through the Internet (Papp-Zipernovszky et al., 2021; Park et al., 2023). Jia et al. (2021) clarifies that supplement usage is directly associated with internet use for health information. Indeed, individuals with online health information-seeking behavior are likely to be positively influenced by the health information and consequently increase their intention to use dietary supplements (Pang et al., 2014; Silver & Johnson, 2023; Wierzejska, 2021). Advancements in technology and social media platforms provide the platform for seeking health information, which in turn influences consumers' behaviour towards the use of dietary supplements. From this, the following hypothesis was proposed:

H6: Health information seeking behavior significantly influences the intention to consume dietary supplements by Gen Y.

Trust in supplement brand

Health represents a major aspect that brand trust affects along the entire consumer process: factor analysis sponsored by the afore-cited investigators confirms this assertion in health and wellness (Ha et al., 2019; Sobari et al., 2019; Merwid-Ląd et al., 2022). Variables dealt with from brands that confront consumer opinion in purchase decisions embrace transparency, goodwill, and social responsibility (Guanqi & Nisa, 2023; Firoozzare et al., 2024). Several characteristics common among Gen Y – a really big consumer group with peculiar must-be characteristics and preferences-make them align themselves with brands that mind what is being said about them. This would maximize purchase decisions when the brands are viewed as disclosing adequate information relevant to their product content, sourcing, or manufacturing process (Kolady et al., 2019; Sansome et al., 2023). Hence, if they trust a brand, they will most likely adopt the brand products into their daily habits (Jiménez Correa et al., 2021; Liu & Wang, 2023); this gave rise to the following hypothesis:

H7: Trust in supplement brand has a significant influence on intention to consume dietary supplements by Gen Y population.

Perceived supplement risk

The conception of dietary supplements is very capable of determining one's choice of diet (Merwid-Ląd et al., 2022). Those who put supplements at a very high risk level would most probably think it wise to be more cautious in their dietary choices, by either not including supplements in their diets at all, or only choosing alternative nutritional sources (Łukiewska, 2019; Pereira Filho et al., 2024). Considering the generation, Gen Y, which is environmentally

inclined, will prefer organic and natural food items, taking medicines that are perceived as risky is troublesome for them. They may even think that a supplement has risks of adverse effects and tend to reject taking the dietary supplement (Dziuba & Szczrba, 2023; Miah, 2024; Sharp & Synodinos, 2024). Therefore, this hypothesis was formulated:

H8: Perceived supplement risk has a significant influence on the intention to consume dietary supplements by Gen Y population.

2.3. Conceptual framework

The research adopted the theory of planned behaviour, with adjusted extended variables to suit the study context. They will comprise of seven independent variables namely – perceived social pressure, perceived behavioural control, perceived supplement value, perceived supplement necessity, health information seeking, trust in supplement brand, and perceived supplement risk. The mediating variable is attitude towards dietary supplements, while the dependent variable is intention to consume dietary supplements. This is pictorially captured in Figure 1.

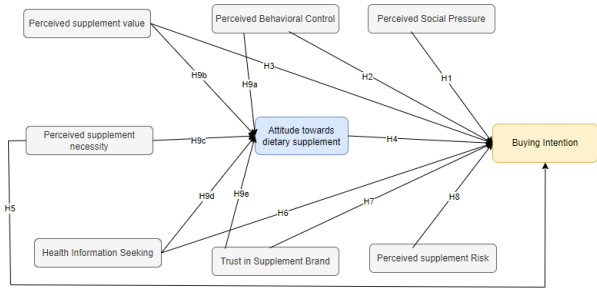

Figure 1. Conceptual framework

2.4. Methods – sample collection

The study employs a survey research design, utilizing the extended theory of planned behavior model, to test the study hypotheses and explore the factors that motivate Gen Y individuals to take dietary supplements. The approach involved the collection of primary quantitative data from the respondents, who meet the inclusion criteria of being members of Gen Y. For the purpose of this study, Gen Y is defined as individuals born between 1981 and 1996. Because this study location was Thailand, it focused on Millennials who are either familiar with or have consumed dietary supplements. Given the size of this population, selecting a representative sample is crucial. The sample size was calculated using Hair et al. (2010) recommendations about items on the data collection instrument, stability and generalizability of the model, and population characteristics. They recommended a minimum of 5 to 10 respondents per item. We used a maximum of 10 respondents per item because of the diverse characteristics and behavioral traits of the study population (Thailand Gen Y population) and to account for the data stability and generalizability.

The study had 42 items, hence a minimum population of 420. To ensure the representativeness of the sample (across different cities in Thailand), the researchers increased the sample size to a minimum of 500 respondents which is still within the limits of Hair et al. (2010) recommendations. The study adopted a combination of sampling techniques to select as representative sample as possible. For a representative regional response, clusters of five major cities in Thailand – Bangkok, Chiang Mai, Khon Kaen, Phuket and Pattaya – were selected. From each of these cities, the respondents were randomly selected, making sure they met the required threshold of (1) being a Millennial (Gen Y) and (2) have experience with dietary supplements.

The data was collected using a structured questionnaire, as the research instrument. The questionnaire was based on the TPB model, incorporating established scales to measure the variables. The first section captures the demographic characteristics of the respondents such as age, gender, education level, supplements experience etc. the second section comprise of questions developed to answer latent variables. For the case of latent variables questions/items, the questionnaire adopted the 5-point Likert scale, where 1 – strongly disagree and 5 – strongly agree. The questionnaire was developed using Google Forms. The participants were invited to participate in the study through various forms including emails, social media advertisements, and other online forums. Before conducting the actual data collection, a pilot test with a small sample to assess the questionnaire's effectiveness, identify any technical issues, and refine the instrument before full-scale data collection was done. From the minimum of 500 targeted sample of the study, 449 valid responses were recorded from the respondents, for a response rate of 89.8% which is considered excellent. Researchers have averred that no definitive criteria exist for categorizing a high response rate; nonetheless, a rate of 80% or over is deemed exceptional. High response rates are a critical characteristic of a high-quality project, needed for producing valid, reliable, and universally accepted outcomes in research (Booker et al., 2021; Wu et al., 2022).

The development of the study instrument consulted various sources. The items perceived social pressure was obtained from Ajzen and Driver (1992) and Wang et al. (2024). Perceived behaviour control was obtained from Ajzen and Driver (1992), and Peña-García et al. (2020). Perceived supplement necessity was obtained from Lin (2016) and Wong et al. (2021). Trust in supplements was obtained from Tzeng and Ho (2022), and Tran et al. (2024). Perceived supplement value was obtained from Kamboj and Kishor (2022) and Albornoz et al. (2024). Behavioral intention was obtained from Ajzen and Driver (1992), Wang et al. (2024) and Michaelidou and Hassan (2008). Health information seeking behaviour questions were developed with reference to Eysenbach et al. (2002), Bates et al. (2006), and Silver and Johnson (2023).

The data analysis employed various techniques; the first data analysis obtained was the descriptive statistics.

The analysis was used to evaluate the characteristics of the study respondents, such as age, gender, marital status etc. The next analysis was the model fitness where indices like Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) where used to assess model fit and compare alternative models. The confirmatory factor analysis (CFA) was applied to assess the underlying structure of the questionnaire and confirm if the measured variables accurately represent the proposed model constructs. Structural equation modeling was adopted to evaluate the study hypothesis; this was done by analyzing the relationships between latent variables.

3. Results of the research

The results of the study analysis were conducted in this section. The analysis results presented include descriptive statistics, model fitness analysis, and hypothesis analysis results.

Demographic results

The demographic analysis was conducted to evaluate the characteristics of the respondents (see Table 1). The results indicated that for gender, majority were the male (52.3%) while others (LGBTQ+) (3.8%). The respondents were also asked their highest education levels. Majority were those with bachelor's degree (45.7%) followed by those with High School/Diploma comprising of 24.3%. The least education level was those with Junior High School/Lower qualification with 14.9%.

