Factors influencing university students' intention to consume pomegranate

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ARTICLE INFO	ABSTRACT
	The objective of this study is to explore the factors influencing university students' intention to consume pomegranates. From the review of literature, we implemented the expanded Theory of Planned Behaviour (TPB) model to ascertain the factors that could influence consumer's intention to consume pomegranates. We employed quantitative survey approach, questionnaires applied adopted and adapted to fit this study. The convenient sampling was chosen from a university student population. Structural Equation Modelling and Smartpls were used to analyse the collected data. Empirical results shown that willingness to pay and subjective norm variables had a significant influence on university students' intention towards pomegranate consumption. However, health benefit of pomegranate, health consciousness, and perceived behaviour control factors had been found to insignificantly influenced university students' intention to consume pomegranates.

1. Introduction

Each year, it is estimated about 100,000 Malaysians suffer from cancer with the most of them are women [1]. According to the Deputy of Health Dato Dr Hilmi Yahya among the top five cancers that affected Malaysians are breast cancer (14.5 percent), intestinal cancer (12.1 percent), lung cancer (11.8 percent), cervical cancer (5.7 percent) and throat cancer (5.4 percent) [1]. Among the various cancers, the breast cancer cases are the most concerning. Although the breast cancer patients Age Standardised Rate (ASR) incidence of 38.7% in Malaysia is reported lower than the global mean, however, the mortality at 18.9% is higher than the world figure [2, 4]. This proof that Malaysia women who have breast cancer had limited survival [2, 4].

It had been reported that many efforts have been made to raise but have had only a few impacts [4]. On top of the free screening programme that have obtained little support from women [3, 4], there are also low response to mammogram subsidy for local women [3, 4].

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In fact, Yip [2] found out that local women that suspected some illness in their breast failed to seek medical attention quickly because they would rather wait or listen to others opinion. Furthermore, many studies carried out in different groups of women lacks of awareness and knowledge to discover of the symptoms of breast cancer by themselves [2]. Furthermore, Malaysia lacks the National Cancer Control Plan, making it even more complicated to prevent the deaths from breast cancer [4]. The unhealthy consensus of breast cancer cases have negatively disrupted our healthy living image of Malaysia. This issue had alerted the Malaysian Government; especially the Ministry of Health, to try and promote better healthy living and well-being in Malaysia [5].

A review of literature has emphasised the importance of pomegranate as an essential supernatural fruit. Furthermore, the total polyphenol concentration of pomegranate juice is greater than that of other types of fruit juices [6]. The polyphenols that may have essential health benefits for people are believed to work as antioxidants that defend the cells in our body from free radical damage.

Pomegranate is believed to contain nature health essential that can cure various types of cancers, including breast cancer [6-8]. The authors argued that this study has a powerful, persuasive idea to consider consumer's intention to consume pomegranates. If consume regularly, it may decrease the percentage of breast cancer illnesses in Malaysia.

Lack of local research focusing on investigation of goodness of pomegranate consumption may create a worrisome news, as sufficient pomegranate fruit is well-advised to avoid illnesses such as breast cancer, cardiovascular diseases and other sicknesses [9-11]. Deficiency in pomegranate intake may be associated with problem indicated in young adults. Currently, growing numbers of senior citizens are playing an important role in encouraging young people to pay more attention to their health.

Therefore, introducing the consumption of pomegranates will play an important role in young adult development. Exploring young adults' habits, such as university students' intention to consume pomegranates in their dietary practice, may create a solution to prevent related breast cancer health issue in the future [12-16]. Nonetheless, research on the factors that influence university students' intention to consume pomegranates has never been conducted in Malaysia. Therefore, the author suggests to explore the university students' intention to consume pomegranates in order to promote changes in their dietary routines.

The result of this study seeks to create awareness of the current increase of breast cancer and this sickness prevention, through advice on the benefits of eating more pomegranates. The awareness of pomegranate consumption at a young age is able to reduce the occurrence of breast cancer cases. Furthermore, it may improve quality of life and health in the future for the entire country.

The following objectives are formulated for this study:

1. To check the significant effects of the health benefits of pomegranate factors that influences university students' intention to consume pomegranates.

2. To evaluate the significant effects of the health consciousness factor influences on university students' intention to consume pomegranates.

