

Examining the Direct and Indirect Role of eWOM in Functional Foods Purchase Intention

Chintra Dewi anak Bajat; Siti Marhamah Mohmed@Wasli *; Pick-Soon Ling
School of Business and Management, University of Technology Sarawak, Sarawak, Malaysia.
Email: sitimarhamah@uts.edu.my

Kelvin Lee Yong Ming
School of Accounting and Finance, Taylor's Business School, Taylor's University, Selangor, Malaysia.

** Corresponding Author*

Abstract

Purpose: The demand for functional foods has also increased with increased health awareness, especially in the post-pandemic era. Consumers tend to seek relevant information to assist their purchase decision-making. Electronic word-of-mouth (eWOM) is perceived as an innovative source of information as extensive information can be obtained from electronic platforms such as social media. However, the role of the eWOM on functional food purchase intention (PI) is still undiscovered. Therefore, the study's main objective is to investigate the role of eWOM on functional food PI through an extended theory of planned behaviour (TPB) model.

Design/methodology/approach: A total of 223 valid responses were gathered in this study and analysed using partial least square structural equation modelling (PLS-SEM).

Findings: To be completed

Research limitations/implications: The finding first revealed that attitude (ATT), subjective norm (SN), health consciousness (HC), and eWOM significantly influence functional foods PI. Besides, eWOM also significantly affects ATT, SN, perceived behavioural control (PBC), and HC. In addition, the findings also found that eWOM indirectly significantly influences functional food PI through ATT and SN.

Practical implications: This study successfully verified the crucial role of eWOM on functional foods PI, which is theoretically essential as it provides evidence of the role of eWOM on PI. Besides, the practical implications derived from the study's findings are also discussed in this study.

Originality/value: The study proposed a novel research framework that provided solid evidence of the effect of eWOM on functional food PI by extending the TPB model. The finding proved that eWOM has a significant direct effect on the constructs in the framework and influenced PI indirectly through ATT and SN.

Keywords: electronic word-of-mouth, functional foods, theory of planned behaviour, health consciousness, purchase intention

Introduction

Internal and external factors influence consumers' purchase intention (PI) (Sun *et al.*, 2022). Word of mouth (WOM) is perceived as affecting consumers' purchase behaviour (Garcia-Salirrosas & Rondon-Eusebio, 2022; Lin *et al.*, 2022). WOM is informal publicity (Lin *et al.*, 2022) and information exchange between consumers about products or services (Gilly *et al.*, 1988). This information can be positive or negative statements (Ahmad *et al.*, 2020), and it

may share by the relevant group of consumers. However, with technological advancement, the traditional WOM has transformed into an electronic form, electronic word of mouth (eWOM) (Al-Dmour *et al.*, 2022), which is disseminated virtually through the electronic platform such as social media, forums, reviews, and comments, and the like (Farzin & Fattahi, 2018). This form of word of mouth is considered a more effective way to approach consumers and is thus expected to be more beneficial than traditional WOM (Al-Dmour *et al.*, 2022). With that, the eWOM could likely be one of the significant information sources that may affect others' behavioural intentions. For instance, Muller-Perez *et al.* (2023) found that eWOM positively affects online repurchase intention in Mexico. Prasad and Prasad (2023) also revealed a similar effect on online PI toward apparel. However, the impact of eWOM on functional foods is relatively limited in the literature, even though the demand for functional foods has increased due to high health awareness and consciousness.

Functional foods are products that can avoid illness and keep or cultivate health conditions (Lakhdar & Smaoui, 2021). Xin and Seo (2020) further remarked on the benefits of functional foods, which are expected to enhance well-being and reduce disease risk. Therefore, functional foods are essential supplements that can improve the human immune system (Ling *et al.*, 2023). Low-fat milk, oats, nuts, vitamins, probiotics, and others are some of the functional foods that may be consumed to improve the human immune system. The demand for functional food has recently increased due to the increasing consciousness regarding health conditions (Xin & Seo, 2020), health awareness, and the benefits of healthy foods (Baker *et al.*, 2022). Moreover, the demand for functional foods and supplement products has also dramatically risen due to the COVID-19 pandemic, as nowadays, consumers take more care of their health conditions, and this is agreed with Sajed and Amgain (2020), who remarked on the increased awareness of health and safety during the pandemic. Therefore, it is necessary to explore further the functional food PI factors due to their increasing importance to the consumers' health needs.

Several studies have empirically investigated the determinant antecedents of functional foods' PI using different perspectives. For example, some studies utilized the framework of the Theory of Planned Behaviour (TPB) and/or extended TPB model (Ling *et al.*, 2023; Pienwisetkaew *et al.*, 2022; Xin & Seo, 2020), Theory of Reasoned Action (TRA) and/or extended TRA model (Nguyen *et al.*, 2019; Rezai *et al.*, 2017), Value-Attitude-Behaviour model (Chang *et al.*, 2020), and the like. These studies provided interesting evidence about influencing consumers to buy functional foods. However, the role of eWOM on functional foods PI is considered under research. In contrast, most of the studies that examined the role of eWOM are focusing on different types of products such as supplements products (Al-Dmour *et al.* (2022), organic food products (Zayed *et al.*, 2022), apparel (Prasad & Prasad, 2023), and others. Therefore, the study's primary purpose is to investigate the role of eWOM on functional food PI to cover the existing gap of the study. The TPB model has been extended with health consciousness (HC), and eWOM reacts as the exogenous constructs to examine its effect on functional foods PI, both directly and indirectly. The result successfully proved the significant role of the eWOM on functional foods PI as it significantly influences ATT, SN, PBC HC, and PI. At the same time, it also considerably and indirectly affects PI through ATT and SN

Literature Review

Theory of Planned Behaviour

Ajzen (1985) proposed a novel model called the theory of planned behaviour (TPB) to explain human behaviour. As TPB advocates, three factors significantly affect human behaviour: attitude (ATT), subjective norm (SN), and perceived behaviour control (Ling *et al.*, 2023). Thus, TPB offered a comprehensive framework to predict human intention and also their behavioural (Taufique & Islam, 2021). ATT refer to the level of an individual's favourable or unfavourable feelings towards a behaviour (Ajzen, 1991). Positive or good ATT would lead to a high intention to engage in that behaviour. An individual's behavioural intention is expected to be influenced by the people they value most, such as family members, friends, lecturers, and others, whereby the individual is more likely to participate in such behaviour when people in their surroundings approve of them to do so. This proposition is social pressure from the people surrounding an individual, a SN (Ajzen, 1991). Moreover, the easiness of involvement in the behaviour is expected to be one of the factors for an individual's behaviour. Thus, perceived behavioural control (PBC) is one of the significant influences in explaining human behaviour (Ajzen, 1991). Empirically, as proposed by Ajzen (1985), the individual will have a high likelihood to perform certain behaviour when that individual has a favourable ATT towards the behaviour, perceives their have such ability to perform it, and also when people surrounding them think that they should engage in such behaviour.