Considering whether they take supplements on not, where the majority indicate that they take supplements (94.2%). The study went further to evaluate how long they have been using supplements, where the majority indicated that they had used them for 1–3 years (43%), followed by those who has used for more than 3 years (25.8%). The respondents were asked the primary reason why they considered taking dietary supplements. Majority indicated they wanted to address specific health concern (28.5%), followed by those that want to improve overall health and well-being (27.6%).

Model evaluation

The other analysis that was conducted was the model evaluation. The first model evaluation was the model fitness to the data. This was done by conducting the confirmatory factor analysis (CFA).

The results summarized in Table 2 and Figure 2 indicated that the CMIN/DF is above the required threshold (3.007) (Bentler, 1990; Hu & Bentler, 1995; Bollen, 1990). The values for GFI = 0.846, CFI = 0.919, TLI = 0.908, IFI =

Table 1. Demographic results

Demographic Variable	Category	n	%
Gender	Male	235	52.3
	Female	197	43.9
	Others	17	3.8
	Total	449	100
Age	1981–1985	90	20.0
	1986–1990	157	35.0
	1991–1996	202	45.0
	Total	449	100
What is your highest level of education completed?	Junior High School or Lower	67	14.9
	High School / Diploma	109	24.3
	Bachelor's degree	205	45.7
	Master's degree and higher	68	15.1
	Total	449	100
How long have you been taking dietary supplements (if applicable)?	Less than 6 months	62	13.8
	6 months to 1 year	78	17.4
	1–3 years	193	43
	More than 3 years	116	25.8
	Total	449	100
What are your primary reasons for considering or taking dietary supplements?	Improve overall health and well-being	124	27.6
	Enhance athletic performance	56	12.5
	Address specific health concerns (e.g., vitamin deficiencies)	128	28.5
	Weight management	89	19.8
	Following a fitness trend	52	11.6
	Total	449	100

0.919 all met the required threshold; RMSEA and RMR also met the required threshold (Bollen, 1990; Hu & Bentler, 1998, 1999).

In addition to the model fitness test, the reliability and validity analysis was conducted and the result displayed in Table 3.

The analysis was conducted to evaluate the reliability and validity of the study variables. The reliability was evaluated using composite reliability (CR) and Cronbach's alpha. The required threshold is >0.70. The results for the CR ranged from 0.771 to 0.860. The results for Cronbach's alpha ranged from 0.720 to 0.863. These values were within the required threshold, hence confirming the reliability of the study. The validity was evaluated using standardized regression weights and average variance extracted (AVE). The required threshold is >0.5. The values for standardized

Table 2. Model fitness model

	Cmin/df	GFI	CFI	TLI	IFI	RMSEA	RMR
Required threshold	>5.0	>0.8	>0.9	>0.9	>0.9	<0.08	<0.08
Obtained Reults	2.461	0.846	0.919	0.908	0.919	0.057	0.040
Threshold Satisfaction?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3. Reliability and validity analysis

Latent Variables	Observed Variables	Standardized Weights	CR	AVE	Cronbach's Alpha
Attitude towards Dietary Supplements	ATD1	0.653	0.771	0.564	0.805
	ATD2	0.708			
	ATD3	0.819			
	ATD4	0.509			
Health Information Seeking	HIS1	0.731	0.798	0.671	0.720
	HIS2	0.504			
	HIS3	0.542			
	HIS4	0.633			
Intention to Consume Dietary Supplements (Buying Intention)	ICD1	0.773	0.851	0.588	0.853
	ICD2	0.731			
	ICD3	0.755			
	ICD4	0.807			
Perceived Behavioural Control	PBC1	0.775	0.860	0.605	0.863
	PBC2	0.814			
	PBC3	0.722			
	PBC4	0.798			
Perceived Supplements Necessity	PSN1	0.769	0.846	0.578	0.846
	PSN2	0.777			
	PSN3	0.733			
	PSN4	0.761			
Perceived social pressure	PSP1	0.718	0.851	0.589	0.857
	PSP2	0.827			
	PSP3	0.771			
	PSP4	0.749			
Perceived supplement risk	PSR1	0.739	0.829	0.548	0.830
	PSR2	0.723			
	PSR3	0.768			
	PSR4	0.729			
Perceived supplement value	PSV1	0.74	0.807	0.511	0.808
	PSV2	0.725			
	PSV3	0.711			
	PSV4	0.683			
Trust in supplement brand	TSB1	0.684	0.850	0.588	0.856
	TSB2	0.787			
	TSB3	0.808			
	TSB4	0.782			

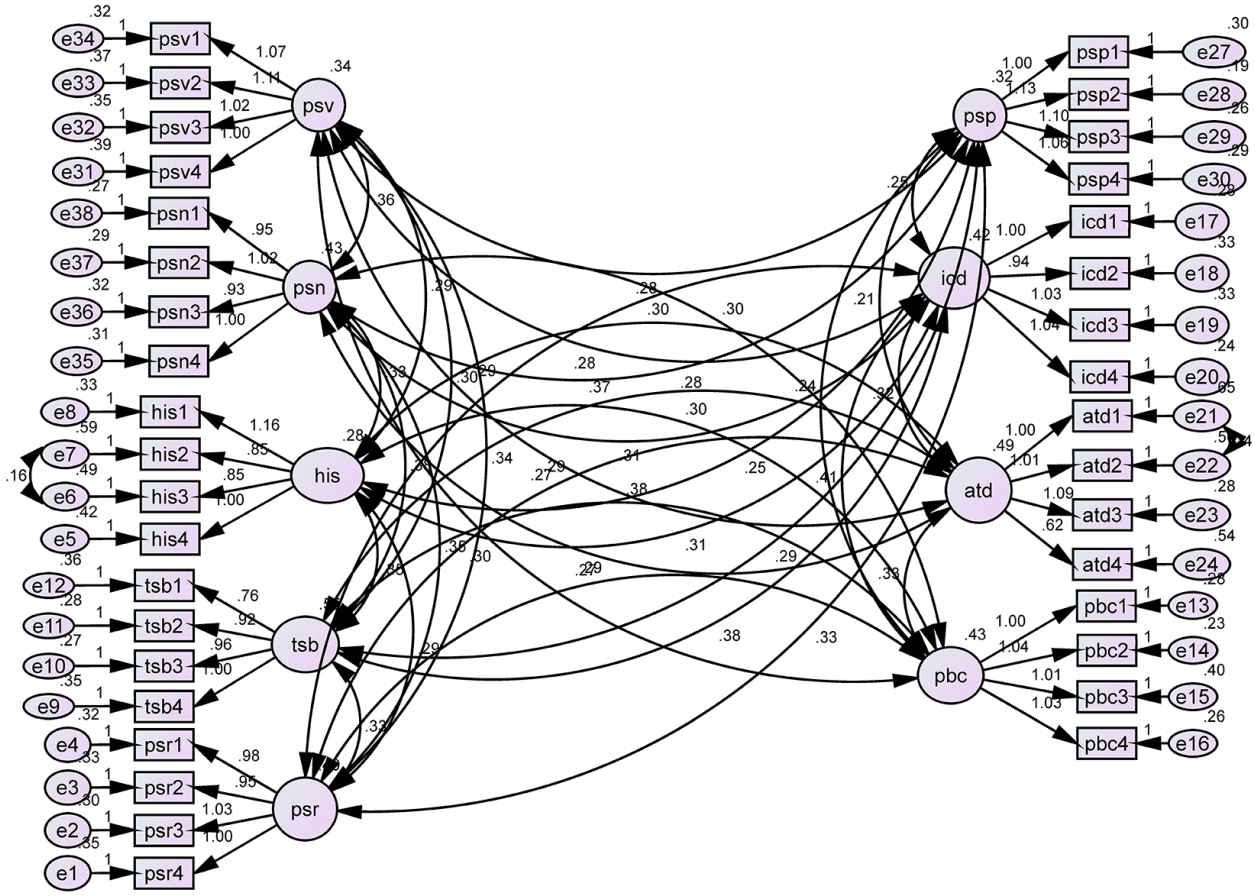

Figure 2. Model fitness model

regression weights ranged between 0.504 and 0.827. On the other hand, the values for AVE ranged from 0.511 to 0.671; these values met the required threshold, confirming the validity of the study constructs (Table 3; Figure 2). Having been satisfied with the validity, reliability, and model fitness, the study went on to test the hypotheses developed.

