

## PROFILING HERBAL MEDICINE USE BY TRANSTHEORETICAL MODEL AND PERCEIVED VALUE: A CASE STUDY OF YOUNG ADULTS IN MALAYSIA

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### Article history

**Received date** : 01-08-2021  
**Revised date** : 23-08-2021  
**Accepted date** : 25-10-2021  
**Published date** : 30-11-2021

### To cite this document:

Y. L. Adeline Tam (2021). Profiling Herbal Medicine Use by Transtheoretical Model and Perceived Value: A Case Study of Young Adults in Malaysia. *International Journal of Accounting, Finance and Business (IJAFB)*, 6 (37), 48 - 63.

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**Abstract:** Herbal medicine market is experiencing tremendous growth in these few years. Young adults between 20 to 29 years old is the largest Malaysian consumer segment with high demand for health-related products. However, this segment is now switching to non-herbal products. Engaging young adults to herbal medicine consumption is important to avoid high dependency on older consumers for sales and customer base. This study aims to investigate, with person-centred approach, the heterogeneity profile of herbal medicine use among young adults using Transtheoretical Model and four perceived value dimensions, namely the quality, price, emotional, and social values. A self-administered questionnaire with verified instruments was designed for data collection. Convenient sampling was used to collect data in Johor Bharu and Kota Kinabalu. A total 363 samples were collected and examined with Two Step Cluster analysis in IBM SPSS. Findings confirmed that the prevalence of herbal medicine use among young adults is high. Findings also highlighted four clusters of herbal medicine use; whereby long-term users in the maintenance stage perceived the highest level of perceived value that is followed by short-term users in the action stage. Meanwhile, non-users in both pre-contemplation and preparation stages had below average level of perceived value. Emotional value is the most critical predictor of herbal medicine use. In conclusion, this study provides the basis to enhance the awareness of herbal as well as complementary and traditional medicine stakeholders on the perceived value of herbal medicine use. Marketers and complementary and traditional health practitioners, armed with this knowledge, could prepare and implement their marketing campaigns and health initiatives efficiently.

**Keywords:** Complementary and Traditional Medicine, Healthcare, Herbal Medicines, Perceived Value, Transtheoretical Model

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## Introduction

Herbal medicine market, a common modality of complementary and traditional medicine, is experiencing tremendous growth in these few years. The Polaris Market Research (2020) reported that world herbal medicine market size was valued at USD 84.5 billion in 2019 and is estimated to reach USD 411.2 billion by 2026, with a Compound Annual Growth Rate of 20.5% from 2020 to 2026. Likewise, sales of processed complementary and traditional medicine products, including herbal, in Malaysia grew by 8.5% from RM 1.47 billion in 2018 to RM 1.60 billion (estimated) in 2019 (Euromonitor International, 2019). Meanwhile, young adults between 20-29-year-old are the largest consumer segment in Malaysia (Department of Statistics Malaysia, 2020). They also represented one of the fastest growing markets for health-related products in Malaysia (Yap, Noor, Marshall, & Liew, 2014). Nevertheless, many young adults are currently switching from complementary and traditional medicine products to non-complementary and non-traditional medicine products (Euromonitor International, 2019). Losing the preferences of young adults, the prospect growth of herbal market is dependent on older consumers (Euromonitor International, 2019). High dependence on older consumer market will have implications, such that the future herbal medicines market might encounter losses of sales and even decreasing consumer base. Hence, these trends suggest that engaging young adults to herbal medicine consumption is crucially important. Studies on young adult perception to herbal medicine could provide knowledge and recommend important strategies to engage young adults with herbal medicine consumption. However, most past studies focused on adult, as a whole (Jang et al, 2017; Liwa et al, 2017; Welz, Emberger-Klein, & Menrad, 2019), or older population (Rhee, Ng, & Dusek, 2017).

