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Consumption of Dietary Supplement Products Among Malaysian Consumers: The Roles of Attitude, Social Influence and Perceived Behavioural Control

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Abstract

There are many evidences that relate nutrition deficiency with increased risk of chronic diseases. A clear understanding and knowledge on the factors influencing dietary supplements consumption is therefore important. This knowledge could assist health professional in developing their marketing strategies. A model is developed and tested examining the relationships between attitude, social influence and perceived behavioural control and consumption of dietary supplements among Malaysian consumers. Mall intercept survey was carried out to acquire data from 316 consumers using structured questionnaires at 10 hypermarkets in Malaysia. Construct measures were based on existing previous research. Measurement reliabilities and validities were established using confirmatory factor analysis. Hypotheses were tested using Structural Equation Model and accepted method for testing mediation effect. From the 10 hypotheses developed, 7 were supported. It was discovered that consumption of dietary supplements is positively been influenced by consumer attitude towards dietary supplements, normative influence, informational influence and perceived behavioural control. On the other hand, attitude towards dietary supplements is positively been influenced by normative influence and perceived behavioural control. The relationship between perceived behavioural control and dietary consumption behaviour is mediated by consumer attitude towards dietary supplements. This research sets the ground for stakeholders in the healthcare and pharmaceutical sectors to improve their understanding of what drives dietary supplements consumption. Armed with this knowledge, marketers and health professionals could plan and execute their marketing strategies and health interventions more effectively. The theoretical implications and managerial implications of these findings are discussed.

Keywords: Dietary supplements; Consumption behaviour; Attitude; Perceived behavioural control; Social influence.

1. Introduction

An increasing awareness of the importance of maintaining a healthy and quality lifestyle has encouraged consumers at all age categories to consider complementary and alternative medicines (CAMs), most notably dietary supplements, which is one of the fastest-growing categories of CAMs (Homer and Mukherjee, 2018). Under the Dietary Supplement Health and Education Act (DSHEA) of 1994, a dietary supplement is defined as a product taken by mouth that serves the purpose of supplementing the diet via a "dietary ingredient(s)". Such dietary ingredients comprise of vitamins, minerals, herbs or other botanicals, amino acids and other substances intended to supplement the diet by increasing total dietary intake and concentrates, metabolites, constituents or extracts (US Food and Drug Administration, 2015).

Due to the numerous of research that have proved the association between nutrition deficiency with increased risk for chronic diseases, heart diseases and other chronic and prevalent diseases, many health experts have concluded that health preventive objective is to improve healthy life and practices among all persons including adolescents and young adults (Nor Azila *et al.*, 2014; Spindler *et al.*, 2014; Yakoob *et al.*, 2016). Further, the health conditions of the population are a concern of the government as it will affect the productivity and consequently, the nation economy in view of the importance of health as an asset in the development of human capital. Therefore, a good understanding of the consumption behaviour of dietary supplements among consumers is deemed to be important.

Most past research focused on the overall improvement of dietary habits, health promotion and disease prevention; scientist and health care professionals are increasingly recognised that dietary supplements play an important role (Berhaupt-Glickstein and Hallman, 2017). Indeed, improved nutritional practices can reduce health care costs as well as lessen the consumers' burden of disease, and could potentially delay the onset of these diseases by five years, thus saving multi-billion in health care cost annually in the world (Johnson *et al.*, 2017). However, few empirical studies related to dietary supplements usage have been conducted in Malaysia despite the accelerating growth of the dietary supplements industry (Fon *et al.*, 2014; Nor Azila *et al.*, 2014; Yap *et al.*, 2014). Most of the relevant studies are commercial survey that primarily focused on reporting the types of supplements consumed, and

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are limited to socio-demographic description of food supplements users. For example, Fon *et al.* (2014) report the typical profile and usage among Malaysian adult consumers, and provided comprehensive review of the relevant marketplace. A review of literature disclosed that past studies (mainly in the Western context) examining dietary supplements purchase or usage behaviour have received great attention from various disciplines such as health science, medicine, health and social behavioural studies, and health psychology (Berhaupt-Glickstein and Hallman, 2017). For instance, in the context of medicine, Homer and Mukherjee (2018) reported the impact of supplement form and dosage level on consumers' perceptions of dietary supplement efficacy. Yakoob *et al.* (2016), studied the impact of dietary and metabolic risk factors on cardiovascular and diabetes mortality.