Analysis of hypotheses

The results of the analysis (see Table 4 and Figure 3) indicated that perceived social pressure (PSP) has a positive and significant influence on intention to consume dietary supplements (ICD) (β = 0.170, p = 0.000), hence supporting H1. Perceived behavioral control over supplement use (PBC) has a significant and positive influence on intention to consume dietary supplements (ICD) (β = 0.721, p = 0.000), hence supporting H2. Perceived supplement value (PSV) was found to have an insignificant and negative influence on intention to consume dietary supplements (ICD) (β = –0.077, p = 0.055), hence rejecting H3. Attitude towards dietary supplements (ATD) has an insignificant and positive influence on intention to consume dietary supplements (ICD) (β = 0.016, p = 0.805), thus rejecting H4. Perceived supplement necessity (PSN) has

Table 4. Analysis of hypothesis

Hypothesis	Path Relationship			Estimate	S.E.	C.R.	P-value
H1	PSP	→	ICD	.170	.033	5.192	***
H2	PBC	→	ICD	.721	.050	14.322	***
H3	PSV	→	ICD	–.077	.040	–1.920	.055
H4	ATD	→	ICD	.016	.066	.247	.805
H5	PSN	→	ICD	.071	.031	2.271	.023
H6	HIS	→	ICD	.203	.056	3.631	***
H7	TSB	→	ICD	.093	.035	2.662	.008
H8	PSR	→	ICD	–.050	.031	–1.650	.099

Notes: ATD = attitude towards dietary supplements; HIS = health information seeking behaviour, ICD = intention to consume dietary supplements, PBC = perceived behavioural control over supplement use, PSP = perceived social pressure, PSV = perceived supplement value, PSN = perceived supplement necessity, TSB = trust supplement brand, PSR = perceived supplement risk.

a significant and positive influence on intention to consume dietary supplements (ICD) (β = 0.071, p = 0.023), hence supporting H5. Health information seeking behavior (HIS) has a significant and positive influence on intention to consume dietary supplements (ICD) (β = 0.203, p = 0.000), therefore supporting H6. Trust supplement brand (TSB) has a significant and positive influence on intention to consume dietary supplements (ICD) (β = 0.093, p = 0.008), hence supporting H7. Perceived supplement risk (PSR) has a non-significant and negative influence on intention to consume dietary supplements (ICD) (β = –0.050, p = 0.099), hence rejecting H8.

The study conducted a mediation analysis of the attitude towards dietary supplements (ATD), in addition to the direct hypothesis (Table 5). The mediation effect was on the relationship between perceived behavioral control over supplement use, perceived supplement value, perceived supplement necessity, health information seeking behavior, trust of supplement brand, and intention to consume dietary supplements. The results indicated that none of the indirect effects was significant, suggesting that attitude towards dietary supplements (ATD) did not mediate any of these relationships, hence rejecting H9a to H9e.

Table 5. Mediation analysis results

Hypothesis	Relationship	Total Effects	Direct Effects	Indirect Effects
H9a	PBC → ATD → ICD	0.621**	0.819**	0.000
H9b	PSV → ATD → ICD	–0.178	–0.210	–0.035
H9c	PSN → ATD → ICD	–0.056	–0.053	–0.046
H9d	HIS → ATD → ICD	0.130**	0.013	–0.122
H9e	TSB → ATD → ICD	0.045**	–0.010	–0.088

4. Discussion and interpretation of results

This study highlights that perceived behavioral control over supplement use has the greatest impact on users' intention to make use of dietary supplements. It implies that that people who feel they have some measure of control over the consumption of supplements, in terms of either accessibility or affordability, would tend to consume them. Such a great impact stresses that only Gen Y finds matter in the accessibility of the consumption of dietary supplements (Rossi et al., 2022; Leong et al., 2023); therefore provisions of accessibility and affordability in supplement consumption should be well highlighted.

Further findings showed that supplement consumption needed a perception of necessity for consideration. Chauhan et al. (2017) support this idea stating that those who believe and perceive a need of the supplement such as health need are more likely to be intended to consume it. Therefore, it is argued here that Gen Y personal health assessment and health consciousness evaluate their needs for supplement consumption, further influencing their consumption behavior. If these individuals claim to have health gaps, they will highly likely compensate by feeling the need for supplementation. The nutrition evaluator assesses the health condition, medical diagnoses, and the advice given to an individual concerning food supplementation (Sobari et al., 2019; Chiba et al., 2021). Personal parameters affecting the requirements for dietary supplementary intake include difficulties related to age or life stage, health information, culture, and, more importantly, social norms; there appears to be an indication wherein further educating people brings the idea of needing supplements closer to them.

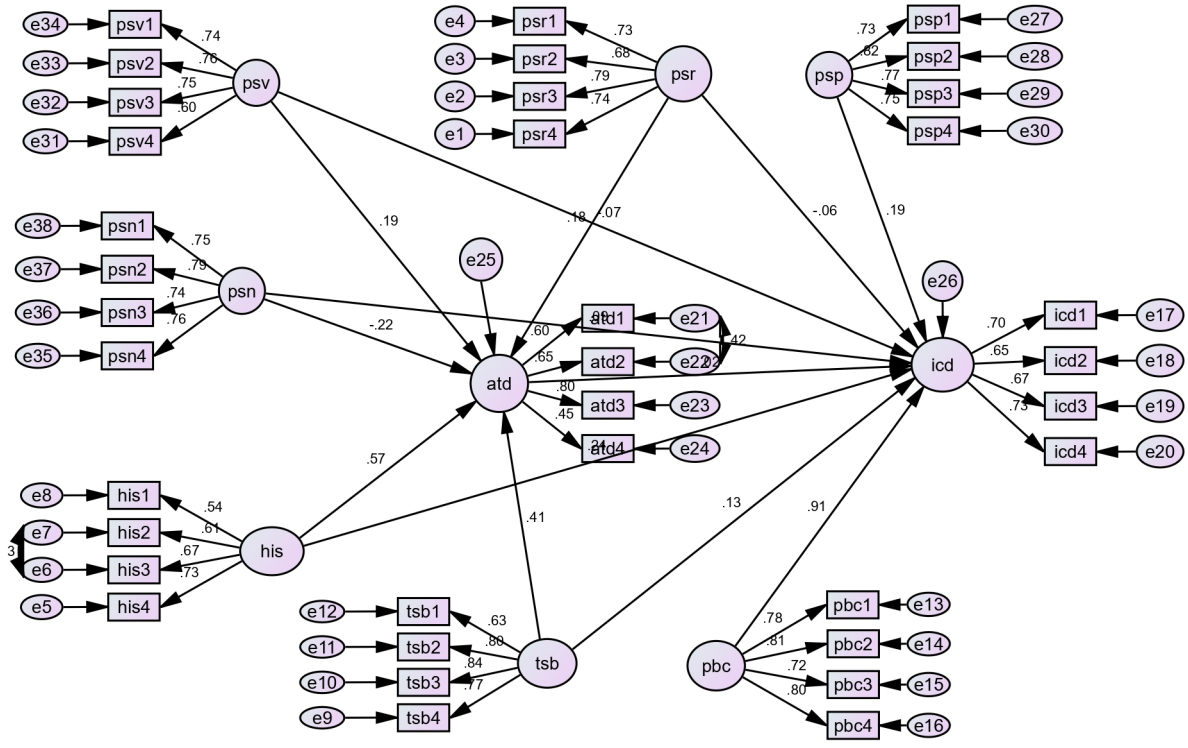

Figure 3. Analysis of hypothesis

Another observation suggests that the information-seeking behavior of Gen Y when it comes to health information pertains to their consumption of supplements. The growing interest among people to know the status of their health, wellness, and conditions has ripened into being able to show what health-specific issues they are confronting in decision-making and adopting health practices involving supplement intake (Pang et al., 2014; Papp-Zipernovszky, 2021). A proactive health information seeker assumes that such possibility enlarges one's understanding and awareness of the use of supplements, thereby becoming more inclined to adopting the supplements into health care practices.