Past studies (Donaldson et al, 2018; Hirai et al, 2008; Welz et al, 2019) found that complementary and traditional medicine users, including herbal medicine users, are not homogeneous, but could be categorised into different groups with unique characteristics and distinct reasons of use. Donaldson et al (2018) pointed out that there are six clusters of complementary and traditional medicine users, which had unique socio-demographic characteristics. Hirai et al (2008) found that there are five different stages of complementary and traditional medicine users based on Transtheoretical Model. They showed that positive perception and positive attitude among users are important in promoting complementary and traditional medicines use. Meanwhile, Welz et al (2019) identified three groups of herbal medicine users, namely new users, established users, and long-term users. They pointed out that push factors such as side effects of modern medicines were associated more with initial herbal medicine use, while pull factors of herbal medicine predicted long-term herbal medicine usage. These studies warrant the importance to study the heterogeneity among herbal users. Nevertheless, the heterogeneity among herbal medicine users was often ignored in past studies (Al-Ghamdi et al, 2017; Foster, Younger, Aiken, Brady-West, & Delgoda, 2017; Liwa et al, 2017), which often compared herbal medicine users to non-users.

Transtheoretical Model (TTM), by Prochaska and Di Clemente (1982), provided a model to define the different stages of health behaviour. TTM recommends that individuals vary in their readiness to take health behaviour action, and hence, they are categorised into five different stages from the pre-contemplation stage (non-user), contemplation stage, preparation stage to action stage (user), and maintenance stage (long-term user). TTM was applied to define different stages of health behaviours such as complementary and traditional medicine use (Hirai et al, 2008), pregnancy-related behaviour (Kocher, Lamb, McGarvey, Muasau-Howard, & Hawley, 2018), hearing rehabilitation (Ekberg, Grenness, & Hickson, 2016), and

mammography adoption (Shirzadi, Nadrian, Jafarabadi, Allahverdipour, & Hassankhani, 2017; Strong & Liang, 2009). The model focuses on the current attitudes, behaviours, and intentions of a person, instead of frequency of use, to determine his or her readiness for change (Ekberg et al, 2016). Therefore, TTM ensures a more reliable way to categorise herbal medicine users for further analysis. Furthermore, the stages of behaviour in TTM not only included both non-user and user, but non-users are also categorised into three different stages, while the users are differentiated into action and maintenance stages. This unique categorisation allowed comparison between non-users as well as between action (short-term) and maintenance (long-term) users. And hence, would contribute to the understanding of heterogeneity among herbal medicine users.

Meanwhile, perceived value was importance in predicting the use of complementary and traditional medicine (Bahall, 2017; Dodds, Bulmer, & Murphy, 2014; Zainuddin, Tam, & McCosker, 2016). Previous literature also concluded that perceived value, instead of social-demography variables, is more relevant to predict complementary and traditional medicine usage (Yap et al., 2014; Robinson, Lorenc, & Blair, 2009). In the health marketing literature, perceived value positively predicted satisfaction and loyalty (Özer, Başgöze, & Karahan, 2017; Pevec & Pisnik, 2018), as well as purchase intention (Zainuddin et al, 2016). Perceived value has significant influence over satisfaction and trust levels, which in turn, leads to increased customer commitment-loyalty in healthcare services (Moliner, 2009). Past studies (Hirai et al, 2008; Shirzadi et al, 2017) showed that individual has different perceptions depends on the TTM stage. Shirzadi et al (2017) pointed out that participants in the maintenance and action stages have significantly higher perceived benefits than those non-users in pre-contemplation and contemplation stages. Likewise, Hirai et al (2008) confirmed that users' perceived positive outcome of use had direct relationship with the stage of use. Therefore, analysing perceived value on herbal medicine consumption stage would inevitably improve the understanding on the users in each stage of use.