3. To determine the significant effects of the willingness to pay attitude factor influences on university students' intention to consume pomegranates.

4. To assess the significant effects of the subjective norms factor that influences university students' intention to consume pomegranates.

5. To analyse the significant effects of the perceived behaviour control factor influences university students' intention to consume pomegranates.

The study organised as follows.

The following section reviews the contemporary literature on expanded Theory Planned Behaviour in pomegranate intake. Next, the research methodology is discussed, followed by analysis, Structural Equation Modelling (SEM) explanation of the decision employ Smart-pls 3.0 to analyse the data. Later, we will report the finding together with a discussion.

2. Literature Review and Hypotheses Development

Consumer behaviour can be define as the processes that involve a person or company to purchase, use or dispose of products, services, ideas or experiences to satisfy needs and wants [17]. Many researchers have looked at consumer behaviour and marketing field has been employing TPB to predict consumers' intentions and behaviour in various other fields [18-21]. Added to this Theory Planned Behaviour is a useful model of early human knowledge and intention-behaviour [18].

Obviously, factors that influence university students' intention to consume are very complicated and below will discuss consumer intention behaviour.

2.1 Intention

Intentions indicate how hard a consumer is willing to try and how much effort they are willing to contribute in order to perform a given behaviour [22]. The intention is also determined by the person's attitude towards the behaviour by their subjective norm and perceived behaviour control [22]. Ajzen [22] suggested that TPB could be extended if further constructs are found to enhance the prediction of intention or behaviour. Ajzen [22] also acknowledged that the theory of reasoned action, and TPB, covers effects as an undifferentiated aspect of the expectancy-value model of attitude.

Eating habits of consumers for pomegranate consumption is an abundance [23-27]. Nevertheless, previous study on pomegranate consumption is different from this study as this current study focus on factors such as health benefit of pomegranates, health consciousness, willingness to pay, subjective norms, and perceived behaviour control influencing intention to consume pomegranates in Malaysia [23-25].

Health benefits of pomegranates may significantly influence intention; therefore, the following factors will discuss the health benefits of pomegranates.

2.2 Health Benefits of Pomegranates

Previous studies have identified the perceived health benefits of consuming healthy food products as the strongest factor influencing purchasing decisions [26]. A large and growing body of literature investigated pomegranates and reported that pomegranate has abundant supply in essential mineral elements [27-30]. A significant number of previous researchers has also been looking at pomegranate juice product development and medical science in preventing many health problems [31-33].

Previous studies have demonstrated the anti-carcinogenic activity of pomegranate extracts in a series of human cancer cells and pomegranate has been described as nature's powerful fruit [34-40]. Pomegranates (*Punica Granatum L.)* have been judged to contain the most prominent antioxidant volume [41]. Another study, at the American Society of Nephrology reported that the pomegranate juice may ward off complications in chronic kidney disease patients on dialysis [42]. Besides that, an essential of pomegranates, i.e., seed hardness, is a priority sensory attribute of the fruits. Obviously, the seeds can be difficult to chew and may affect buyer's total satisfaction [43-44].

In summary, many researchers focused on pomegranate juice product development and medical science in the prevention of various health issues [31, 45-49].

Yet, little is known about the health benefits of pomegranate factors that influence university students' intention to consume. Therefore, this study explores the possibility that the benefits of pomegranates may create a positive effect on university students' intention to consume. This research has developed the following hypothesis.

Hypothesis 1: There is a significant effect on the benefits of pomegranate influences on university students' intention to consume pomegranates.

The following will discuss on health consciousness effects on intention-behaviour.

2.3 Health Consciousness

Health consciousness is the concern of a person to looks after their own body health. Health consciousness is a factor that strongly influences consumers' buying decision-making for healthy products [50]. Several types of research have shown that information on health and the benefits of a food product (i.e. energy and nutrition values) can positively influence the probability of purchase [51-52]. The consumer's increasing interest in health benefits has progressively mean more attention being given to fruit.

Shaharuddin *et al.* [53] investigated the diet habit of 116 of Malaysian breast cancer patients, and discovered that 72 blamed diet as a contributing factor of breast cancer. The study found that 67 women changed their dietary habits immediately, by increasing intake of fruit including pomegranate. The above issue prompted various researchers to investigate the benefit of eating more fruit including pomegranate to prevent breast cancer [6, 35, 39, 54].