As the study shows, perceived social pressure was found to be a major determinant of the consumption of diet supplements in Gen Y; generally, the effect of the beliefs and actions of one's peers, family, and general social norms tends to be significant on consumption behavior and consequently on individual decisions, especially on health-related behavior. The younger generations are on their social media; indeed, the voice of their peers is significant when it comes to their behavior (Misirlis et al., 2021). Healthy eating and exercising remain some of the hot topics among Gen Y. This is even more concerning for the unhurriedly developing young adults because of the health-conscious trend and wellness culture. Leroy et al. (2021) have argued that social norms can influence eating habits; the main area of social media, peer influence, and cultural movements frames behavior and belief and thus influences the rise of more and more influencers in health and what happens in everyday life with his peer group on social media, which could worsen the occurrence.

Yet another important finding was that a significant factor is trust in the brand of the dietary supplement. This means that trust is one of the key ingredients in making consumer decisions in what appear to be very health-related products with high perceived risk. This also relates well to Ha et al. (2019) that states trust reduces perceived risk and uncertainty concerning a particular product thus increasing the chances of purchase. Factors like perceived product quality, the reputation of the brand, the transparency of the label, and endorsements from health professionals or influencers can help people build trust; the findings of the research seem to imply that for Gen Y, in most instances cynical about marketing claims and highly selective about the brands they endorse, trust in a supplement brand would be the prime motivator for intentions to consume such products.

The results have shown many recommendations for the dietary supplements consumption of Gen-Y. The first of the recommended principles is that of perceiving control behaviors within Gen-Y consumers with respect to the dietary supplement since these perceptions control consumption of the supplements. Hence, interventions should provide means of strengthening perceived behavioral control with strategies through availability and affordability. The second most important initiative will be developing a very efficient system to share comprehensive information about uses, safety, and advantages of using dietary supplements. In this respect, Gen-Y should also be taken into account because of the perceived needs of their dietary consumption. The reasons range from the increasing awareness that Gen-Y has towards health, and mostly preventive healthcare, to access to health information and personalized healthcare settings as well as recommendations from health professionals whose health assessments and medical test results may lead someone to think that consuming a dietary supplement would be appropriate.

Considering that health-seeking behavior is a critical factor to consider, this research advises the importance of enabling patients and the public to access health information. Information can take the form of consultation with a health professional, or it can be the result of an online search, social media interactions, and reading material on health. Health Information Seeking (HIS) in association with dietary supplementation means looking for various information that pertains to benefits, risks, and appropriate use of supplements. Truly educated peoples would make the most right choice with respect to health consumption. Yet another ideally pragmatic intervention recommendation would be on the perception toward food supplements. This particular research indicates that, for effective stimulation of supplement intake in Generation Y, a feature should be cognitive disposition to these products. There are several variables making up the opinions held by an individual towards dietary supplements; these individual beliefs and perceptions, experiences, along with prevailing external social norms, might also include.

5. Conclusions

Several aspects of the research findings inform the study's conclusion. The primary focus of the study was to uncover the real reasons behind the actual intake of dietary supplements in Gen Y. This study becomes more important because this generation of young adults is much more health conscious compared to all the other age-groups. The study would show how perceived behavioral control affects supplement-use intention, perceived need for supplements, health information search behavior, perceived social pressure, and brand trust in the supplements. All the factors claimed above would be needed for a detectable understanding of the interplay between core beliefs and external influences for forming health-related decisions in an individual; such evidence would also be useful to health practitioners, marketers, and policymakers in encouraging responsible consumption of dietary supplements; the interventions propose to change attitudes towards dietary supplements by breaking existing inert beliefs, spreading adequate credible information, and shaping the conversations through social media toward healthy-positive messaging. Providing good information to patients, having conversations, and providing assistance will impact positive attitudes and a good environment for decisions to be made. Build values and approaches that can somehow fit

within the acceptable scope and borders of those motivated by values and beliefs of Generation Y so that they would be more likely to accept and then consume dietary supplements.

In theory, this study seeks to expand the framework of the Theory of Planned Behavior (TPB) to understand the intended consumption of dietary supplements of Generation Y in Thailand to the extent that it has told a story, both theoretically and practically; our results offer significant contributions theoretically to health behavior models in confirming the inclusion of novel constructs such as brand trust, supplement necessity, and digital information-seeking along with traditional TPB variables. Noteworthy is that perceived behavioral control with a weight of β = 0.721 has emerged as the most potent predictor, implying that in this cohort, autonomy regarding access to and affordability of supplements eclipses any attitudinal or normative considerations; this challenges the conventional TPB assumptions and suggests contextual nuances in health decision-making. Equally intriguing is that opposite to what we anticipated, attitude toward supplements could neither predict intention nor mediate any other linkages, something which is outside the premise of established theory and merits further scrutiny through the lens of cultural or generational cognitive processes.

From a practical standpoint, these takeaways provide practical value for multiple stakeholders. Supplement brands need to elevate their efforts in respect of accessibility (e.g., subsidized subscription facilities, extensive retail outlets) and transparency regarding sourcing and certification to maximize perceived behavioral control and brand trust, the latter being a significant factor (β = 0.093**). Education programs targeting Gen Y should be established by health practitioners and policymakers with evidence-based information aimed especially at the digital space where health information-seeking behavior was impactful (β = 0.203***). Retailers and marketers can build on the verified effect of social pressure-lighting (β = 0.170***) by working with legitimate influencers while co-creating community marketing strategies tapping into peer-based consumption paradigms.

Methodologically speaking, we acknowledge several limitations that provide contextuality for our findings. The restrictive focus on Gen Y in Thailand precludes any direct broadened generalizability to other cultural or economic settings where variables like brand trust or social norms may behave differently. The cross-sectional survey captures only intention and not actual behavior and, hence, does not explore the intention-behavior gap. Moreover, the non-significance of attitude may indicate some measurement constraining issues or possible moderators left unaccounted for, such as scepticism on commercial health claims. The limitations, however, present opportunities for future studies. Researchers would benefit from comparative cross-cultural replications (e.g. individualistic Western societies versus collectivist Asian markets) in order to clarify cultural moderators. Longitudinal work capable of tracking the conversion of intentions into actual sustained supplement usage would certainly lend strength to any behavioral predictability. Qualitative inquiries to unravel the reasons why attitude fell short of mediating such relationships could point towards possible unnoticed themes of cognitive dissonance or trust barriers unexplored in quantitative means. Also, future studies should focus on digital influences regarding specific platforms (e.g. TikTok short-form content versus Instagram aesthetics) on social norms and credibility information.

Funding

This work was supported by the KMITL Business School, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand under Grant number 2567-02-12-008.

Author contributions

CC and BK conceived the study, CC, SK, BK, SC were responsible for the design and development of the data analysis. CC, SK and BK were responsible for data collection and analysis. BK and SC were responsible for data interpretation. CC wrote the first draft of the article. SK and BK wrote the methods section, CC, SK, BK, SC reviewed the final draft.