The use of dietary supplements represents an area of interest in the health literature because of its potential epidemiologic implications with regards to disease (Starr, 2015). Due to the importance of food supplements products in disease prevention (and health promotion) as well as the growing use of dietary supplements around the globe, research into investigating the factors influencing dietary supplements consumption is warrant.

2. Literature Review

2.1. Theoretical Underpinning

The Theory of Planned Behaviour (TPB) (Ajzen, 2002) has been used by many scholars to explain numerous types of behavioural decisions. The theory suggests that human behaviour is predicted by intentions to perform the behaviour and also by perceived behavioural control when particular behaviour is not under full volitional control (Chung *et al.*, 2012). Intentions are defined as plans to act or perform in a particular way and signify the motivation toward the behavior.

Intentions are influenced by attitudes towards outcomes of the behaviour, subjective norms, and perceived control over the behavior (Ajzen, 2002; Conner *et al.*, 2003). Attitudes are overall evaluations of the behaviour as favourable or unfavourable and subjective norms evaluate the perceived social pressures to perform or not perform a particular behaviour. Perceived behavioural control is the individual's perception of the extent to which performance of the behaviour is easy or difficult (Ajzen, 2002; Conner *et al.*, 2003).

2.2. Attitude

As noted in Ajzen (2002), consumer attitude refers to an individual's overall positive or negative personal evaluations of performing the target behaviour. An individual's attitude is the overall person's favourable or unfavourable feeling of performing that behaviour and is determined by behavioural beliefs about the outcome of the behaviour and evaluation of the outcome. Theoretically, he argued that an individual's attitude towards performing a particular behaviour is likely to be positive if that person perceives that there are positive outcomes resulting from the behaviour. Using a deductive logic, favourable attitude towards the use of dietary supplements is likely to increase a person's intention to consume the products.

Many previous studies that employed the TPB model indicated that attitude is an important predictor of consumers' intentions to conduct certain health-related behaviors Empirically, attitude has been demonstrated to be a significant predictor of various behaviours (Chung *et al.*, 2012). For example, in a study of ready meals consumption and takeaways purchase behaviour using British sample, Mahon *et al.* (2006) found attitude to be the best contributor to the consumption behaviour. Rahman and Noor (2016), found attitude to significantly related to purchase behaviour of organic food products in Bangladesh. More specifically, Reinert *et al.* (2007) reported that individuals with positive attitudes towards healthy eating behaviour had, in general, a better dietary profile and were more likely to comply with dietary guidelines. The results indicated that attitude was an antecedent of intention to use. Therefore, based on these arguments, the following hypothesis is proposed:

H1: Consumer attitude is positively related to consumption of dietary supplements.

2.3. Social Influence

Social influence has long been regarded as an important factor that affects consumer behaviour (Mangleburg *et al.*, 2004). Nevertheless, the crucial role that reference group play in meeting continuing health care needs is often neglected (Willison *et al.*, 2007). The social influence that reference groups can exert on an individual's health decision can be categorised into two main types; namely normative influence and informational influence (Bearden *et al.*, 1989). While Willison *et al.* (2007) defined normative influence as the tendency to conform to the expectations of others, Mangleburg *et al.* (2004) defined informational influence as the likelihood to accept information from significant others to guide decision making process in ambiguous situations.

On one hand, applying to the dietary supplement context, individuals who encounter uncertainly are likely to either seek information from knowledgeable others (such as health professional, doctor & physicians) and significant others (such as family members & friends) or make inferences by observing the behaviours of reference group (Mangleburg *et al.*, 2004). Besides, an individual might consume dietary supplements due to the expectations of those significant others. Therefore, both normative influence and informational influence can have effects on product/brand selections (Bearden *et al.*, 1989). Therefore, we hypothesized that:

H2: Normative influence is positively related to the consumption of dietary supplements.