It has been observed that information about health has a higher impact on consumer's choice of food [55-57]. Pomegranate extracts can reduce and prevent pathogenic dental bacterial. On top of that, it can also reduce the risk of plaque, gingivitis and periodontal disease [58-59].

Despite the increasing essentials of pomegranates being widely admired and other health products being globally accepted as an influence of health conscious, there is a limited understanding of health consciousness factors that influence university students' intention to consume pomegranates in Malaysia to date.

This research predicts that this health consciousness factor may or may not create a positive effect on university students' intention to consume pomegranates. Therefore, this research has developed the following hypothesis.

Hypothesis 2: There is a significant effect of the health consciousness factor on university students' intention to consume pomegranates.

The subsequent discussion is on willingness to pay attitude that may support pomegranate consumption intention.

2.4 Willingness to Pay

Willingness to pay (WTP) is the price a buyer would pay for a good and WTA is the price a seller would pay for a good [60]. Palwasha *et al.*, [61] demonstrated that food consumption patterns are influenced by willingness to pay factor. A study by Blitstein *et al.*, [62] shown that the fruit purchases of an individual are influenced by price and willingness to pay. For instance, Onyango et al., [63]

identified a connection between willingness to pay a premium price and beliefs in the superiority of foods and their health benefits. Another research found consumers are willingness to pay a premium price for pesticide eliminated food products [64-66]. There is a significant effect of health information provision on product acceptance, purchase intention or willingness to pay [65].

It has been reported that South East Asia consumers, such as from Thailand, are more willingness to pay for fresh pomegranate juice than consumers from the United States of America. However, Estonian consumers prefer bottled pomegranate juice [67].

To increase the value of pomegranate products in order to reduce cancer and other sicknesses in Malaysia, researchers must understand consumer's preferences of their attitude towards a products. Although the willingness to pay has been widely studied in the area of environmentally friendly product, quality, safety, healthy and organic food products, there is still an absence of willingness to pay comprehension in the area of pomegranate consumption among university students. Therefore, this study has formulated the following hypothesis.

Hypothesis 3. There is a significant effect of willingness to pay factor on university students' intention to consume pomegranates.

One suggestion is that subjective norms may influence university students' intention to consume pomegranates.

2.5 Subjective Norms

Subjective norms can be defined as how a behaviour is examined by people that affect our consumption [68]. Previous studies have reported that peers have a negative influence on healthy eating [69]. Most young adults have quite unhealthy food eating behaviour. One explanation for this may be that social norms among friends tend to not promoting healthy eating. In fact, subjective norms play a very important role in influencing young adult's healthy eating. A study conducted by Kamphuis *et al.*, [70] and Kamphuis *et al.*, [71] discovered a positive effect for the subjective norms factor from families, close friends and co-workers increased fruit intake. Previous research discovered subjective norms to be the most beneficial predictor of intentions to consume fruit [72-76].

Contradicting finding exist in previous studies, and still no extensive examination has been undertaken in the field of subjective norms and pomegranate consumption among university students. Therefore, this study has formulated the following hypothesis.
Hypothesis 4. There is a significant effect of subjective norms factor on university students' intention to consume pomegranates.

Furthermore, perceived behaviour control may also play an important part in influencing consumer intention to consume the fruit.

2.6 Perceived Behaviour Control

Ajzen and Fishbein [68, 22] stated the more resources, opportunities, and confidence a person feels about performing a behaviour, and fewer obstacles they anticipate, the greater should be their Perceived Behaviour Control (PBC) over that behaviour. Perceive behaviour controls (PBC) to apply to a specific degree of control that a consumer perceives as the ability or difficulty of carrying out a behaviour [68]. This verified that the higher the perceived control the greater should be the consumers' intention to carry out a behaviour [68]. When consumers have an adequate degree of actual control over a behaviour, they are expected to fulfil their intention; when the possibility

opportunity arrived at the correct time [68]. This supported by Beaulieu and Godin [78] discovered that behavioural control is the main factor influencing intentions of healthy eating [78, 96].

Since perceived behaviour control factor applying to the intention to consume pomegranates has less mentioned in previous studies, this study has developed the following hypothesis.