Considering the tremendous growth of herbal market and the need to engage young adult users, investigation on the heterogeneity profile and perceived value of young adult herbal medicine users is warranted. TTM provides a framework to categorise the stage of use while perceived value dimensions are suitable in analysis the perceptions of participants in each herbal medicine stage of use. Nevertheless, there is a lack of studies investigating the heterogeneity profile of herbal users using TTM and perceived value dimensions. To fill this research gap, this study aims to investigate the heterogeneity profile of herbal medicine users among young adults using TTM and perceived value dimensions. Consistently, the study attempts to answer two research questions: 1. What is the profile of young adult herbal medicine users? and 2. Do herbal medicine users exhibit distinct perceived value by the stages of use? In this study, the herbal medicine users are categorised into different stages of use based on stages of change in TTM (Hirai et al, 2008; Kocher et al, 2018; Shirzadi et al, 2017), which are then further analysed from the perspectives of perceived value dimensions (Bahall, 2017; Dodds et al, 2014; Zainuddin et al, 2016). The research proposal of this study is presented to and approved by the PhD Research Proposal Assessment Committee appointed by the Universiti Teknologi Malaysia. The research activity is bound by the Postgraduate Academic Regulations set by the university. This study contributes theoretically to the body of knowledge by bridging the gap in literature and expands the understanding of herbal medicine consumption among young adults.

## Literature Review

### Transtheoretical Model (TTM)

Transtheoretical Model (TTM) proposed by Prochaska and Di Clemente (1982) is a popular model for investigating different stages of health behaviour change (Ekberg et al, 2016; Kocher et al, 2018; Shirzadi et al, 2017). TTM proposes that individuals vary in their readiness to take health behaviour action and posits change as a process that unfolds over time through a series of stages. The stages are both stable and open to change (Prochaska, Redding, & Evers, 2008). There are five key stages in TTM, which are pre-contemplation, contemplation, preparation, action, and maintenance stages. The use experience, past usage period, intention to use, preparation to try, and use behaviour are all factors in determining a person's stage (Ekberg et al, 2016). Using these criteria to categorise herbal medicine user, instead of depending on the period of use (Welz et al, 2019) or frequency of use (LaCaille & Kuvaas, 2011), could provide more insight to understand the heterogeneity of herbal medicine users.

People who have never used herbal medicines before are classified into three non-user stages based on two criteria, intention to use and plan to use. Pre-contemplation stage is the stage in which people are lack of awareness and do not intent to use herbal medicine. They are non-users who are reluctant, unmotivated, or not ready to use herbal medicine products (Prochaska et al, 2008). People in the contemplation stage are non-user who are aware of the benefits of herbal medicine and intend to use herbal medicine products. They are, however, also concerned about the potential drawbacks and costs of using herbal medicine and hence are ambivalent with the use of herbal medicine (Prochaska et al, 2008). In the preparation stage, people intend and plan to use herbal medicine. They have intention to use and have acted or have a plan of action to start using herbal medicine such as asking for advice from users, looking for information online, and sourcing for the suitable products (Prochaska et al, 2008). Although people in preparation stage are not herbal medicine users, but they are the potential users who marketer could targeted on. People in the preparation stages are much more likely to transit to the action stage compared to those in the pre-contemplation or contemplation stages (Ekberg et al, 2016). Meanwhile, herbal medicine users are categories into two distinct stages depends on the herbal medicine usage period. People in the action stage are new and short-term herbal medicine users who used herbal medicine for less than six months. In the maintenance stage, people are the establish or long-term users who have used the herbal medicines over six months. They have incorporated the use of herbal medicine into their daily choice of healthcare products (Ekberg et al, 2016).

The perception of an individual determined the stage that an individual located (Hirai et al, 2008; Shirzadi et al, 2017). Shirzadi et al (2017) discovered that the perceived benefits of people at different stages differ significantly, with individuals in pre-contemplation having the lowest perceived benefits, increasing with stages, and reaching the highest in the action stage. People in the maintenance stage has perceived benefits that are lower than those in the action stage but significantly higher than those in the contemplation stage. Similarly, Hirai et al, (2008) confirmed that positive perception (pro) was increasing by stages significantly and positive perception (pro) was strong predictor for complementary and traditional medicine stages. Nevertheless, past studies (Hirai et al, 2008; Shirzadi et al, 2017) were only investigating the relationship between positive perception and TTM stages, lack of study that investigate the possible relationship between value perceptions towards herbal medicine products and TTM stages of herbal medicine usage.