H3: Informational influence is positively related to the consumption of dietary supplements.

On the other hand, Bearden *et al.* (1989) in their study discovered that the normative influence has a significant influence on attitude. Many past health-related studies examined the influence of social influence on attitude was conducted in the organic food context. For example, Smith and Paladino (2010) in their study found that social

influence was positively related to attitude towards organic food products. It is worth noting that the traditional conceptualisation of social influence norm captures only on the dimension of normative influence, however, the dimension of informational influence has been overlooked (Armitage and Conner, 2001). Generally, family and friends (McDonald and Nicholson, 2006), doctors (Jayanti and Whipple, 2008), and the media (Rowe and Toner, 2003) have certain level of influences on the consumption of dietary supplements. It is obvious that consumers who frequently consume dietary supplements have the propensity to receive social reinforcement from significant others (McDonald and Nicholson, 2006); and this form of social influence can have effects on attitude towards the consumption of dietary supplements of those significant other around them. Therefore, it is reasonable to posit both normative and informational influence as the determinants of attitude. Therefore, we hypothesized that:

H4: Normative influence is positively related to consumer attitude towards the consumption of dietary supplements.

H5: Informational influence is positively related to consumer attitude towards the consumption of dietary supplements.

2.4. Perceived Behavioural Control (PBC)

Perceived behavioural control means an individual's perception regarding the ease or difficulty of performing the target behaviour (Ajzen, 2002). It is deemed relevant to the consumption of dietary supplements since there bound to be some control factors that may facilitate or inhibit an individual's behaviour to consume dietary supplements such as resources and availability of the supplements. He also noted that people will intend to engage in a given behaviour when they perceive it to be under their control. The influences of perceived behavioural control on consumption have been well researched and documented (Armitage and Conner, 2001). For instance, in examining two different health-protective behaviours (i.e., breast or testicular self-exam and dental regime), McCaul *et al.* (1993) merely report the positive correlations between perceived behavioural control and health behavioural intention. Hagger and Chatzisarantis (2005), found perceived control to be positively related to exercise behaviour. In the context of dietary behaviour, Povey *et al.* (2000) found perceived control factor to contribute to the prediction of dietary behavioural intention. Nevertheless, no empirical study has thus far looked into the predictive ability of perceived behavioural control in explaining dietary supplements consumption behaviour. It is expected that greater perceived behavioural control (i.e., greater self-confidence, fewer obstacles one anticipates and more resources and opportunities one believe they possess) will lead to greater tendency to consume dietary supplements. It is therefore expected that perceived behavioural control will positively influence the consumption of dietary supplements, leading to the following hypothesis:

H6: Perceived behavioural control is positively related to the consumption of dietary supplements.

The abovementioned studies nonetheless provided support for the links between perceived behavioural control and behaviour. As noted by Ajzen (2002), the strength of an individual's belief in his or her ability (which capture the element of perceived behavioural control) will relatively improve his/her personal evaluation towards all sorts of things. Krutulyte *et al.* (2008), further noted that the magnitude of an individual's belief in his or her ability to improve general health is related to favourable perception on the consumption of food supplements. Although there is lacked of empirical evidence to support the link between perceived behavioural control and consumer attitude, it is reasonable to expect that greater perceived behavioural control (i.e., greater self-confidence, fewer obstacles one anticipates and more resources and opportunities one believe they possess) will lead to more favourable personal evaluations to consume dietary supplements, leading to the following hypothesis:

H7: Perceived behavioural control is positively related to consumer attitude towards dietary supplements consumption.