Since the inception of the TPB by Ajzen (1985), it has been widely adopted in literature to investigate the factors of human behaviour in different research settings. However, as remarked by Ling *et al.* (2023), only three personal attitudinal factors are considered in the TPB, thus limiting capturing some specific features in certain behaviour. For that reason, TPB has been extended to incorporate some other important elements or aspects that may not be captured in the TPB when it has been used to study certain specific behaviour. For example, Ling *et al.* (2023) extended TPB with social media influence, environmental knowledge, and government support as moderators to study green consumption behaviour. Similarly, TPB has also been extended with environmental concerns, HC, and eWOM to study the organic food PI. Alam *et al.* (2020) included perceived value in the TPB model to investigate sustainable food consumption. A similar idea has also been applied to reusable drinking cups, whereby Wang *et al.* (2022) further assessed the intention to use reusable drink cups by expanding the initial TPB model with environmental concerns, green university initiatives, and moral norms. Moreover, Ling *et al.* (2023) also further incorporated HC and subjective knowledge together with the impact of COVID-19 to identify their effect on functional foods PI. Therefore, this study employed a similar setting, whereby the initial TPB model is further extended with HC and eWOM in examining the functional foods PI to explore the subject matter better.

Theoretical Framework and Hypothesis Development

Effect of ATT on PI

According to Ajzen (1991), ATT is defined as the personal feeling toward a specific behaviour, whether the feeling is positive or negative. Similarly, ATT toward functional foods also refers to an individual's opinion (Ling *et al.*, 2023). Theoretically, as suggested by Ajzen (1985), when an individual has a good or positive perception toward products like functional foods, they are more likely to purchase them as their benefit; it will benefit them. Similar postulation is also expected in this study, where consumers are expected to purchase functional foods when they have a favourable ATT toward functional foods, as proved in the

literature (Nystrand & Olsen, 2020). For example, Bajat *et al.* (2023) and Ling *et al.* (2023) found a significant positive influence of ATT on functional food PI in Malaysia. Similar findings were also revealed in other products, such as sustainable foods in Malaysia (Alam *et al.*, 2020) and organic foods in Egypt (Zayed *et al.*, 2022). Thus, the hypothesis below is proposed in this study.

H1: ATT is positively significant with PI.

Effect of SN on PI

SN refers to the perception of the pressure from an individual's social context, which is expected to influence an individual's behaviour (Ajzen, 1991). The people in the social context may include friends and family, superiors, non-profit organizations, government, etc. When an individual thinks the people important to them have positive feelings about a particular behaviour, they usually engage in such behaviour. As proved in the literature, the positively significant effect of SN on the PI has been widely documented (Bajat *et al.*, 2023; Nguyen *et al.*, 2020; Liu, 2022). For instance, Rezai *et al.* (2017) discovered the significant positive effect of SN on natural functional foods' PI in Malaysia. Similarly, the significant positive impact of SN on BI to purchase dietary supplements in China was also discovered by Liu *et al.* (2021). Recently, Ling *et al.* (2023) also revealed the significant positive influence of SN on functional foods' PI in Malaysia. Therefore, the following hypothesis is formulated in this study.

H2: SN is positively significant with PI.

Effect of PBC on PI

besides the perception of others and the self-feeling on the behaviour could influence the behavioural intention, Ajzen (1991) also suggested that the perceived difficulties in engaging in a behaviour significantly influenced an individual's behaviour. It also can be defined as the easiness of performing a certain behaviour; either additional effort or cost is required. As found in previous studies, an individual is likely to perform a certain behaviour when they perceive that they have such ability to do it or that it is easy to do it (Ling *et al.*, 2023; Tran & Nguyen, 2021). Therefore, the significant influence of the PBC on the consumer 's PI toward functional foods is hypothesized in this study. This proposition aligns with Liu *et al.* (2022), who revealed the PBC's significant effect on dietary supplement PI in China. Similarly, the evidence of the substantial influence of PBC on PI towards the traditional functional food consumption behaviour in Indonesia (Sumaedi & Sumardjo, 2021). The positively significant impact of PBC on the PI in different types of products is also remarked in literature, such as green food (Qi & Ploef, 2021) and health foods (Lee *et al.*, 2020). With that, the following hypothesis is proposed in this study.

H3: PBC is positively significant with PI.

Effect of HC on PI

HC is incorporated into the TPB model to better capture the functional foods' features and increase the proposed framework's explainability. HC refers to an individual's understanding of health conditions and requirements (Hsu *et al.*, 2016). Ling *et al.* (2023) defined HC as an individual's concern regarding their health condition in their daily life. If individuals are more aware and conscious of their health condition, they are expected to take action that could improve their health, such as purchasing functional foods. For that reason, HC is expected to have a significant impact on the consumers' PI on different types of foods, and this postulation has been proved in literature (Bajat *et al.*, 2023; Hsu *et al.*, 2016; Iqbal *et al.*, 2021; Qi & Ploeger, 2021). For example, Huang *et al.* (2019) revealed that HC significantly

influences the PI of functional food in China. Similar findings were also remarked by Xin and Seo (2020), who also found the significant effect of HC on imported functional foods' PI among Chinese consumers. Therefore, the hypothesis below is hypothesized in this study.

H4: HC is positively significant with PI.

Effect of eWOM on ATT, SN, PBC and HC

EWOM is the information or statement spread virtually through the electronic platform regarding the reviews or opinions about the products, services or objects (Al-Dmour *et al.*, 2022; Farzin & Fattahi, 2018). As one of the important information sources, eWOM is perceived to influence consumers' behaviours. Firstly, ATT is expected to be affected by the EWOM, as no matter whether the eWOM on a particular object is positive or negative, it tends to form favourable or unfavourable ATT of consumers and ultimately affects their behavioural intention, and this proposition has been supported in the literature. For example, Yodpram and Intalar (2019) proposed that eWOM positively affects the brand ATT on the consumers' willingness to pay a premium for ticket prices in a low-cost airline. This supposition is empirically proved in later studies, such as Kunja *et al.* (2022) found that eWOM significantly influences the hedonic and utilitarian brand ATT of young consumers' purchasing intention. Zayed *et al.* (2022) also revealed a similar finding whereby the significant positive relationship of the eWOM on the ATT also exists in the context of organic food products' PI in Egypt. In a recent study, Anubha (2023) further proved that the different elements of eWOM, including quality, valence, consistency and quantity, positively influence the consumer's ATT towards halal cosmetics in India.