### **Perceived Value**

Perceived value is the overall evaluation of a product or service by a customer based on the comparison of benefits received to costs incurred (Hennigs et al., 2012). Perceived values are significant standards that are used by an individual to make preference decisions and guide consumers' selection (Song & Kim, 2019). Further, perceived value significantly predicted purchase intention, satisfaction, and loyalty of customers towards healthcare products or services (Özer et al, 2017; Pevec & Pisnik, 2018; Zainuddin et al, 2016). Past studies (Bahall, 2017; Dodds et al, 2014; Robinson et al, 2009; Yap et al, 2014) also pointed out that value perception is crucial towards the use of complementary and traditional medicine. Bahall (2017) and Dodds et al (2014) concluded that complementary and traditional medicine consumers appreciated multi-dimensional perceived value, which includes empowerment, control, quality of care, treatment efficiency, social value, and emotional value.

Past studies, using profile analysis, also discovered that multi-dimensional perceived value is effective in classifying customers into distinct clusters in various contexts such as social marketing (Gordon, Dibb, Magee, Cooper, & Waitt, 2018), tourism (Song & Kim, 2019; Wang, Chen, & Prebensen, 2018), luxury products consumption (Hennigs et al, 2012), university education (Jiménez-Castillo, Sánchez-Fernández, & Iniesta-Bonillo, 2013), and pet ownership (Chen, Hung, & Peng, 2012). According to studies (Chen et al, 2012; Gordon et al, 2018; Hennigs et al, 2012; Jiménez-Castillo et al, 2013; Song & Kim, 2019; Wang et al, 2018), customers in a cluster had distinct preferences for specific perceived value dimensions when compared to customers in other clusters. As a result, Wang et al (2018) confirmed that customers in a cluster had similar preferences for a specific service compared to other services, allowing for a better understanding of the customers' needs and desires. Meanwhile, previous studies (Song & Kim, 2019; Wang et al, 2018) has found that one cluster had a significantly higher value perception than the others. Song and Kim (2019) confirmed that a cluster that highly appreciated all the values had a higher level of satisfaction and revisit intention, whereas the cluster that scored the lowest in perceived value had the lowest level of satisfaction and revisit intention. Likewise, Gordon et al (2018) discovered a significant positive relationship between the consumer cluster and social behaviours as well. These studies (Chen et al, 2012; Gordon et al, 2018; Hennigs et al, 2012; Jiménez-Castillo et al, 2013; Song & Kim, 2019; Wang et al, 2018) suggested that multi-dimensional perceived value is crucially important to analyse profile of consumers.

Acknowledging the importance of multi-dimensional perceived value, Sweeney and Soutar (2001) proposed four perceived value dimensions, the quality (functional) value, price (functional) value, emotional value, and social value, to analyse the perceived value of consumers. The proposed four-dimensions perceived value were utilised to measure consumers' perceived value in various healthcare contexts such as healthy eating (Thomé, Pinho, & Hoppe, 2018) and public university hospital services (Özer et al, 2017). Functional value is the perceived benefits from the functional, utilitarian, or physical performance of a product (Tam, Baharun and Sulaiman, 2019). The perceived usefulness of herbal medicine has direct effect on the acceptance and use of herbal medicine (Dodds, Bulmer, and Murphy, 2014; Foster et al., 2017). Although quality and price values are often categorised as a functional value, Sweeney and Soutar (2001) argued that functional value is not a single dimension, but instead, consisted of two dimensions, price and quality. Tam, Baharun and Sulaiman (2019) revealed that the influences of price and quality values on dependent variables were contradicting. Therefore, this study included both quality and price values separately.