2.5. The Mediating Role of Attitude

Both social influence and perceived behavioural control are among the important factors in predicting health behaviour (Jayanti and Whipple, 2008), and possibly have an effect on attitudes (Smith and Paladino, 2010). However, some past health studies have found no direct influence of social influence on behaviour in the context of healthy eating behaviour (Povey *et al.*, 2000) and exercise (Rhodes *et al.*, 2006). Similarly, McCaul *et al.* (1993) and Rhodes *et al.* (2006) reported control factor has no direct effect on health protective and exercise behaviour, respectively. Apparently, social cognitive approaches might offer an explanation to justify why there is no significant effect of social factor and control factor on behaviour by introducing mediating variable to these links. Since attitude is widely recognised as a strong predictor of behaviour (Armitage and Conner, 2001), it is logical to posit attitude as a mediator that represent the generative mechanism through which social influence and perceived behavioural control are able to influence behaviour to consume dietary supplements (Baron and Kenny, 1986). Based on the above justifications, the following hypotheses are posed:

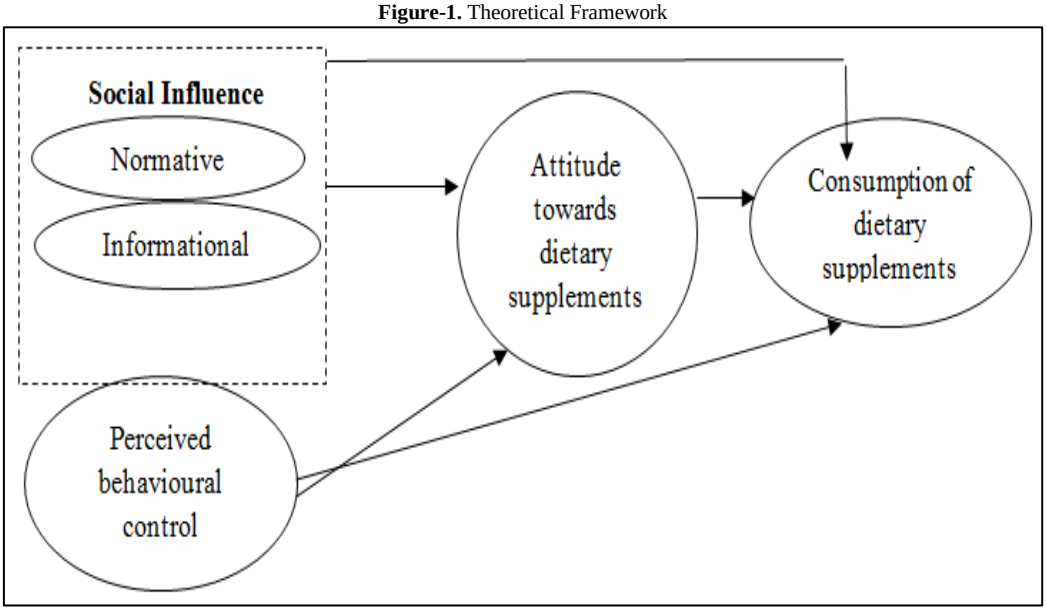
H8: The influence of normative influence on the consumption of dietary supplements will be mediated through attitude towards dietary supplements.

H9: The influence of informational influence on the consumption of dietary supplements will be mediated through attitude towards dietary supplements.

H10: The influence of perceived behavioural control on the consumption of dietary supplements will be mediated through attitude towards dietary supplements.

Figure 1 below shows the theoretical framework of this study.

Figure-1. Theoretical Framework



3. Methodology

This study is in a form of cross sectional, where data was gathered once. The study sample comprised of consumers who shop at numerous hypermarkets in Malaysia. Consumers were selected as the study sample due to the important roles they have in dietary product consumption (Conner *et al.*, 2003). The sampling procedure employed for the present study was mall intercept survey whereby respondents were intercepted during shopping in malls. This was a similar method employed in other study conducted in consumption behaviour (Jin and Kang, 2011).