Hypothesis 5. There is a significant effect of intention on perceived behaviour control factor on university students' intention to consume pomegranates.

To sum up from the review of literature there is a deficit of study relating to TPB focusing on pomegranate consumption. Without an appropriate theory assessment, the researcher cannot formulate sufficient measures and procedures to judge the proposed research model. Hence, below Figure 1 proposed a research model through an agreement with the theory and previous findings, suggests that there is a need to expand the Theory Planned Behaviour to explore the various factors influencing university students' intention to consume pomegranate.
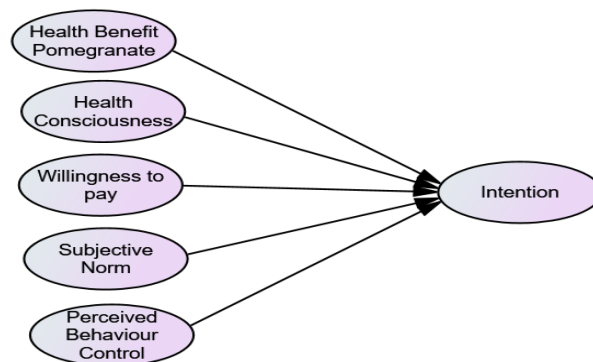

Fig. 1. Expanded theory planned behaviour research model

3. Methodology

This study is an exploratory research. The research aims to explore and predict how the factors, such as the health benefits of pomegranates, health consciousness, willingness to pay, subjective norms, and perceived behaviour control influence university students' intention to consume pomegranate. The hypotheses developed for the expanded Theory Planned Behaviour and it was discussed during the literature review. The survey is conducted on university's students in Malaysia. This study proposes a different approach, by introducing five hypotheses in a reflective research model. The PLS-SEM method and SmartPLS 3.0 software [79] is used to predict which research hypothesis had a significant influence.

SmartPLS 3.0 is a user-friendly modelling approach, as there is no need for adequate assumptions. For instance, for non-normal distribution, there is no need for large sample sizes and measurement scale are required [80-82]. The PLS-SEM approach, which is also a multivariate analysis method, has earned interest and is widely used by researchers to assess exploratory research [84]. Therefore, PLS-SEM is used with the objective of exploring which factors that contribute significantly in the expanded TPB model. It also used both measurement and structural model simultaneously [79].

3.1 Sampling, Questionnaires Design, Pre-Test and Structural Equation Modelling Techniques

Non-probability convenient sampling was applied in this study, as it is believed to be an appropriate approach for collecting data quickly and efficiently [91].

This study employs questionnaires that are adopted and adapted as a survey instrument to explore intention to consume pomegranates. The study formulated the questionnaire's items via the literature review altering items to be acceptable in the context of pomegranate consumption research. The final survey questionnaire was comprised of 27 items (as shown in Table 2), and represented five constructs of the health benefits of pomegranates (5 items); namely, health consciousness (3 items), willingness to pay (6 items), subjective norms (5 items), perceived behaviour control (4 items), and intention (4 items). The questionnaire items used a 5 point-Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Pilot-test employed a small sample to verify that respondents were able to understand questionnaire's statements, before being officially distributed to the respondents. A descriptive statistical technique will be employed to report the respondents' profile and characteristics. The research analysed the hypotheses by applying the partial least square-structural equation modelling (PLS-SEM) method.

The expanded Theory Planned Behaviour research model showed in Figure 1. The data analysis of the study was carried out according to two a stage approach; as suggested by [84]. At the beginning, a measurement model was assessed, and in the end, a structural model was measured.

Confirmatory Factor Analysis was subsequently performed to determine the reliability, convergent validity and discriminant validity of the measurement items that were identified in the theoretical research model. Hair *et al.*, [85] explained that convergent validity is 'the range to which an assessment correlates positively with alternative measures of the same construct. Furthermore, when measuring the convergent validity of the constructs in the theoretical research model, the indicator reliability, Composite Reliability and Average Variance Extracted (AVE) was produced. The results of the convergent validity in this analysis are reported in Table 2. The index number of reliability represents the statistical number of indicator variance that was interpreted by the latent variable. Hair *et al.* [85] explained that 'higher outer loadings on a construct indicate that the indicators used shared high resemblance in common'.