Besides, eWOM is considered useful information from electronic platforms, which is expected to significantly affect the consumers' SN. SN refers to the people's influence on their behaviour in the consumers' social context. Therefore, the information or reviews from the electronic platform could be one of the social pressures that may influence the consumer's behaviour (Zayed *et al.*, 2022). When consumers receive more positive feedback or comments regarding an object, it could affect their decision-making and behaviour, and this association has been verified in the literature. For instance, Kitcharoen (2019) discovered a significant positive association of the eWOM on the SN in the context of hotel booking intention in Thailand. The significant positive influence of the eWOM on the consumers' SN was also found by Zayed *et al.* (2022) in the context of organic food PI in Egypt.

Similarly, eWOM is also estimated to affect the PBC significantly. This proposition is particularly true when consumers can obtain helpful information through eWOM, which may help consumers buy functional foods conveniently. For example, the consumers may get information regarding the location of the stores that sell certain functional foods and also which stores may offer special discounts on the functional foods. This information would reduce the difficulty in the purchasing decision-making, thus increasing the intention to purchase. Empirically, the significant influence of the eWOM on the PBC is proved in some studies. For instance, Kitcharoen (2019) found a positive association between eWOM and PBC in Thailand. Zayed *et al.* (2022) also remarked on the same finding in the context of organic food PI in Thailand.

As an additional construct in the proposed framework, HC is crucial to affecting the consumer's intention to purchase functional foods, which is proved in the literature. As mentioned before, eWOM is perceived as a vital information source that may influence consumers' behaviour. Therefore, some important information, such as health-related

information, could be disseminated through the eWOM, which could further enhance the consciousness of the consumers regarding their health condition. With that, it is anticipated that eWOM has a significant positive association with HC, and this anticipation has been documented in the literature. For example, Zayed *et al.* (2022) revealed the positive influence of eWOM on HC, as the consumers may receive some information related to the health benefits from eWOM.

From the discussion above, the following hypotheses were formulated and to be examined in this study.

H5: eWOM is positively significant with ATT.

H6: eWOM is positively significant with SN.

H7: eWOM is positively significant with PBC.

H8: eWOM is positively significant with HC.

Effect of eWOM on PI

Besides, eWOM is also projected to have a significant direct relationship with the PI. As remarked in the previous section, consumer behaviour tends to be affected by different factors, including eWOM. eWOM refers to the information exchange among different groups of individuals, such as consumers, retailers, and others, through electronic platforms. As evidenced in the literature, this information is expected to influence the consumers' decision-making and also their PI (Kunja & GVRK, 2020; Liu *et al.*, 2022; Muller-Perez *et al.*, 2023; Prasad & Prasad, 2023). For instance, the PI of Generation Z in Pakistan is significantly influenced by eWOM, as found by Tabassum *et al.* (2020). Similarly, Prasad *et al.* (2019) revealed the same positively significant effect of eWOM on the PI of Generation Y in India. Kunja (2022) also remarked on the positive impact of eWOM on the consumer's smartphone PI. By desegregating the eWOM into four different elements, Anubha (2023) further proved that eWOM quality, eWOM valence, and eWOM consistency significantly influenced the consumers' halal cosmetics PI. Besides, Ng and Goh (2022) also found that eWOM attractiveness and eWOM quantity significantly affected the consumers' fitness memberships PI. With that, the hypothesis below is proposed:

H9: eWOM is positively significant with PI.

Mediation Role of ATT, SN, PBC and HC

Besides the direct influence of the eWOM on the functional foods' PI, this study also aimed to examine the indirect effect of eWOM on the intention to purchase functional foods through four proposed mediators, namely ATT, SN, PBC, and HC. The main reason is to ensure that the role of eWOM on functional foods PI can be examined thoroughly and comprehensively, as the indirect effect may also possess certain important implications. As Farani *et al.* (2017) remarked, TPB's constructs may mediate the relationship between endogenous constructs and behavioural intention. The significant mediating effect of the proposed mediators has been proved in literature but in different research contexts. For example, Ng *et al.* (2021) found that ATT and SN partially mediated the relationship between environmental concern and behavioural intention on the food waste separation intention. Besides, Wang and Chu (2021) also found that ATT fully mediated the relationship between endogenous constructs like descriptive norms, injunctive norms, and the perceived effectiveness of CFFs on certified functional foods PI in Taiwan. Likewise, Ng and Goh (2022) also documented the significant mediation effect of ATT on the relationship between eWOM quality and PI of fitness memberships in Malaysia. Duong *et al.* (2022) further found that ATT and PBC could

significantly mediate the relationships toward green PI. Moreover, the significant mediation role of HC is also remarked in literature but in different research contexts. For instance, Synodinos *et al.* (2023) found that SN significantly influences the organic foods PI through environmental knowledge and HC. Similarly, both Espinosa and Kadic-Maglajlic (2018) and Xue *et al.* (2020) also remarked on the significant mediation role of HC in their studies. Therefore, the following hypotheses are proposed:

- H10:** ATT significantly mediates the relationship between eWOM and PI.
- H11:** SN significantly mediates the relationship between eWOM and PI.
- H12:** PBC significantly mediates the relationship between eWOM and PI.
- H13:** HC significantly mediates the relationship between eWOM and PI.

The proposed research framework of the study is illustrated in Figure 1 below, as discussed in the previous section.