Disclosure statement

The authors declare that they have no competing financial, professional, or personal interests from other parties with regards to the study.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I., & Driver, B. L. (1992). Contingent value measurement: On the nature and meaning of willingness to pay. *Journal of Consumer Psychology*, *1*(4), 297–316. https://doi.org/10.1016/S1057-7408(08)80057-5

Alami, A., Tavakoly Sany, S. B., Lael-Monfared, E., Ferns, G. A., Tatari, M., Hosseini, Z., & Jafari, A. (2019). Factors that influence dietary behavior toward iron and vitamin D consumption based on the theory of planned behavior in Iranian adolescent girls. *Nutrition Journal*, *18*, Article 8. https://doi.org/10.1186/s12937-019-0433-7

Albarracin, D., Oyserman, D., & Schwarz, N. (2024). Health communication and behavioral change during the COVID-19 pandemic. *Perspectives on Psychological Science*, *19*(4), 612–623. https://doi.org/10.1177/17456916231215272

Albornoz, R., García-Salirrosas, E. E., Millones-Liza, D. Y., Villar-Guevara, M., & Toyohama-Pocco, G. (2024). Using the theory of perceived value to determine the willingness to consume foods from a healthy brand: The role of health consciousness. *Nutrients*, *16*(13), Article 1995. https://doi.org/10.3390/nu16131995

Alfieri, A., & Mazzeo, F. (2023). Role of nutritional supplements in sport, exercise and health. *Nutrients*, *15*(20), Article 4429. https://doi.org/10.3390/nu15204429

Aliyu, A. A., Karishma, S., Abdurrahman, M. I., & Tsoho, A. U. (2020). A review on dietary supplements: Health benefits, market trends and challenges. *International Journal of Scientific Development and Research*, *5*(11), 26–35.

Alotaibi, A. F., Khdary, S. N., Alzarzor Alajami, M. A., Sambas, E. A., Aldakhil, N. A., Naibulharam, D. Y., Alsulmi, A. A., & Alosaimi, F. D. (2024). Pattern of dietary supplement use and its psychosocial predictors among females visiting fitness centers in Saudi Arabia: Findings from a cross-sectional study. *Saudi Pharmaceutical Journal*, *32*(3), Article 101966. https://doi.org/10.1016/j.jsps.2024.101966

Amer, S., Elsheikh, S., Shailabi, T., Douaouia, L., Abuhaimed, S., Ishteiwy, E., Abdullah, L., Balid, M. M., Swed, S., Amer, Y., Zaitoun, N., Zaitoun, N., & Ibrahim, M. (2024). Consumption of dietary supplements and their determinants among adults in six Arabic countries: A cross-sectional survey. *The Egyptian Journal of Internal Medicine*, *36*, 1–17. https://doi.org/10.1186/s43162-024-00323-7

Azila Mohd Noor, N., Yap, S. F., Liew, K. H., & Rajah, E. (2014). Consumer attitudes toward dietary supplements consumption: Implications for pharmaceutical marketing. *International Journal of Pharmaceutical and Healthcare Marketing*, *8*(1), 6–26. https://doi.org/10.1108/IJPHM-04-2013-0019

Balestrino, M. (2019). The risks and uses of dietary supplements. *The Lancet Neurology*, *18*(9), 814–815. https://doi.org/10.1016/S1474-4422(19)30292-3

Barretto, J. R., Gouveia, M. A. D. C., & Alves, C. (2024). Use of dietary supplements by children and adolescents. *Jornal de Pediatria*, *100*(Suppl 1), S31–S39. https://doi.org/10.1016/j.jped.2023.09.008

Bates, B. R., Romina, S., Ahmed, R., & Hopson, D. (2006). The effect of source credibility on consumers' perceptions of the quality of health information on the Internet. *Medical Informatics and the Internet in Medicine*, *31*(1), 45–52. https://doi.org/10.1080/14639230600552601

Bayır, T., Çam, S., & Tuna, M. F. (2024). Does knowledge and concern regarding food supplement safety affect the behavioral intention of consumers? An experimental study on the theory of reasoned action. *Frontiers in Nutrition*, *10*, Article 1305964. https://doi.org/10.3389/fnut.2023.1305964

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Bollen, K. A. (1990). Overall fit in covariance structure models: Two types of sample size effects. *Psychological Bulletin*, *107*(2), 256–259. https://doi.org/10.1037/0033-2909.107.2.256

Booker, Q. S., Austin, J. D., & Balasubramanian, B. A. (2021). Survey strategies to increase participant response rates in primary care research studies. *Family Practice*, *38*(5), 699–702. https://doi.org/10.1093/fampra/cmab070

Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The theory of planned behavior: Selected recent advances and applications. *Europe's Journal of Psychology*, *16*(3), 352–356. https://doi.org/10.5964/ejop.v16i3.3107

Brzezińska, O., Łukasik, Z., Makowska, J., & Walczak, K. (2020). Role of vitamin C in osteoporosis development and treatment – A literature review. *Nutrients*, *12*(8), Article 2394. https://doi.org/10.3390/nu12082394

Bundechanan, N., & Fongsuwan, W. (2017). Thai Generation Y/Millennial consumer health and wellness: An antioxidant beverage SEM analysis. *Asia-Pacific Social Science Review*, *16*(3), Article 7. https://doi.org/10.59588/2350-8329.1097

Chauhan, H., Bhatia, M., & Hirpara, N. (2017). Dietary food supplements: What consumers perceive? In *Making a difference and becoming the agents of change in the field of management* (pp. 100–110). Billberry Studio. https://ssrn.com/abstract=3070859

Chiba, T. (2023). Patients are using dietary supplement for the treatment of their diseases without consultation with their physicians and pharmacists. *Pharmacy (Basel, Switzerland)*, *11*(6), Article 179. https://doi.org/10.3390/pharmacy11060179

Chiba, T., Tanemura, N., & Nishijima, C. (2021). The perception of vitamins and their prevalence in fortified food and supplements in Japan. *Nutrients*, *13*(9), Article 3136. https://doi.org/10.3390/nu13093136

Chiou, W. B., Yang, C. C., & Wan, C. S. (2011). Ironic effects of dietary supplementation: Illusory invulnerability created by taking dietary supplements licenses health-risk behaviors. *Psychological Science*, *22*(8), 1081–1086. https://doi.org/10.1177/0956797611416253

Cichocka, I., Krupa, J., & Mantaj, A. (2020). The consumer awareness and behaviour towards food packaging in Poland. *Economics and Sociology*, *13*(2), 304–317. https://doi.org/10.14254/2071-789X.2020/13-2/20

Conley, K. L., & Lusk, J. L. (2019). What to eat when having a millennial over for dinner. *Applied Economic Perspectives and Policy*, *41*(1), 56–70. https://doi.org/10.1093/aepp/ppy008

Conner, M., Kirk, S. F., Cade, J. E., & Barrett, J. H. (2001). Why do women use dietary supplements? The use of the theory of planned behavior to explore beliefs about their use. *Social Science & Medicine*, *52*(4), 621–633. https://doi.org/10.1016/S0277-9536(00)00165-9

Council for Responsible Nutrition. (2016). *Supplement use among younger adult generations contributes to boost in overall usage 2016 – More than 170 million Americans take dietary supplements*. https://www.crnusa.org/newsroom/supplement-use-among-younger-adult-generations-contributes-boost-overall-usage-2016-more

Dabija, C., Csorba, L. M., Pop, N. H., & Obadă, R. (2023). The impact of extraversion and introversion on millennials' propensity to recommend their preferred fitness center. *Behavioral Sciences*, *14*(1), Article 22. https://doi.org/10.3390/bs14010022

Dimitrova, T., & Ilieva, I. (2021), The significance of emotional intelligence in entrepreneurial success. *Journal of Business Venturing*, *36*(5), 100–120.