Nevertheless, for reflective measurement, the numbers with loading smaller than 0.5 will be deleted or removed from the PLS model [86]. Several items or indicators in this expanded theoretical research model were consequently removed due to a low loading. Composite reliability measures the reliability of the indicators. Gefen *et al.* [87] and Hair *et al.*, [83] pointed out that determining the composite reliability should exceed 0.7 or greater to obtain adequate convergence and internal consistency.

Fornell and Larker [88] explained that Average Variance Extracted (AVE) is the sum of variance that is derived by the latent variables proportionate to the sum of variance referable to the measurement error. To obtain adequate convergent validity, the value of AVE must be greater 0.5 and higher [83, 88, 89-90].

In summary using PLS-SEM, the research had to verify the reliability and validity of the initial measurement research model, and later, check the outer weight, loadings, and structure research model relationships for the latent and the obvious or manifest variables. Eventually, the research employed a bootstrap 10,000 re-sample technique to measure the statistical significance of the structural paths in the model.

3.2 Empirical Analysis and Result

In general, a data sample should be 10 or more than the total path or predictor in the model. Another statistical power can be performed using the Cohen table [90, 92-93]. In this study, 700 questionnaires were distributed; of which, 523 responses were received, resulting in 75% response rate.

The demographics of the respondents are listed in Table 1. In this study, the majority of the respondents recruited were male (54.4%). Chinese Students made up the biggest population in this study (85%), followed by Malay (9%) and Indian (5.8%).

Table 1
Respondents' profile

Group	Frequency	Percentage (%)
Gender		
Male	283	54.2
Female	239	45.8
Races		
Chinese	445	85
Malay	47	9
Indian	30	5.8
Age		
19	249	47.7
20	110	21.1
21	107	20.5
22	56	10.7
Education		
Degree	500	95.8
Diploma	17	3.3
Pre-university	5	1.0
Financial Support		
Parent only	237	45.4
Parent and loan (PTPTN)	243	46.6
PTPTN (only)	28	5.4
Scholarship	14	2.7
Place of birth		
Village	130	24.9
Small town	285	54.6
City	107	20.5

From the result shown in Table 2, the composite reliabilities of all constructs were greater than 0.8, which confirms a high internal consistency [93]. Three items from health consciousness were deleted due to low outer loading of less than 0.5 [86]. The rest of the items in the model were above 0.5. The Average Variance Extraction (AVE) of all constructs were above 0.5, this convergent validity of overall exogenous variables and behaviour intention to consume endogenous variable is established [88-89].

Table 2
Measurement model

Items	Loading	AVE	CR	CA	Achieved
Health Benefit of Pomegranate (HBP): [source: [30, 39]					
I know pomegranate can prevent breast cancer.	0.716	0.580	0.873	0.823	Yes
I know pomegranate is an important source of anthocyanins good for my health.	0.774				
I know pomegranate is a nature's powerful fruit.	0.744				
I know pomegranate has anti-carcinogenic prevent human cancer cell growth.	0.751				
I know pomegranate juice use in many medical sciences.	0.819				
Health Consciousness (HC): [source: [52, 94]					
I always eat fruit such as pomegranate to prevent cancer.	0.523	0.620	0.824	0.700	Yes
I usually eat fruit such as pomegranate to prevent any harmful diseases.	0.905				
I am concern with my personal health.	0.878				
Willingness To Pay (WTP): [source: [55, 62, 66]					
I willing to pay high prices because the pomegranate is good for my health.	0.919	0.792	0.958	0.948	Yes
I willing to pay high prices because the pomegranate can prevent cancer.	0.909				
I willing to pay high prices because the pomegranate can prevent prostate cancer.	0.908				
I willing to pay high price for one good quality pomegranate.	0.871				
I willing to pay the high price of the pomegranate because it is good for my skin.	0.913				
I willing to pay the high price of the pomegranate because it is high in nutrition value.	0.816				
Subjective Norms (SN): [source: [69-70]					
My sister influences me to eat a pomegranate.	0.699	0.728	0.941	0.924	Yes
My brother influences me to eat a pomegranate.	0.852				
My close friend influences me to eat a pomegranate.	0.890				
My boyfriend influences me to eat a pomegranate.	0.895				
My girlfriend influences me to eat a pomegranate.	0.899				
Perceived Behaviour Control (PBC): [source: [68, 78]					
Whenever I wanted to I easily could consume pomegranate.	0.829	0.673	0.891	0.841	Yes
It is usually up to me if I choose to consume pomegranate.	0.920				
I can pay more for pomegranate If I want too.	0.729				
There is no problem for me to consume pomegranate anytime.	0.792				
Intention (In): [source:[68, 77]					
I intend to eat pomegranate next three days	0.918	0.728	0.946	0.931	Yes
I intend to eat pomegranate next four days	0.946				
I intend to eat pomegranate next five days	0.942				
I intend to eat pomegranate next six days	0.911				