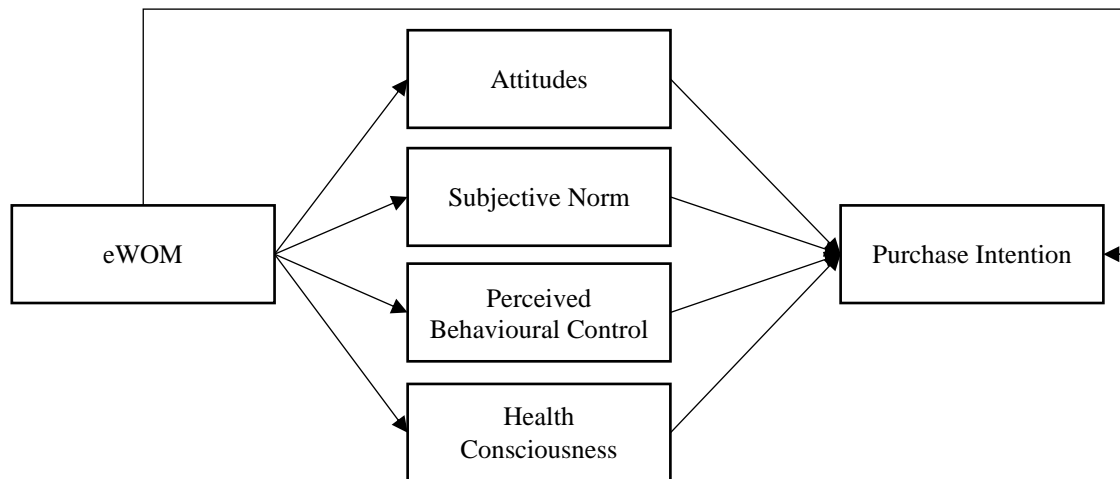


Figure 1: Proposed Research Framework

Method

The quantitative approach is used by collecting the primary responses from the general consumers in Malaysia through the convenience sampling technique. The online survey link in Google Forms has been shared with the targeted respondents through several channels such as Facebook, what apps, email, and the like. Any respondents who received the invitation link are invited to participate in this study. In total, 223 usable and valid responses were gathered from the targeted respondents. This sample size was sufficient for this study as it met the minimum sample size of 189 determined using power analysis through g*power software with the criteria of 0.15 effect size, a power level of 95%, and 13 hypotheses.

A total of 26 measurement items were adapted from previous studies to develop the study questionnaire. For example, six items of ATT and four items of PI were elicited from Zayed *et al.* (2022), while four items of SN and PBC were adapted from Xin and Seo (2020). Besides, four items of HC were borrowed from Pienwisetbaew *et al.* (2022), and four items of eWOM were adapted from Al-Dmour *et al.* (2022). A seven-point Likert scale has been adopted to measure the level of agreement of the measurement items, ranging from 1 (strongly disagree) to 7 (strongly agree). The questionnaire was prepared in English and then back-to-back translated into Malay to prevent misunderstanding.

The partial least square structural equation modelling (PLS-SEM) has been used to analyse the collected responses as the multivariate normality test through Mardia's coefficient procedure showed that the dataset is not normally distributed. Therefore, this signified that the PLS-SEM is suitable for analysing this data (Hair *et al.*, 2019). Besides, the full collinearity test introduced by Kock (2015) has also been adopted to assess the common method bias (CMB). The result of the full collinearity test found that this study has no CMB issue, as the variance inflation factors (VIF) value derived from the full collinearity test for all constructs is lower than 3.3 (Kock, 2015).

Findings

As presented in Table 1, of the 223 respondents, 112 are females, and 111 are male. Approximately 53 per cent of these respondents are aged between 21 to 30 years old, 26 per cent are from 31 to 40 years old, 10 per cent are respondents aged 20 and below, and aged 41 and above accounted for 11 per cent. Regarding occupation, 47 per cent are employees, 30 per cent are students, and 14 per cent are self-employed. The majority of the respondent earned RM1500 and below (36%), followed by RM2501 to RM3500 (17.49%) and RM1501 to RM2500 (16.59%). Besides, around 65% of the respondent have tertiary education and above, while the remaining have secondary education and below.

Table 1: Characteristics of the Respondents

Characteristics		Frequency	Percentage
Gender	Male	111	49.78
	Female	112	50.22
Age	20 YO and below	22	9.87
	21 – 30 YO	118	52.91
	31 – 40 YO	58	26.01
	41 – 50 YO	16	7.17
	50 YO and above	9	4.04
Occupation	Employee	105	47.09
	Housewife	13	5.83
	Retiree and Other	7	3.14
	Self-Employed	32	14.35
	Students	66	29.60
Income Range	RM1500 and below	81	36.32
	RM1501 – RM2500	37	16.59
	RM2501 – RM3500	39	17.49
	RM3501 – RM4500	28	12.56
	RM4501 – RM5500	18	8.07
	RM5501 and above	20	8.97
Highest Education Level	Certificate / Diploma / Bachelor Degree	144	64.57
	Master Degree / PhD	30	13.45
	Primary School / Secondary School	48	21.52
	Other	1	0.45

The study first assesses the outer measurement model through reliability and validity tests. Table 2 shows that convergent validity is established as the outer loading values for all measurement items are higher than 0.708 (Hair *et al.*, 2019), except for HC4, which was deleted due to the low loading value. Similarly, all the average variance extracted (AVE) values exceed 0.5000, confirming the establishment of convergent validity (Bagozzi & Yi, 1988). The composite reliability (CR) values were calculated to measure the internal consistency. All constructs have CR values greater than 0.7000, which proves the study's

high internal consistency (Gefen *et al.*, 2000). Furthermore, the heterotrait-monotrait (HTMT) ratio of the correlation has also been used to assess the discriminant validity of the study. As revealed in Table 3, all HTMT values are less than the threshold level of 0.85, which further shows that the discriminant validity of the study was also achieved (Kline, 2011). Therefore, this can ensure the measurement model of the study is reliable and valid. In addition, to ensure the common method bias (CMB) doesn't interfere with the dataset, all constructs' variance inflation factor (VIF) values have been obtained from the full collinearity test. As the VIF values for all constructs are lower than the suggested threshold value of 3.3, thus, it can be confidently stated that the collected responses of the study don't have the CMB issue (Kock, 2015).