In the present study, the survey was held at various hypermarkets located at ten major cities in Malaysia. The reason to choose hypermarket shoppers is because survey conducted showed that 56% of sales for dietary supplement products come from store-based retailers, with hypermarket is one of the major contributors (Nor Azila *et al.*, 2014). For data collection purposes, 500 questionnaires were distributed to shoppers. Out of this number, 184 were omitted because they were incomplete. Thus, a total of 316 responses were usable and used for subsequent analysis, presenting a response rate of 63%. All measurements were adapted from previously published work and have proven satisfactory psychometric quality. Each construct was assessed using 5-point Likert-type scale. Particularly, items measuring the normative and informational influence were adapted from Bearden *et al.* (1989), whilst the measurement scales for attitude and perceived behavioural control were derived from Hagger and Chatzisarantis (2005) and Ajzen (2002). Last but not least, the consumption of dietary supplements was measured using instrument adapted from (Conner *et al.*, 2003).

4. Results

4.1. Profile of the Respondents

Regarding the profile of the respondents, 60% of the respondents are males and 40% are females. In terms of the age of the respondents, majority of the respondents (70%) are at the ages of 26-30 and 31-35. Respondents below 20 years old constitute 10% followed by respondents of ages 21-25 (16%) and finally, respondents of ages 36-40 years (20%). Concerning the marital status of the respondents, almost half of the respondents (48%) are married. Among the 50% of the respondents who indicated that they consumed dietary supplements in the last six months, 40% and 30% of these consumers buy supplement products from chemists/pharmacies/drug stores and direct selling sources, respectively.

4.2. Measurement Validation

A two-step approach was employed for empirical analysis using structural equation modelling (Anderson and Gerbing, 1988). First, confirmatory factor analysis was conducted to assess the psychometric properties of the scales. Upon determining the model fit, the significance, direction, and size of each structural parameter for the specified model were calculated. An analysis of the priori measurement model resulted in good model fit ($\chi^2 = 429.31$, $\chi^2/df = 1.651$, GFI = 0.927, TLI = 0.967, CFI = 0.971, RMSEA = 0.039) after several modifications based on standardised residuals, modification indices and standardised loading estimates (Hair *et al.*, 2010). The measurement model was improved using a conservative strategy, that is, only those paths that made theoretical sense were considered.

4.3. Convergent Validity

Evidence of convergent validity was demonstrated (see Table 1). That is, each factor loading of the reflective indicators was significant with loading greater than 0.50 (Hair *et al.*, 2010). Furthermore, following Hair *et al.* (2010), all individual scales exceeded the acceptable composite reliability and the average variance extracted (AVE) of 0.60 and 0.50 respectively.

Table-1. Reliability and Validity of Measures

Construct	No. of items	Items Loadings	AVE	Construct Reliability
Normative influence	3	0.688 – 0.821***	0.681	0.832
Informational influence	3	0.719 – 0.847***	0.622	0.871
Perceived behavioral control	5	0.573 – 0.821***	0.577	0.833
Attitude	5	0.641 – 0.799***	0.564	0.874
Consumption of dietary supplements	7	0.694 – 0.848***	0.592	0.891

***p < 0.001

4.4. Discriminant Validity

Discriminant validity was implemented using a procedure introduced by Gaski and Nevin (1985) whereby a correlation between two scales that is lower than the reliability of each of those scales is taken as proof of good discriminant validity. The results (see Table 2) revealed that all scales for the specified model had reliabilities in excess of the correlations between them, indicating that each pair of constructs was distinct. Next, discriminant validity was determined by the variance extracted value, namely whether or not it exceeds the squared inter-construct correlations associated with that construct (Hair *et al.*, 2010). As shown in Table 2, the variance extracted of each construct was well above its squared correlation with other constructs. These results lent adequate evidence for discriminant validity of the present measurement model.