Note: the cut-off line for loading is ≥0.5, AVE is ≥0.5 and CR is ≥0.7. CA is ≥0.7.

Based on Hair *et al*. [83], explanation of discriminant validity, the construct can be tested by following Fornell and Larcker [88] standard benchmarks. The AVE of a latent construct should be greater than the squared correlation between the latent variable in the measurement model with whatever latent construct demonstrates the discriminant validity of the constructs. The result of the

Table 3 analysis show that the discriminant validity indicated that there was no measurement, as all square root values of AVE (as shown in Table 3) for all constructs, were greater than other latent constructs.

Table 3
Fornel and Lacker criteria

	HBP	HC	IN	PBC	SN	WTP
Health Benefit of Pomegranate (HBP)	**0.762**					
Health Consciousness (HC)	0.462	**0.788**				
Intention to consume (IN)	0.188	0.358	**0.888**			
Perceived Behaviour Control (PBC)	0.174	0.073	0.179	**0.820**		
Subjective norms (SN)	0.329	0.545	0.508	0.248	**0.853**	
Willingness to pay (WTP)	0.106	0.179	0.184	0.219	0.155	**0.890**

Note: Values in the diagonal (bolded) indicate the square root of the Average Variance Extracted (AVE) and the off-diagonals show the correlations index.

Furthermore, Henseler's HTMT criterion (see Table 4) prescribe more rigorous evaluation than the previous criterion; proposing that all constructs are distinctively different at HTMT0.90 thresholds [95].

Table 4
Discriminant

	HBP	HC	IN	PBC	SN	WTP
Health Benefit of Pomegranate (HBP)						
Health Consciousness (HC)	0.614					
Intention to consume (IN)	0.213	0.457				
Perceived Behaviour Control (PBC)	0.204	0.191	0.203			
Subjective norms (SN)	0.372	0.742	0.526	0.287		
Willingness to pay (WTP)	0.211	0.215	0.183	0.295	0.173	

3.3 Examine of Structure Model

Before testing the structural model, it is crucial to verify that there is no collinearity result in the model. Table 5 indicates the result of collinearity assessment of the model. The result of the VIF values below 3.3 for each of the constructs show that collinearity is not an issue [96].

Table 5
Collinearity assessment

Constructs	Intention
Health Benefit of Pomegranate	1.307
Health consciousness	1.797
Perceived Behaviour Control	1.143
Subjective Norms	1.629
Willingness to pay	1.081

Table 6
Direct effect hypotheses testing

	Hypotheses	Direct Effect (Beta)	Std. Error	T Value	P. Value	Decision
H1	Health Benefit of Pomegranate - Intention	0.015	0.047	0.323	0.747	Not Supported
H2	Health Consciousness – Intention	-091	0.053	1.736	0.083	Not supported
H3	Willingness to pay – Intention	0.092	0.042	2.204	0.028*	Supported
H4	Subjective Norms – Intention	0.434	0.058	7.444	0.000**	Supported
H5	Perceived Behaviour Control – Intention	0.047	0.041	1.149	0.250	Not supported

Note: *, ** indicate statistical significance at the 0.05 and 0.01 levels at 95% confidence level, t (0.05, 1999) = 1.960 and t (0.01, 1999) = 2.576.

PLS does not immediately provide a significance measure. Significance levels for loadings, weights, and paths were measured through bootstrapping. Ten thousand bootstrap samples (10000) were applied through empirically calculated standard errors and evaluated statistical significance.