Table 2: Convergent Validity, Internal Consistency, and VIF

Constructs	Items	Outer Loading	AVE	CR	VIF
Attitude	ATT1	0.9033	0.7923	0.9581	2.8860
	ATT2	0.8330			
	ATT3	0.8907			
	ATT4	0.9024			
	ATT5	0.9040			
	ATT6	0.9051			
Subjective Norm	SN1	0.8987	0.8562	0.9597	2.5670
	SN2	0.9377			
	SN3	0.9523			
	SN4	0.9117			
Perceived Behavioural Control	PBC1	0.7724	0.7467	0.9215	1.7750
	PBC2	0.8990			
	PBC3	0.8485			
	PBC4	0.9284			
Health Consciousness	HC1	0.8845	0.8201	0.9319	1.3990
	HC2	0.9192			
	HC3	0.9128			
electronic Word-of-Mouth	eWOM1	0.7135	0.6586	0.8847	1.8820
	eWOM2	0.8730			
	eWOM3	0.8511			
	eWOM4	0.8002			
Purchase Intention	PI1	0.9491	0.9023	0.9736	2.8820
	PI2	0.9520			
	PI3	0.9499			
	PI4	0.9485			

Table 3: Discriminant Validity

	ATT	SN	PBC	HC	eWOM	PI
ATT						
SN	0.7580					
PBC	0.5638	0.5188				
HC	0.4764	0.3449	0.4914			
eWOM	0.5950	0.5746	0.6920	0.4846		
PI	0.7794	0.7582	0.4921	0.4599	0.6121	

After the validity and reliability of the study have been established, the study continues to assess the inner structural model using the bootstrapping procedure in SmartPLS version 4 to test the proposed hypotheses. The results showed that eWOM could explain 28.57%, 26.65%, 35.21%, and 17.08% variation in ATT, SN, PBC, and HC, respectively. Besides, all five proposed exogenous constructs could predict approximately 65.31% of the variance in PI. Moreover, the study's predictive relevancy (Q^2) values are greater than zero, verifying the exogenous constructs' predictive ability on the endogenous construct.

For the hypotheses testing, the results in Table 4 first showed eight out of nine direct hypotheses were supported, except for H3, whereas PBC insignificantly influences PI. Specifically, it proved that PI was significantly impacted by ATT, SN, HC, and eWOM, thus supporting H1, H2, H4, and H9. Moreover, the eWOM also significantly influences ATT, SN, PBC, and HC. Therefore, H5, H6, H7, and H8 also been supported. These findings signified that eWOM played a crucial role in determining the functional foods' PI, as it significantly influenced all the involved constructs. By referring to Cohen (1988), the result showed that HC and eWOM only have a small effect on PI ($0.02 < f^2 < 0.15$), while ATT and SN together with eWOM on HC possess a medium effect ($0.15 < f^2 < 0.35$). A large effect was also found for eWOM towards ATT, SN, and PBC ($f^2 > 0.35$).

In addition, the study also examines the indirect role of the eWOM on the PI through the four mediators, ATT, SN, PBC, and HC; the result is presented in Table 5. The mediation analysis revealed that eWOM indirectly affects PI through ATT and SN, thus supporting H10 and H11. However, H11 and H12 are unsupported, signifying that eWOM could not influence PI via PBC and HC. Overall, the study's results have proved that eWOM played a crucial role in determining the functional foods' PI as it could significantly influence consumers' PI directly or indirectly through ATT and SN.

Table 4: Path-Coefficients and Hypotheses Testing

Hypo.	Path	Coeff.	t-value	p-value	BCI-LL	BCI-UL	f2	Result
H1	ATT->PI	0.3950	4.6507	0.0000	0.2431	0.5231	0.1846	Supported
H2	SN->PI	0.3568	4.5867	0.0000	0.2326	0.4933	0.1668	Supported
H3	PBC->PI	-0.0489	0.7825	0.2170	-0.1504	0.0511	0.0039	Not Supported
H4	HC->PI	0.1026	1.8167	0.0347	0.0126	0.1955	0.0222	Supported
H5	eWOM->ATT	0.5345	7.8052	0.0000	0.4061	0.6352	0.4001	Supported
H6	eWOM->SN	0.5163	8.7931	0.0000	0.4081	0.6057	0.3634	Supported
H7	eWOM->PBC	0.5934	9.6027	0.0000	0.4710	0.6822	0.5435	Supported
H8	eWOM->HC	0.4133	5.1228	0.0000	0.2677	0.5334	0.2060	Supported
H9	eWOM->PI	0.1420	2.2384	0.0126	0.0341	0.2418	0.0319	Supported

Table 5: Path-Coefficients and Hypotheses Testing for Mediation Analysis

Hypo.	Path	Coeff.	t-value	p-value	BCI-LL	BCI-UL	f2	Result
H10	eWOM ->ATT->INT	0.2111	3.8894	0.0001	0.1257	0.3023	Small	Supported
H11	eWOM ->SN->INT	0.1842	4.0445	0.0000	0.1196	0.2719	Small	Supported
H12	eWOM ->PBC->INT	-0.0290	0.7819	0.2172	-0.0886	0.0305	None	Not Supported
H13	eWOM ->HC->INT	0.0424	1.6070	0.0541	0.0066	0.0924	None	Not Supported