Table-2. Factor correlations and squared correlation between the study constructs

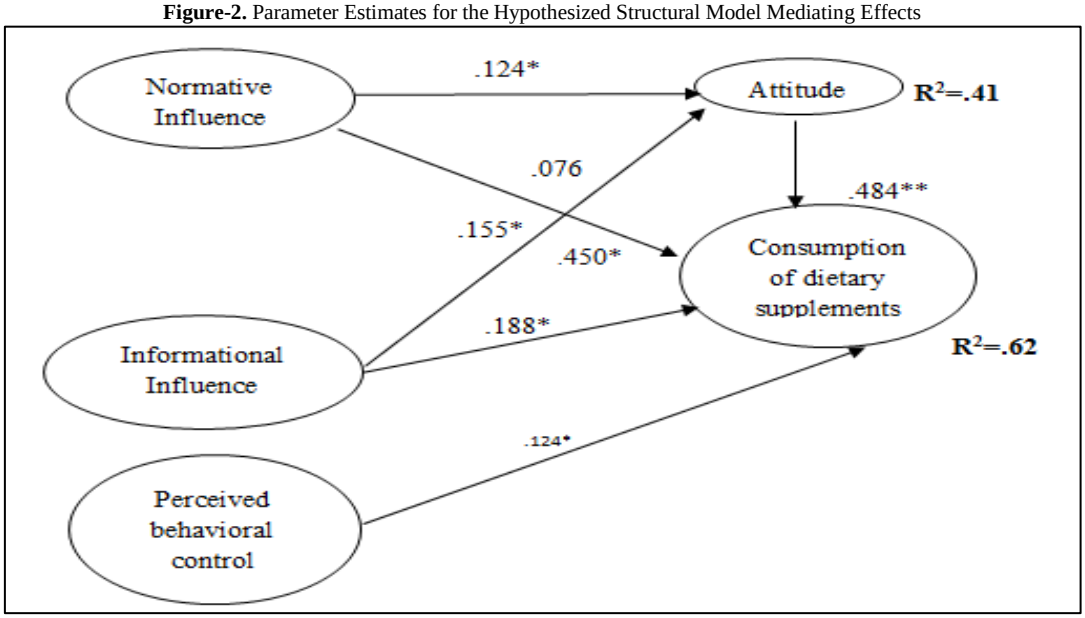
Factor	AVE	NI	II	PBC	ATT	CON
NI	0.658	0.852				
II	0.684	.463* (0.21)	0.867			
PBC	0.551	.354* (0.13)	.514* (0.26)	0.858		
ATT	0.567	.353* (0.12)	.415* (0.17)	.633* (0.40)	0.867	
CON	0.595	.438* (0.19)	.527* (0.28)	.603* (0.36)	.704* (0.50)	0.880

Notes: NI = Normative Influence; II = Informational Influence; PBC = Perceived Behavioural Control; ATT = Attitude; CON = Consumption of dietary supplements; * p< .001

4.5. Structural Model

Having established the fitting measurement model with adequate evidence of reliability and validity, the structural model with all the main effects was then tested. The specified structural model (Figure 2) showed a satisfactory model fit to the empirical data (χ^2 = 284.42, χ^2/df = 1.589, GFI = 0.942; TLI = 0.975, CFI = 0.978, RMSEA = 0.037). Around 41.3% of the total variance in consumer attitude can be explained by the normative influence and perceived behavioural control. Overall, normative influence and perceived behavioural control had shown positive influences on consumer attitude. Informational influence was not significantly related to consumer attitude. Therefore, hypotheses H4 and H7 are supported while H5 is rejected. The specified structural model explained a total variance of 62.3% in consumption behaviour. Our findings proved that attitude, normative influence, informational influence and perceived behavioural control have positive effects on consumption behaviour. Therefore, hypotheses H1, H2, H3 and H6 are supported. Amongst other factors, attitude emerged to be the most salient factor in influencing the consumption of dietary supplements.