The outcome of structural model analysis was achieved by employing a PLS technique and bootstrapping method with 10000 samples. Table 6 indicates that the path between health benefits of pomegranates and intention was insignificant (t =0.323, p = 0.747), thus rejecting Hypothesis 1; the path between health consciousness and intention was also insignificant (t =1.736, p = 0.083), thus not supporting Hypothesis 2. However, the path between willingness to pay and intention to consume pomegranates was significant (t =2.204, p = 0.028), thus supporting Hypothesis 3 (see table 6 and Figure 2). The path between subjective norms and intention was highly significant (t =7.444, p = 0.000), thus confirming Hypothesis 4; while the the path between perceived behaviour control and intention was insignificant (t = 1.149, p=0.250), thus, Hypothesis 5 was not supported. We concluded that both H3 and H4 contribute significantly to overall factors affecting university students' intention to consume pomegranates with a p-value of less than 0.05. However, for H1, H2, and H5, there was no evidence to indicate student influence.

Moreover, Table 7 presents the examination of co-efficient of determinant (R^2), the effect size (f^2), and the predictive relevance (Q^2) of exogenous variables on endogenous variable in this study. The value for co-efficient of discovery (R^2) for intention to consume is 0.276. This suggests that the exogenous variables in this study, namely health benefits pomegranates, health consciousness, willing to pay, subjective norms, and perceived behaviour control factors explained 27.6% of the variation in overall factors that affecting university students' intention to consume pomegranates. Generally, the Q^2 value of 0.211 for intention, which is larger than 0, suggests that the health benefits pomegranates, health consciousness, willingness to pay, subjective norms, and perceived behaviour control factors, own a predictive power over intention [85]. The results also indicate that the subjective norm factor (f^2 = 0.160) has a medium sized effect on intention. This show that subjective norm is more crucial than others factors in explaining intention to consume pomegranates.

Table 7
Summary of result- path coefficient, f² and q²

			Effect Size *f²*		
Constructs	**Path Coefficient R²**	**Predictive Relevance Q²**	**Constructs**	**Intention**	**Effect size**
Intention	0.276	0.211	Health Benefit of Pomegranate	0.000	Small
			Health Consciousness	0.006	Small
			Perceived Behaviour Control	0.003	Small
			Subjective Norms	0.160	Medium
			Willingness to pay	0.011	Small

Guidelines for assessing f² and q² values: 0.02= small, 0.15= medium, 0.35=large

4. Implication and Conclusion

When confirming the use of expanded Theory Planned Behaviour on the university students' intention to consume pomegranates in Malaysia, it is crucial to understand how the health benefits of pomegranates, health consciousness, willingness to pay, subjective norm and perceived behaviour control, affect intention to consume pomegranates. This finding corresponds to previous findings that willingness to pay and subjective norm are stronger predictors than others constructs, such as the health benefits of pomegranate, health consciousness, and perceived behaviour control [61-62, 67, 71-74]. Although the health benefits of pomegranates and health consciousness factors were found to be largely positive in preventing illness in previous study [31, 46-49], the findings of the present study show that it is not necessary accurate for university student's consumers in Malaysia. Perhaps the lack of knowledge and belief about the benefits of pomegranates among university students could be a reason for not supporting pomegranate consumption. Pomegranate seeds could also a reason, because they are difficult to chew, thus reducing consumer total satisfaction [43-44].

We discovered several intervention strategies that are able to improve pomegranate eating habits, by introducing more information related to health benefits of pomegranates to parents and friends. This study identified that university students are willingness to pay pomegranate. We hope that this study might contribute towards a growing interest in Malaysians pomegranate eating behaviour and ultimately improve health and quality of life.

4.1 Limitation and Recommendation

Despite the measurements of the current study, from theoretical, methodological and empirical point of view, several limitations emphasize the necessity to contribute to future studies. Firstly, this study is limited to examining only the factors influence intention to consume pomegranates; rather than other similar fruits that might also contribute to health benefit standpoints. Secondly, the choice of university students as a convenient sampling, possibility jeopardize the generalizability of the results to the population.

This study recommended future studies to study similar healthy fruit and compare intention to consume by ethnicity in order to extend the Theory Planned Behaviour in fruits research.

Furthermore, the future studies need to identify how to improve knowledge of the health benefits of pomegranates among consumers. Other than that availability in the market place should also be considered. The recommendations of knowledge and availability factors need to be tested by theory-driven and practice-based research; so that new pomegranate eating habits can be created.

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