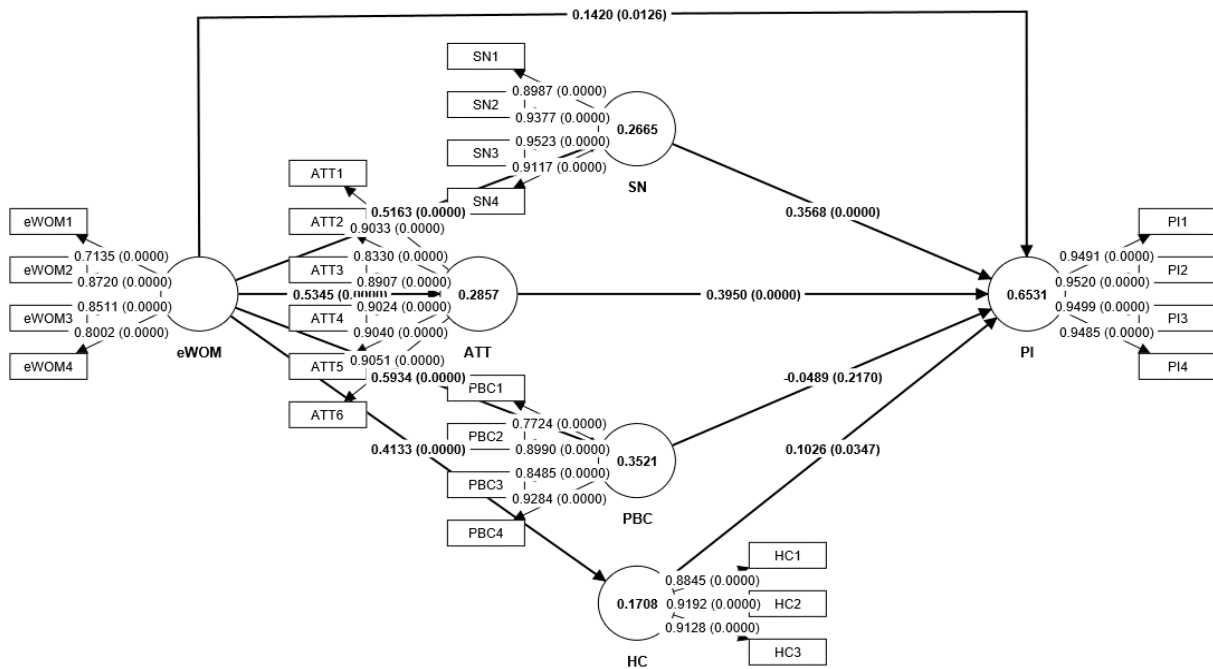


Figure 2: Path-Coefficients and Hypotheses Testing

Discussion

The results showed that ATT, SN, HC, and eWOM significantly influenced the PI of functional foods, except for PBC. The significant effect of ATT on PI on functional foods is similar to Ling *et al.* (2023), Nystrand and Olsen (2020), and other studies in different contexts (Alam *et al.*, 2020; Latip *et al.*, Zayed *et al.*, 2022). This result indicated that favourable feelings about functional foods significantly drive consumers to buy functional foods. Similarly, the significant positive influence of the SN on PI also coincides with Bajat *et al.* (2023), Ling *et al.* (2023) and Rezai *et al.* (2017), who also found that the pressure from the people surrounding them could affect their PI on functional foods. However, PBC was found insignificant with the functional foods PI in this study. This finding is quite surprising as it opposes past studies that revealed the significant effect of PBC on PI, such as Sumaedi and Sumardjo (2021), Tran and Nguyen (2021), and Liu *et al.* (2022). This result may signify that consumers must put in extra effort or pay premium prices to purchase functional foods, which may discourage them. As expected, HC is positively significant with PI, and this finding is consistent with Bajat *et al.* (2023), Huang *et al.* (2019) and Xin and Seo (2020). The result indicated that when consumers are more alert and conscious of their health condition, they are likely to purchase functional foods to keep their health at a satisfactory level. In terms of the effect of eWOM on the functional foods PI, the result found that the eWOM significantly influences the PI, and this finding is in line with most of the studies on PI in different contexts (Ahmad *et al.*, 2020; Farzin & Fattahi, 2018; Nguyen & Phan, 2022; Prasad & Prasad, 2023). This finding showed that the consumers could have higher PI on the functional foods if they received helpful and quality information regarding the functional foods on electronic platforms such as social media.

Besides, this study has further proved the significant role of the eWOM on the ATT, SN, PBC, and HC. This finding is paralleled with Zayed *et al.* (2022), who also remarked on the significant influence of eWOM on the same constructs in the context of organic food's PI. This result indicated that the information search from the electronic platform could further enhance the consumers' favourable feelings about functional foods. Not only that, the

feedback and comments on these electronic platforms could become a social pressure that would significantly influence the consumers' purchase decisions. Similarly, consumers may perceive purchasing functional foods as easy when they receive that electronic information, which can further reduce the difficulty of buying functional foods. This study further found that eWOM could increase the consumers' HC, reaffirming that the information received from the electronic platform could enhance the consumers' health awareness. Furthermore, besides the direct association, the study's findings also revealed the indirect role of eWOM on functional foods' PI. In contrast, the eWOM significantly and indirectly influences PI through ATT, SN, and HC. This finding is particularly important as it adds new evidence regarding the role of eWOM on functional food PI, either direct or indirect, which is relatively scarce in the literature.

Implications

The primary theoretical implication of the study was based on the novel research framework that offered empirical evidence on the effect of eWOM on functional food PI. The TPB model was extended with HC and eWOM for this purpose. The findings verified that HC significantly influenced the consumers' intention to purchase functional foods. This finding signified that the existing TPB has to be integrated with some factors to capture the specific settings of the study. Moreover, this study has confirmed the effect of eWOM on functional food PI, either directly or indirectly, through ATT and SN. Specifically, eWOM significantly influenced all constructs in the proposed framework, including ATT, SN, PBC, HC, and PI. Besides, ATT and SN also react as effective mediators to mediate the relationship of eWOM on functional foods PI. Thus, the direct and indirect role of the eWOM has been successfully proved in this study, contributing to the existing literature, especially on the consumers' purchase behaviour and functional foods.

Besides, the findings of the study also contributed practically to the stakeholders. The stakeholders, such as government agencies and functional food manufacturers and retailers, could concentrate on eWOM in promoting the consumption of functional foods. As proved in this study, eWOM influences PI directly and indirectly. Therefore, the advantages and benefits of consuming functional foods could be disseminated through electronic platforms such as social media and websites. With the high usage of electronic platforms, information sharing could be successfully transmitted to consumers. Receiving this information would affect the consumers' purchasing decision-making and, ultimately, their purchasing behaviour. For instance, the more favourable imparting details regarding the benefit of having functional foods through eWOM, the consumers tend to have good ATT. Thus, it would increase their likelihood of buying it. Besides, eWOM is also perceived as one of the social pressures that may affect consumers' decision-making and purchasing behaviour. The more information received from the sources surrounding them, the higher the intention to purchase functional foods. A similar effect is also postulated for PBC. The information obtained through the eWOM may increase the consumers' ability to buy functional foods and make the purchasing process more convenient. In addition, the more information received through the eWOM, the more conscious it is related to their health condition. With that, eWOM could significantly increase the awareness level of the consumers and subsequently drive them to buy functional foods when they are more conscious of their health condition.

Conclusions and Recommendations for Future Studies

As electronic sources gradually become mainstream for information seeking, the effect of eWOM on the consumer's purchasing behaviour is being proved in literature. However, the

impact of the eWOM on the functional foods PI is relatively limited, even though the eWOM is considered one of the important opinion sources that the consumers will usually reference. This study aimed to investigate the role of eWOM on functional food PI using an extended TPB model. By collecting 223 primary responses from Malaysian consumers, the result of the PLS-SEM showed that eWOM played a crucial role in determining the consumers' PI on functional foods. Specifically, eWOM significantly influences ATT, SN, PBC, and HC. At the same time, eWOM, ATT, SN, and HC also considerably determine the consumer's functional foods PI. Besides, the mediation analysis further found that eWOM could indirectly influence functional foods PI through ATT and SN. This finding is significant as it could provide substantial theoretical implications for the existing literature, whereas the evidence on the role of eWOM on functional foods PI was provided. Besides, the study's findings also offered some practical implications, and the stakeholders can refer to cultivating the consumption of functional foods to enhance the immune systems.