Djaoudene, O., Romano, A., Bradai, Y. D., Zebiri, F., Ouchene, A., Yousfi, Y., Amrane-Abider, M., Sahraoui-Remini, Y., & Madani, K. (2023). A global overview of dietary supplements: Regulation, market trends, usage during the COVID-19 pandemic, and health effects. *Nutrients*, *15*(15), Article 3320. https://doi.org/10.3390/nu15153320

Dogra, P., & Kaushal, A. (2024), Does the pandemic affect the lifestyle and dietary intake? A comparative investigation during the pandemic and new normal situation. *British Food Journal*, *126*(9), 3397–3422. https://doi.org/10.1108/BFJ-08-2023-0759

Dziuba, S., & Szczrba, A. (2023). Agile management in Polish organic food processing enterprises. *Production Engineering Archives*, *29*(1), 101–107. https://doi.org/10.30657/pea.2023.29.12

El Khoury, D., Tabakos, M., Dwyer, J. J., & Mountjoy, M. (2023). Determinants of supplementation among Canadian university students: A theory of planned behavior perspective. *Journal of American College Health*, *71*(6), 1957–1965. https://doi.org/10.1080/07448481.2021.1951276

Elsahoryi, N. A., Odeh, M. M., Jadayil, S. A., McGrattan, A. M., Hammad, F. J., Al-Maseimi, O. D., & Alzoubi, K. H. (2023). Prevalence of dietary supplement use and knowledge, attitudes, practice (KAP) and associated factors in student population: A cross-sectional study. *Heliyon*, 9(4), Article e14736. https://doi.org/10.1016/j.heliyon.2023.e14736

Emergen Research. (2023, 30 November). *Dietary supplements market size worth USD 339.89 billion in 2032*. https://finance.yahoo.com/news/dietary-supplements-market-size-worth-082900237.html

Espeño, P. R., Ong, A. K. S., German, J. D., Gumasing, M. J., & Casas, E. S. (2024). Analysis of actual fitness supplement consumption among health and fitness enthusiasts. *Foods*, *13*(9), Article 1424. https://doi.org/10.3390/foods13091424

Eysenbach, G., Powell, J., Kuss, O., & Sa, E. R. (2002). Empirical studies assessing the quality of health information for consumers on the world wide web: A systematic review. *JAMA*, *287*(20), 2691–2700. https://doi.org/10.1001/jama.287.20.2691

Fanzo, J., McLaren, R., Bellows, A., & Carducci, B. (2023). Challenges and opportunities for increasing the effectiveness of food reformulation and fortification to improve dietary and nutrition outcomes. *Food Policy*, *119*, Article 102515. https://doi.org/10.1016/j.foodpol.2023.102515

Firoozzare, A., Boccia, F., Yousefian, N., Ghazanfari, S., & Pakook, S. (2024). Understanding the role of awareness and trust in consumer purchase decisions for healthy food and products. *Food Quality and Preference*, *121*, Article 105275. https://doi.org/10.1016/j.foodqual.2024.105275

Guanqi, Z., & Nisa, Z. U. (2023). Prospective effects of food safety trust on brand evangelism: A moderated-mediation role of consumer perceived ethicality and brand passion. *BMC Public Health*, *23*(1), Article 2331. https://doi.org/10.1186/s12889-023-17268-1

Ha, N. T., Nguyen, Th. L. H., Nguyen, Th. P. L., & Nguyen, T. D. (2019). The effect of trust on consumers' online purchase intention: An integration of TAM and TPB. *Management Science Letters*, *9*(9), 1451–1460. https://doi.org/10.5267/j.msl.2019.5.006

Ha, M., Nguyen, G.-D., Nguyen, Th. H.-Th., & Thi Nguyen, B.-D. (2023). The use of dietary supplements and vitamin consumption during and after the COVID pandemic in Vietnam: A perspective of user-generated content. *Humanities and Social Sciences Communications*, *10*(1), Article 2340. https://doi.org/10.1057/s41599-023-02340-3

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis* (7th ed.). Pearson Education.

Hamid, S., Bukhari, S., Ravana, S. D., Norman, A. A., & Ijab, M. T. (2016). Role of social media in information-seeking behaviour of international students: A systematic literature review. *Aslib Journal of Information Management*, *68*(5), 643–666. https://doi.org/10.1108/AJIM-03-2016-0031

Haubenstricker, J. E., Lee, J. W., Segovia-Siapco, G., & Medina, E. (2023). The theory of planned behavior and dietary behaviors in competitive women bodybuilders. *BMC Public Health*, *23*(1), Article 1716. https://doi.org/10.1186/s12889-023-16568-w

Ho, S. S., Goh, T. J., & Chuah, A. S. F. (2022). Perceived behavioral control as a moderator: Scientists' attitude, norms, and willingness to engage the public. *PLoS ONE*, *17*(10), Article e0275643. https://doi.org/10.1371/journal.pone.0275643

Hoang, T. D. T. (2023). Examination of tourists' culinary experience: Revisiting the experience economy in the case of Hue Cuisine. *Journal of Tourism and Services*, *14*(27), 249–264. https://doi.org/10.29036/jots.v14i27.641

Hoseini, A., Dehdari, T., Solhi, M., Rahideh, S. T., & Janani, L. (2021). Qualitative exploration of the factors influencing the use of dietary supplements in Iranian women: Introduction to areas of focus for developing interventions. *Heliyon*, *7*(4), Article e06607. https://doi.org/10.1016/j.heliyon.2021.e06607

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hu, L.-T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76–99). Sage.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*(4), 424–453. https://doi.org/10.1037/1082-989X.3.4.424

Huang, L., Shah, M. W., Wang, Y., Nam, Y., & Sun, G. (2024). Exploring the association between dietary patterns and the types of dietary supplements used. *Journal of Functional Foods*, *113*, Article 106030. https://doi.org/10.1016/j.jff.2024.106030

Ireland, L. (2023, 28 November). Millennials: The wellness generation. *PM Live*. https://pmlive.com/intelligence/millennials_the_wellness_generation_1503783/

Jabbari, P., Yazdanpanah, O., Benjamin, D. J., & Kalebasty, A. R. (2024). Supplement use and increased risks of cancer: Unveiling the other side of the coin. *Cancers*, *16*(5), Article 880. https://doi.org/10.3390/cancers16050880

Jia, X., Pang, Y., & Liu, L. S. (2021). Online health information seeking behavior: A systematic review. *Healthcare*, *9*(12), Article 1740. https://doi.org/10.3390/healthcare9121740

Jiménez Correa, E. A., Palacio-López, S. M., Sánchez-Torres, J. A., Gaviria Martínez, L. F., Arrubla Zapata, J. P., Hernández Fernández, Y. L., & Lopera, C. P. (2021). Effectiveness of social responsibility marketing in young millennials – Generation Y: Analysis of three cases for brand positioning. *Heliyon*, *7*(10), Article e08150. https://doi.org/10.1016/j.heliyon.2021.e08150

Jumriani, J., Abbas, E. W., Rajiani, I., Hadi, S., Muhaimin, M., Mutiani, M., & Rafsanjani, A. I. (2022). The utilization of traditional cuisine as a tourist attraction on the river banks. *Global Journal of Entrepreneurship and Management*, *3*(1), 23–29. https://doi.org/10.57585/GJEM.022.011

Kamboj, K., & Kishor, N. (2022). Influence of customer perceived values on organic food consumption behaviour: Mediating role of green purchase intention. *FIIB Business Review*. https://doi.org/10.1177/23197145221125283

Kan, M. P. H., & Fabrigar, L. R. (2017). Theory of planned behavior. In V. Zeigler-Hill & T. Shackelford (Eds.), *Encyclopedia of personality and individual differences* (pp. 1–8). Springer. https://doi.org/10.1007/978-3-319-28099-8_1191-1

Kolady, D. E., Kattelmann, K., & Scaria, J. (2019). Effects of health-related claims on millennials' willingness to pay for probiotics in the US: Implications for regulation. *Journal of Functional Foods*, *60*, Article 103434. https://doi.org/10.1016/j.jff.2019.103434

Leap, M. (2023, 31 January). Vitamin boost: Half of Millennials are using vitamins and supplements more often than they did before the pandemic. *Mintel*. https://www.mintel.com/press-centre/millennials-vitamins-and-supplements/

Lenssen, K. G., Garcia Fuentes, A., Van Osch, F. H., Bast, A., & De Boer, A. (2022). Assessing the influence of information on the intention to use dietary supplements: An online questionnaire study. *Journal of Functional Foods*, *92*, Article 105017. https://doi.org/10.1016/j.jff.2022.105017

Leong, L. Y., Hew, T. S., Ooi, K. B., Metri, B., & Dwivedi, Y. K. (2023). Extending the theory of planned behavior in the social commerce context: A meta-analytic SEM (MASEM) approach. *Information Systems Frontiers*, *25*(5), 1847–1879. https://doi.org/10.1007/s10796-022-10337-7

Leroy, F., Brengman, M., & Verbeke, W. (2021). Millennials and healthy eating: The mediating role of subjective norms and perceived behavioral control. *Appetite*, *158*, Article 105010.