Figure-2. Parameter Estimates for the Hypothesized Structural Model Mediating Effects



* p<.05; ** p<.01; *** p<.001

4.6. Mediating Effect

The hypothesised model proposes three possible indirect (mediating) paths. To test the mediation effects, the hypothesised partial mediation model was compared against both full mediation and direct effect model (i.e., all predicting variables including attitude were allowed to affect consumption of dietary supplements directly without specifying any mediating effects) using competing model strategy (Baron and Kenny, 1986). Chi-square difference test displayed that the partial mediation model was more superior compared to the full mediation ($\Delta\chi^2 = 51.416$, $p < 0.001$, $df = 3$) and direct effect model ($\Delta\chi^2 = 176.4$, $p < 0.001$, $df = 3$). Consequently, the mediating effects can be explained with confidence using our specified model. Hair *et al.* (2010), stated that a path with a coefficient value more than 0.09 represents a sizable indirect effect. An indirect path (through attitude) was observed for the effect of perceived behavioural control on consumption of dietary supplements ($\beta = .266$). Therefore, hypothesis H10 is supported while hypotheses 8 and 9 are rejected.

5. Discussion

The present research contributes to the existing literature on health and pharmaceutical marketing, which is of significant interest to stakeholders in the healthcare and pharmaceutical industry such as marketing practitioners, health professionals, public policy agencies, consumer welfare advocates and academicians. It looks feasible that desirable changes in attitude, social influence and perceptions of control might contribute to corresponding changes in consumption of dietary supplements among consumers.

The present study found attitude to have a positive influence on consumption of dietary supplements. The result makes theoretical sense because the more favourable the perception in one's instrumental attitude toward consumption of dietary supplements, the greater likelihood that the person will consume dietary supplements. This finding supported past studies that found attitude to be the strongest social cognitive predictor in determining behaviour in the context of organic food consumption (Michaelidou and Hassan, 2008), dietary products (Alami *et al.*, 2019; Yap *et al.*, 2014) and enriched food (Tudoran *et al.*, 2009). The present study found that normative influence had a positive effect on consumer attitude. This finding highlights the crucial role of significant other such as family members and friends in shaping consumer attitude towards the consumption of dietary supplements. Most past health-related research examined the role of social influence on attitude was found in the organic food context. The present finding is congruent with a study by Smith and Paladino (2010) who found normative influence (termed as subjective norm in their study) to have a significant positive effect on attitudes towards organic food products. More specifically, this finding also further substantiates Conner *et al.* (2003) research that normative belief is an important determinant of supplement use. Similarly, Smith and Paladino (2010) found that the influence of others is an important factor in the determination of healthy diet. One plausible reason why normative influence drives attitude toward dietary supplement consumption is due to the individual's motivation to comply with the relevant others like family and friends.

The present study revealed that the presence of health-benefit information on the dietary supplement did not change how individuals view the consumption of food supplements. This finding is contradict with Tudoran *et al.* (2009) argument that information consumers receive from significant others (or reference group) is regarded as an important determinant of consumer choice. This result is expected, because there are powerful arguments suggesting that consumers might have reservation on the reliability and the trustworthiness of such information about dietary supplements received. This is especially true under the condition that the respondents may be uncertain whether there were regulations controlling manufacturer claims and, if there were such laws or regulations, or whether manufacturers are policed effectively. Indeed, consumers may have difficulty in identifying dietary supplements certificates and labels, which result in the less significant impact on their attitude towards supplement consumption. Other possible reasons for such finding may be because the effect of informational influence on consumer attitude is dependent on the context involved. For instance, informational influence might play a significant role in a more expensive or serious health context such as medical care services compared to dietary supplements.

The role of perceived behavioural control has been studied in numerous studies in health behaviours. Despite the scarce of empirical evidences to support the relationship between perceived behavioural control and consumer attitude, this study found perceived behavioural control to have positive effect on consumer attitude, which is in line with Krutulyte *et al.* (2008) view that the strength of an individual's belief in his or her ability to improve their general health is related to food supplements use. This finding makes logical sense as one might expect that the greater self-confidence, fewer obstacles one anticipates and more resources and opportunities one believe they possess would have greater tendency to lead to more favourable attitude towards dietary supplements. It is hypothesized that the concept of perceived behavioural control might be related with how the consumers perceived the price of dietary supplements available on the market or their affordability to purchase these products. These perceptions might influence their attitude towards dietary supplement consumption. One possible explanation for the significant effect of perceived behavioural control on attitude is that consumers might rely on their family and friends to provide dietary supplements, such as vitamin to maintain or enhance their health. As a result, price and affordability that may indirectly affect how they perceive their own control over consuming dietary supplements does not emerge to be an issue when forming their attitude toward the consumption of dietary supplements.