This study consists of some limitations that may be considered in future studies. For instance, the study only focused on the general consumers in Malaysia using a convenient sampling technique. Therefore, the generalizability of the could be an issue for the results' findings. Future studies may consider using purposive sampling to examine the effect of eWOM on the functional foods eaters rather than general consumers, as it could provide more detailed findings from those who consumed functional foods. Besides, eWOM could be played different roles, not just limited to the direct and indirect ones examined in this study. To comprehensively explore the role of eWOM, further studies may include eWOM as a mediator or moderator, as consumer purchase behaviour involves complex decision-making. Moreover, future studies may consider a comparative study, whereas all respondents are assumed to be homogenous in this study. However, different sub-cultures of the respondents may behave differently, as proved in some literature. For instance, males and females, eater and non-eater, and others may have different opinions regarding the role of eWOM on functional foods' PI. More exciting and comprehensive findings could be gained if these limitations were addressed.

Acknowledgement

The authors wish to acknowledge that this study is funded by UTS Research Grant (UTS/RESEARCH/4/2022/13).

References

- Ahmad, A., Abuhasheash, M., Obeidat, Z. and Al-Khatib, M. (2020). EWOM and airline e-ticket purchasing intention: mediating effect of online passenger trust. *Management Science Letters*, 10(12), 2729-2740.
- Alam, S.S., Ahmad, M., Ho, Y-H., Omar, N.A. and Lin, C-Y. (2020). Applying an Extended Theory of Planned Behavior to Sustainable Food Consumption. *Sustainability*, 12(20), 8394.
- Al-Dmour, H., Al-Qawasmi, S., Al-Dmour, R. and Amin, E.B. (2022). The role of electronic word of mouth (eWOM) and the marketing mix on women's purchasing intention of children's dietary supplements. *International Journal of Pharmaceutical and Healthcare Marketing*, 16(3), 376-391.
- Anubha. (2023). Mediating role of attitude in halal cosmetics purchase intention: an ELM perspective. *Journal of Islamic Marketing*, 14(3), 645-679.
- Bagozzi, R. and Yi, Y. (1988). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Sciences*, 16, 74-94.

- Bajat, C.D.a., Mohmed@Wasli, S.M., Ling, P-S. and Ling, L-S. (2023). Do health consciousness and perceived benefits play a role in motivating buyers to purchase functional foods? *Borneo Journal of Social Science & Humanities*, 5(2), 84-98.
- Baker, M.T., Lu, P., Parrella, J.A. and Leggette, H.R. (2022). Consumer Acceptance toward Functional Foods: A Scoping Review. *International Journal of Environmental Research and Public Health*, 19(3), 1217.
- Chang, H-P., Ma, C-C. and Chen, H-S. (2020). The Impacts of Young Consumers' Health Values on Functional Beverages Purchase Intentions. *International Journal of Environmental Research and Public Health*, 17(10), 3479.
- Cohen, E. (1988). Authenticity and commoditisation in tourism. *Annals of Tourism Research*, 15(2), 371-386.
- Duong, C.D., Doan, X.H., Vu, D.M., Ha, N.T. and Dam, K.V. (2022). The Role of Perceived Environmental Responsibility and Environmental Concern on Shaping Green Purchase Intention. *Vision: The Journal of Business Perspective*. Doi: 10.1177/09722629221092117
- Espinosa, A. and Kadic-Maglajlic, S.K. (2018). The Mediating Role of Health Consciousness in the Relation Between Emotional Intelligence and Health Behaviors. *Frontiers in Psychology*, 9, 2161. 10.3389/fpsyg.2018.02161
- Farani, A.Y., Karimi, S. and Motaghd, M. (2017). The role of entrepreneurial knowledge as a competence in shaping Iranian students' career intentions to start a new digital business. *European Journal of Training and Development*, 41(1), 83-100.
- Farzin, M. and Fattahi, M. (2018). E-WOM through social networking sites and impact on purchase intention and brand image in Iran. *Journal of Advances in Management Research*, 15(2), 33-47.
- Garcia-Salirrosas, E. and Rondon-Eusebio, R.F. (2022). Green Marketing Practices Related to Key Variables of Consumer Purchasing Behavior. *Sustainability*, 14(14), 8499.
- Gilly, M.C., Graham, J.L., Wolfenbarger, M.F. and Yale, L.J. (1998). A dyadic study of interpersonal information search. *Journal of the Academy of Marketing Science*, 26(2), 83-100.
- Hair, J. F., Risher, J. J., Sarstedt, M. and Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24.
- Hsu, S-Y., Chang, C-C. and Lin, T.T. (2016). An analysis of purchase intentions toward organic food on health consciousness and food safety with/under structural equation modeling. *British Food Journal*, 118(1), 200-216.
- Iqbal, J., Yu, D., Zubair, M., Rasheed, M.I., Khizar, H.M.U. and Imran, M. (2021). Health Consciousness, Food Safety Concern, and Consumer Purchase Intentions Toward Organic Food: The Role of Consumer Involvement and Ecological Motives. *SAGE Open*, 10.1177/21582440211015727
- Kitcharoen, K. (2019). The Effect of E-Word of Mouth (E-WOM) on Various Factors Influencing Customers' Hotel Booking Intention. *ABAC ODI Journal Vision. Action. Outcome*, 6(1), 62-74.
- Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling*, 2nd ed. Guilford Press.
- Kock, N. (2015). Common method bias in PLS-SEM: a full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1-10.
- Kumar, G.A. (2021). Framing a model for green buying behavior of Indian consumers: From the lenses of the theory of planned behavior. *Journal of Cleaner Production*, 295, 126487.