Li, J. C., Lin, Y., & Yang, Y. C. (2024). Extending the theory of planned behavior model to explain people's behavioral intentions to follow China's AI-generated content law. *BMC Psychology*, *12*, Article 367. https://doi.org/10.1186/s40359-024-01824-4

Lin, K.-Y. (2016). User communication behavior in mobile communication software. *Online Information Review*, *40*(7), 1071–1089. https://doi.org/10.1108/OIR-07-2015-0245

Lin, L.-Y., Husnayain, A., Chen, Y.-T., & Kuo, C. Y. (2024). The association between interest in nutritional supplements and COVID-19 pandemic – evidence from Google trends. *BMC Public Health, 24*(1), Article 109. https://doi.org/10.1186/s12889-023-17607-2

Liu, Q., & Wang, X. (2023). The impact of brand trust on consumers' behavior toward agricultural products' regional public brand. *PLoS ONE*, *18*(11), Article e0295133. https://doi.org/10.1371/journal.pone.0295133

Lordan, R. (2021). Dietary supplements and nutraceuticals market growth during the coronavirus pandemic – implications for consumers and regulatory oversight. *Pharmanutrition*, *18*, Article 100282. https://doi.org/10.1016/j.phanu.2021.100282

Łukiewska, K. (2019). Changes in the competitive positıon of the food industry in the European Union member states. *Forum Scientiae Oeconomia*, *7*(2), 71–87. https://doi.org/10.23762/fso_vol7_no2_5

Lwakatare, M., & Mlimbila, J. (2023). Dietary supplement use and associated factors among adults working in urban settings in Tanzania: A cross-sectional study. *Health Services Insights*. https://doi.org/10.1177/11786329231170752

Marinova, D., Bogueva, D., Wu, Y., & Guo, X. (2022). China and changing food trends: A sustainability transition perspective. *Ukrainian Food Journal*, *11*(1), 126–147. https://doi.org/10.24263/2304-974X-2022-11-1-13

Martinčić, M., Vuković, D., & Hunjet, A. (2022). Consumer responses to selected activities: Price increases, lack of product information and numerical way of expressing product prices. *Journal of Risk and Financial Management*, *15*(6), Article 255. https://doi.org/10.3390/jrfm15060255

Masur, P. K., DiFranzo, D., & Bazarova, N. N. (2021). Behavioral contagion on social media: Effects of social norms, design interventions, and critical media literacy on self-disclosure. *PLoS ONE, 16*(7), Article e0254670. https://doi.org/10.1371/journal.pone.0254670

McDonald, D. D., & Nicholson, N. R. (2005). Dietary supplement information and intention to continue and recommend supplements. *International Journal of Nursing Studies*, *43*(1), 51–57. https://doi.org/10.1016/j.ijnurstu.2005.01.008

Merwid-Ląd, A., Szandruk-Bender, M., Matuszewska, A., Trocha, M., Nowak, B., Oster, M., & Szeląg, A. (2022). Factors that influence the use of dietary supplements among the students of Wroclaw Medical University in Poland during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *19*(12), Article 7485. https://doi.org/10.3390/ijerph19127485

Miah, R. I. V. (2024). Consumer intentions to consume food supplements: A survey study on its predictors, associated biased beliefs and risk-benefit perception [Doctoral dissertation, Universidade Católica Portuguesa]. *Universidade Católica Portuguesa*. https://ciencia.ucp.pt/en/studentTheses/consumer-intentions-to-consume-food-supplements

Michaelidou, N., & Hassan, L. M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies*, *32*(2), 163–170. https://doi.org/10.1111/j.1470-6431.2007.00619.x

Mikulic, M. (2024). Total U.S. dietary supplements market size 2023 vs. 2031. *Statista*. https://www.statista.com/statistics/828481/total-dietary-supplements-market-size-in-the-us/

Mintel. (2023). *Vitamin boost: Half of Millennials are using vitamins and supplements more often than they did before the pandemic*. https://www.mintel.com/press-centre/millennials-vitamins-and-supplements/

Misirlis, N., Elshof, M., & Vlachopoulou, M. (2021). Modeling Facebook users' behavior towards the use of pages related to healthy diet and sports activities. *Journal of Tourism, Heritage & Services Marketing*, *7*(2), 49–57.

Pacifici, R., Palmi, I., Vian, P., Andreotti, A., Mortali, C., Berretta, P., Mastrobattista, L., & Pichini, S. (2016). Emerging trends in consuming behaviours for non-controlled substances by Italian urban youth: A cross-sectional study. *Annali dell'Istituto Superiore di Sanità*, *52*(1), 104–113. https://doi.org/10.4415/ANN_16_01_17

Pang, P. C. I., Chang, S., Pearce, J., & Verspoor, K. (2014). Online health information seeking behaviour: Understanding different search approaches. *Health Information Science and Systems*, *2*(1), 1–10.

Papp-Zipernovszky, O., Horváth, M. D., Schulz, P. J., & Csabai, M. (2021). Generation gaps in digital health literacy and their impact on health information seeking behavior and health empowerment in Hungary. *Frontiers in Public Health, 9*. https://doi.org/10.3389/fpubh.2021.635943

Park, S. Y., Yourell, J., McAlister, K. L., & Huberty, J. (2023). Exploring Generation Z and young Millennials' perspectives of a spiritual self-care app and their spiritual identity (Skylight): Qualitative semistructured interview study. *JMIR Formative Research*, *7*, Article e54284. https://doi.org/10.2196/54284

Pawlak, R., Brown, D., Meyer, M. K., Connell, C., Yadrick, K., Johnson, J. T., & Blackwell, A. (2008). Theory of planned behavior and multivitamin supplement use in Caucasian college females. *Journal of Primary Prevention*, *29*(1), 57–71. https://doi.org/10.1007/s10935-008-0127-y

Peña-García, N., Gil-Saura, I., Rodríguez-Orejuela, A., & Siqueira-Junior, J. R. (2020). Purchase intention and purchase behavior online: A cross-cultural approach. *Heliyon*, *6*(6), Article e04284. https://doi.org/10.1016/j.heliyon.2020.e04284

Pereira Filho, J. M., Costa, C. S. R., da Costa, M. F., & de Siqueira, Y. M. (2024). The influence of perceived risk on food supplement consumption intention. *Revista de Administração da UFSM*, *17*(2), e5–e5. https://doi.org/10.5902/1983465984653

Piórecka, B., Koczur, K., Cichocki, R., Jagielski, P., & Kawalec, P. (2022). Socio-economic factors influencing the use of dietary supplements by schoolchildren from Małopolska Voivodship (Southern Poland). *International Journal of Environmental Research and Public Health*, *19*(13), Article 7826. https://doi.org/10.3390/ijerph19137826

Purba, A. K., Thomson, R. M., Henery, P. M., Pearce, A., Henderson, M., & Katikireddi, S. V. (2023). Social media use and health risk behaviours in young people: Systematic review and meta-analysis. *BMJ*, *383*, Article e073552. https://doi.org/10.1136/bmj-2022-073552