The present finding found that the effect of perceived behavioural control on dietary supplements consumption behaviour was indirectly through consumer attitude. This applies that, a good understanding of dietary supplements consumption behaviour has been gained by studying the mediating effect of consumer attitude. To be specific, the results propose that efforts to encourage greater likelihood to consume dietary supplements can be enhanced by strengthening the level of influence of their significant others, the perceived control they possess and attitude

towards consuming dietary supplements. Individuals who have greater control over dietary consumption are more likely to develop positive attitude toward the act of consuming dietary supplement. In turn, these favourable attitudes drive their tendency to consume such health products. Empirically, the finding that proves the mediating role of attitude on the link between perceived behavioural control and consumption behaviour is in line with Michaelidou and Hassan (2008) study which report similar result in the context of organic foods. This result also consistent with Smith and Paladino (2010) study in organic food purchase context that consumer attitude found to be a significant mediator for the effect of perceived behavioural control on consumption behaviour of organic food.

6. Research Implications

The health and wellness setting has been experiencing transformation over the past few decades. All of these trends and changes create the segmentation and targeting become more challenging for health marketers.

From the theoretical perspective, the present study develops an integrative model that can helps dietary supplement marketers to better understand social influence and control factors that influence consumer's attitude to consume dietary supplements. Armed with this knowledge, marketers should plan and perform their marketing strategies particularly segmentation, positioning, merchandising and communication more effectively.

The finding that attitude is an important factor that influences consumer to consume dietary supplements brings important implications for marketing practitioners especially on the decisions related to communication strategies. In any attempt to boost the likelihood to consume dietary supplements among consumers, integrated marketing communication program using advertising, in-store merchandising, websites, public relations tools and loyalty programs could be designed to enhance consumer attitude towards dietary supplements consumption. Such communication efforts can be more successful via rational appeal, which is conveying objective factual information about the beneficial aspects of dietary supplements to consumers.

This study found that the greater the perceived normative influence among consumers, the greater favourable their attitude towards supplements use. In turn, this positive attitude yields greater likelihood to consume dietary supplements. Our finding recommends that intervention targeted at cultivating social influence toward supplement use is likely to form the consumer's attitude favourability. As the regulation increases, personal recommendations by family and friends are becoming a more reliable source for health information as compared to medical professionals or media sources. Hence, the presentation of word-of-mouth campaigns becomes an appropriate strategy to persuade consumers of the particular benefits of a dietary product. For example, strategies such as reaching families by developing multiproduct promotions that include healthy, easy-to-prepare products while emphasizing the positive experience of eating together as a family might work well.

The finding that perceived behavioural control has a positive influence on both consumer attitude and their tendency to consume dietary supplements showed the importance of perceived opportunities and resources that potentially facilitate or inhibit an individual's decision to change their dietary behaviour. For that reason, in order to increase a person's perception of control toward dietary supplement use, one has to increase the facilitators that encourage consumption of dietary supplement and/or decrease the barriers that may hinder or restrain consumption of dietary supplements.

7. Conclusion and Future Research Suggestions

In conclusion, the current study offers a base for future research beyond dietary supplement use, but also extended to other health behaviours. This study was based on a cross-sectional perspective, which limits the knowledge of the long-term impact of the factors in our model. A longitudinal future research in this area is needed to unveil with clarity and greater certainty, the relationship between consumers' behavior towards dietary supplements over time. As with any other studies using a consumer sample, the findings of this study might not represent consumers at large. A replication of this study with more general consumers of a wide range in their characteristics might be necessary to attest the applicability of the model to the broader public.

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