- Kunja, S.R. and GVRK, A. (2020). Examining the effect of eWOM on the customer purchase intention through value co-creation (VCC) in social networking sites (SNSs): A study of select Facebook fan pages of smartphone brands in India. *Management Research Review*, 43(3), 245-269.
- Kunja, S.R., Kumar, A. and Rao, B. (2022). Mediating role of hedonic and utilitarian brand attitude between eWOM and purchase intentions: a context of brand fan pages in Facebook. *Young Consumers*, 23(1), 1-15.
- Lakhdar, S. and Smaoui, F. (2021). Making context matter: unravelling functional foods' constructions by Tunisian consumers. *Qualitative Market Research: An International Journal*, 24(4), 470-496.
- Latip, M.S.A., Newaz, F.T., Mohamad, M.A., Tumin, S.A., Rahman, N.F.A. and Noh, I. (2021). The Moderating Effect of Food Safety Knowledge on Organic Food Purchase Intention in a New Normal. *Pertanika Journal Social Sciences & Humanities*, 29(4), 2281-2299.
- Lau, J.L. and Hashim, A.H. (2020). Mediation analysis of the relationship between environmental concern and intention to adopt green concepts. *Smart and Sustainable Built Environment*, 9(4), 539-556.
- Lin, T.T., Yeh, Y-Q. and Hsu, S-Y. (2022). Analysis of the Effects of Perceived Value, Price Sensitivity, Word-of-Mouth, and Customer Satisfaction on Repurchase Intentions of Safety Shoes under the Consideration of Sustainability. *Sustainability*, 14(24), 16546.
- Ling, P-S., Wong, L-J., Mohmeh@Wasli, S.M. and Bajat, C.D.A. (2023). Sorry COVID-19! You Don't Moderate My Intention to Purchase Functional Foods. *Malaysian Journal of Consumer and Family Economics*, 30, 330-354.
- Liu, C., Sun, C-K., Chang, Y-C., Yang, S-Y., Liu, T. and Yang, C-C. (2022). The Impact of the Fear of COVID-19 on Purchase Behavior of Dietary Supplements: Integration of the Theory of Planned Behavior and the Protection Motivation Theory. *Sustainability*, 13(22), 12900.
- Liu, T-L., Lin, T.T. and Hsu, S-Y. (2022). Continuance Usage Intention toward E-Payment during the COVID-19 Pandemic from the Financial Sustainable Development Perspective Using Perceived Usefulness and Electronic Word of Mouth as Mediators. *Sustainability*, 14(13), 7775.
- Muller-Perez, J., Acevedo-Duque, A., Rettig, P.V., Garcia-Salirrosas, E.E., Fernandez-Mantilla, M.M., Izquierdo-Marin, S.S. and Alvarez-Becerra, R. (2023). Consumer Behavior after COVID-19: Interpersonal Influences, eWOM and Digital Lifestyles in More Diverse Youths. *Sustainability*, 15(8), 6570.
- Ng, P. Y., Ho, P-L. and Sia, J. K-M. (2021). Integrative model of behavioural intention: The influence of environmental concern and condition factors on food waste separation. *Management of Environmental Quality*, 32(3), 631-645.
- Ng, X-Y. and Goh, Y-N. (2022). Attitude Towards eWOM and Purchase Intention: Exploring the Effect of Central and Peripheral Cues. *Malaysian Journal of Consumer and Family Economics*, 28, 434-465.
- Nguyen, N., Nguyen, H.V., Nguyen, P.T., Tran, V.T., Nguyen, H.M., Nguyen, T.M.N., Cao, T.K. and Nguyen, T.H. (2019). Some Key Factors Affecting Consumers' Intentions to Purchase Functional Foods: A Case Study of Functional Yogurts in Vietnam. *Foods*, 9(10), 24.
- Nguyen, T.T. and Phan, H.T.T. (2022). Impact of COVID-19 anxiety on functional foods consuming intention: role of electronic word of mouth. *Heliyon*, 8, e11344.
- Nystrand, B.T. and Olsen, S.O. (2020). Consumers' attitudes and intentions toward consuming functional foods in Norway. *Food Quality and Preference*, 80, 103827.

- Pienwisetkaew, T., Wongthahan, P., Naruetharadhol, P., Wongsachia, S., Vonganusuntree, C., Padthar, S., Nee, S., He, P. and Ketkaew, C. (2022). Consumers' Intention to Purchase Functional Non-Dairy Milk and Gender-Based Market Segmentation. *Sustainability*, 14(19), 11957.
- Prasad, S. and Prasad, S.S. (2023). Conviction and online purchase intention towards apparel in online environment. *International Journal of Retail & Distribution Management*, 51(5), 674-689.
- Prasad, S., Garg, A. and Prasad, S. 2019. Purchase decision of generation Y in an online environment. *Marketing Intelligence & Planning*, 37(4), 372-385.
- Rezai, G., Teng, P.K., Shamsudin, M.N., Mohamed, Z. and Stanton, J.L. (2017). Effect of perceptual differences on consumer purchase intention of natural functional food. *Journal of Agribusiness in Developing and Emerging Economics*, 7(2), 153-173.
- Sajed, A.N. and Amgain, K. (2020). Corona Virus Disease (covid-19) Outbreak and the Strategy for Prevention. *Europasian Journal of Medical Sciences*, 2(1), 1-3.
- Sumaedi, S. and Sumardjo. (2021). A model of traditional functional food consumption behaviour. *British Food Journal*, 123(1), 13-30.
- Sun, Y., Leng, K. and Xiong, H. (2022). Research on the influencing factors of consumers' green purchase behavior in the post-pandemic era. *Journal of Retailing and Consumer Services*, 69, 103118.
- Synodinos, C., Moraes, G.H.S.M.d. and Prado, N.B.d. (2023). Green food purchasing behaviour: a multi-method approach of Generation Y in a developing country. *British Food Journal*, 125(9), 3234-3248.
- Tabassum, S., Khwaja, M.G. and Zaman, U. (2020). Can Narrative Advertisement and eWOM Influence Generation Z Purchase Intentions? *Information*, 11(12), 545.
- Tran, A.T.V. and Nguyen, N.T. (2021). Organic Food Consumption among Households in Hanoi: Importance of Situational Factors. *Sustainability*, 13(21), 12496.
- Wang, E.S-T. and Chu, Y-H. (2021). How Social Norms Affect Consumer Intention to Purchase Certified Functional Foods: The Mediating Role of Perceived Effectiveness and Attitude. *Foods*, 10(6), 1151.
- Xin, L. and Seo, S(S). (2020). The role of consumer ethnocentrism, country image, and subjective knowledge in predicting intention to purchase imported functional foods. *British Food Journal*, 122(2), 448-464.
- Xue, Y., Liu, G., Feng, Y., Xu, M., Jiang, L., Lin, Y. and Xu, J. (2020). mediating effect of health consciousness in the relationship of lifestyle and suboptimal health status: a cross-sectional study involving Chinese urban residents. *BMJ Open*, 10, e039701. 10.1136/bmjopen-2020-039701
- Yodpram, S. and Intalar, N. (2019). Conceptualizing eWOM, Brand Image, and Brand Attitude on Consumer's Willingness to Pay in the Low-Cost Airline Industry in Thailand. *Proceedings*, 39, 27.
- Zayed, M.F., Gaber, H.R. and Essawi, N.A. (2022). Examining the Factors That Affect Consumers' Purchase Intention of Organic Food Products in a Developing Country. *Sustainability*, 14(15), 5868.