Rautiainen, S., Manson, J. E., Lichtenstein, A. H., & Sesso, H. D. (2016). Dietary supplements and disease prevention – A global overview. *Nature Reviews Endocrinology*, *12*(7), 407–420. https://doi.org/10.1038/nrendo.2016.54

Rizwan Khan, A. Y., Rana, M. A., Naqvi, D. E. S., Asif, A., Najeeb, F., & Naseem, S. (2024). Health-seeking behaviour and its determinants following the COVID-19 pandemic. *Cureus*, *16*(1), Article e5225. https://doi.org/10.7759/cureus.52225

Rossi, R. E., Chen, J., & Caplin, M. E. (2022). The role of diet and supplements in the prevention and progression of COVID-19: Current knowledge and open issues. *Preventive Nutrition and Food Science*, *27*(2), 137–147. https://doi.org/10.3746/pnf.2022.27.2.137

Sansome, K., Wilkie, D., & Conduit, J. (2023). Beyond information availability: Specifying the dimensions of consumer perceived brand transparency. *Journal of Business Research*, *170*, Article 114358. https://doi.org/10.1016/j.jbusres.2023.114358

Sharma, A., Adiga, S., & Ashok, M. (2014). Knowledge, attitude and practices related to dietary supplements and micronutrients in health sciences students. *Journal of Clinical and Diagnostic Research: JCDR*, *8*(8), HC10–HC13. https://doi.org/10.7860/JCDR/2014/9329.4683

Sharp, K., & Synodinos, C. (2024). Going green: Unpacking Generation Y's shift towards organic food in South Africa. *Polish Journal of Management Studies*, *30*(2), 264–281. https://doi.org/10.17512/pjms.2024.30.2.16

Sheeran, P., Klein, W. M., & Rothman, A. J. (2017). Health behavior change: Moving from observation to intervention. *Annual Review of Psychology*, *68*, 573–600. https://doi.org/10.1146/annurev-psych-010416-044007

Silver, R. A., & Johnson, C. (2023). Health information seeking behavior on social networking sites and self-treatment: Pilot survey study. *Online Journal of Public Health Informatics*, *15*, Article e51984. https://doi.org/10.2196/51984

Sobari, N., Usman, H., & Sunarmo, S. (2019). Halal supplement: A perspective of Muslim millennial generation. In *Proceedings of the 2nd International Conference on Strategic and Global Studies (ICSGS 2018)*. Central Jakarta, Indonesia. https://doi.org/10.4108/eai.24-10-2018.2289671

Stavrinou, S. E., Arafidis, P. A., Loutradis, C., Memmos, E., Faitatzidou, D., Giamalis, P., Koumaras, C., Karagiannis, A., & Papagianni, A. (2020). Associations of serum sclerostin and Dickkopf-related protein-1 proteins with future cardiovascular events and mortality in haemodialysis patients: A prospective cohort study. *Clinical Kidney Journal*, *14*(4), 1165–1172. https://doi.org/10.1093/ckj/sfaa069

Stevens, C. J., Mauger, A. R., Hassmèn, P., & Taylor, L. (2017). Endurance performance is influenced by perceptions of pain and temperature: Theory, applications and safety considerations. *Sports Medicine*, *48*(3), 525–537. https://doi.org/10.1007/s40279-017-0852-6

Szot, M., Karpęcka-Gałka, Dróżdż, R., & Frączek, B. (2022). Can nutrients and dietary supplements potentially improve cognitive performance also in esports? *Healthcare*, *10*(2), Article 186. https://doi.org/10.3390/healthcare10020186

Tan, E. C., Eshetie, T. C., Gray, S. L., & Marcum, Z. A. (2022). Dietary supplement use in middle-aged and older adults. *The Journal of Nutrition, Health and Aging*, *26*(2), 133–138. https://doi.org/10.1007/s12603-022-1732-9

Teangsompong, T., & Sawangproh, W. (2024). Understanding online purchase intention of plant-based foods: Exploring causal factors and moderating role of self-efficacy within the SOR theory. *Heliyon*, *10*(10), Article e30785. https://doi.org/10.1016/j.heliyon.2024.e30785

Tran, T. D., Van Pham, T., Nguyen, P. C. T., Louis, L. T., & Le, N. N. T. (2024). A case study of decision-making towards using online food distribution services after COVID-19 in Vietnam. *Distribution Science Research*, *22*(3), 33–47. https://doi.org/10.15722/jds.22.03.202403.33

Tzeng, Y., & Ho, Y. (2022). Exploring the effects of product knowledge, trust, and distrust in the health belief model to predict attitude toward dietary supplements. *SAGE Open*. https://doi.org/10.1177/21582440211068855

Veckalne, R., Kapustins, M., & Tambovceva, T. (2023). Smart cities, green diets: How the Lucy Veg App supports Valencia's vegan community and contributes to SDGs. *Virtual Economics*, 6(2), 7–22. https://doi.org/10.34021/ve.2023.06.02(1)

Waiyachote, P. (2024). Perception of marketing communication and university choice intention of Generation Z in Bangkok. *Journal of Multidisciplinary in Social Sciences*, *20*(1). https://so03.tci-thaijo.org/index.php/sduhs/article/view/269260

Walker, T. (2024, March 30). Multiple factors behind Thailand's birth rate decline, experts say. *VOA News*. https://www.voanews.com/a/multiple-factors-behind-thailand-s-birth-rate-decline-experts-say/7539719.html

Wang, B., Tang, T., Kaspar, E., & Li, Y. (2024). Explaining citizens' plastic reduction behavior with an extended theory of planned behavior model: An empirical study in Switzerland. *Journal of Environmental Management*, *358*, Article 120869. https://doi.org/10.1016/j.jenvman.2024.120869

Wathanakom, N. (2023). A causal model of health consciousness, perception of risk and benefits, social influence, and attitude on the intention to purchase vitamins and nutritional supplements by Generation Y consumers. *Journal of Law and Sustainable Development*, *11*(7), Article e754. https://doi.org/10.55908/sdgs.v11i7.754

Wierzejska, R. E. (2021). Dietary supplements – for whom? The current state of knowledge about the health effects of selected supplement use. *International Journal of Environmental Research and Public Health*, *18*(17), Article 8897. https://doi.org/10.3390/ijerph18178897

Wirnitzer, K. C., Motevalli, M., Tanous, D. R., Wirnitzer, G., Wagner, K., Cocca, A., Schätzer, M., Kirschner, W., Drenowatz, C., & Ruedl, G. (2022). Study protocol of "Sustainably healthy – From science 2 highschool & university" – prevalence of mixed, vegetarian, and vegan diets linked to sports & exercise among Austrian tertiary students and lecturers/academic staff. *International Journal of Environmental Research and Public Health*, *19*(22), Article 15313. https://doi.org/10.3390/ijerph192215313

Wong, Y. Q., Tan, B. C., Lau, T. C., & Khan, N. (2021). Purchase intention towards dietary supplements during COVID-19 pandemic: Consumers' perspective. *Food Research*, *5*(5), 294–299. https://doi.org/10.26656/fr.2017.5(5).270

Wongthahan, P., Chandeewanta, S., Phromthep, K., & Hengboriboon, L. (2024). Factors affecting customer attitudes towards alternative cricket protein and the concept of novel products in China and Thailand. *CyTA – Journal of Food*, *22*(1). https://doi.org/10.1080/19476337.2024.2326061

Wu, M., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports*, *7*, Article 100206. https://doi.org/10.1016/j.chbr.2022.100206

Yeo, S. F., Tan, C. L., Leong, I. Y. C., Palmucci, D. N., & Then, Y. J. (2023). Supplements purchase intention: Young consumer's perspective. *British Food Journal*, *125*(7), 2610–2627. https://doi.org/10.1108/BFJ-09-2022-0818