Quality (functional) value, or performance value, is the benefits derived from the product's perceived quality and projected performance (Sweeney & Soutar, 2001). Dodds et al (2014) found that quality value (quality of care and treatment efficiency) is the primary perceived value of complementary and traditional medicine that appreciated by consumers. Herbal users were satisfied with the efficacy of herbal medicines and perceived that herbal medicine are useful (Foster et al., 2017; Jokar, Noorhosseini, Allahyari, & Damalas, 2017). Users also believed that herbal medicine improved the quality of life by giving sense of control over health, making it easier to cope with health problem and improving overall health (Rhee et al, 2017). Similarly, Bahall (2017) pointed out that users were concerned with empowerment, control, cure, and improved quality of life offered by complementary and traditional medicine. Price (functional) value, or value for money, refers to the utility derived from the decrease in perceived short-term and long-term costs of a product (Sweeney & Soutar, 2001). One of the popular reasons to use herbal medicine is that herbal medicine is cheaper than conventional medicine (Liwa et al., 2017; Jokar et al., 2017). Users perceived value for money because they were gaining good results from complementary medicine treatment (Dodds et al, 2014). Besides, herbal users consume herbal medicine as a way to reduce health care expenses as some herbal medicines are freely available (Jokar et al., 2017). Therefore, both quality and price values are important for decisions to use herbal medicine.

Emotional and social values are referring to the utility extracted from the product's ability to produce feelings or affective states and to boost social self-concept, respectively (Sweeney & Soutar, 2001). Past studies (Bahall, 2017; Dodds et al, 2014; Rhee et al, 2017) suggested that users enjoyed emotional or psychological benefits from use of complementary and traditional medicine, specifically herbal medicine. The perceived benefits of using herbal products included reduction of stress, relaxation, help to sleep, and feeling better emotionally (Bahall, 2017; Dodds et al, 2014; Rhee et al, 2017). Dodds et al (2014) found that many users gained a 'sense of self' from the use of complementary and traditional medicine, and this was linked to the physical and emotional well-being after the use. Meanwhile, herbal medicine users also appreciated the social value of using herbal medicine. Some herbal medicine users thought that using herbal medicine 'congruent their inner beliefs and inner self' (Bahall, 2017). Others believe that herbal medicine help in improving relationships with others (Rhee et al, 2017) and to face the pressure of relatives and friends (Liwa et al, 2017). Previous studies (Bahall, 2017; Dodds et al, 2014; Rhee et al, 2017) pointed out the herbal medicine users appreciated the multi-dimensional perceived value of consuming herbal medicine. Nevertheless, there are limited studies investigating the heterogeneity profile of herbal medicine users using perceived value, and hence this study used the four dimensions of perceived value proposed by Sweeney and Soutar (2001) to further profile the herbal medicine users.

### **Research Methodology**

Person-centred approach is used to analyse the herbal medicine use profile by TTM stage of use. This approach assumes that the population and its samples may have unobserved sub-groups, and hence, effort to identify the sub-groups within a sample is required. In this study, herbal medicine refers to medicinal products produced from plant, raw or processed, for health maintenance and disease prevention (Aziz & Tey, 2009). Herbal medicine included in this study are traditional herbal, such as Malay herb and traditional Chinese herbs, as well as modern herbal products, such as Evening Primrose Oil.

### Sampling and Data Collection

The young adults in this study are consumers within the age range of 20 to 29-year-old. This segment is known as the largest consumer segment in Malaysia (Department of Statistics Malaysia, 2020) and they also represented one of the fastest growing markets for health-related products in Malaysia (Yap et al, 2014). Convenient sampling method was used to collect data. Two cities, Johor Bharu (West Malaysia) and Kota Kinabalu (East Malaysia), were selected for data collection. Collecting data from the two cities allowing consumers who lived in West and East Malaysia to answer the survey, in which the respondents of survey will include respondents from the three main races in the country and the natives from East Malaysia. Convenient sampling was used to collect data via structured self-administered questionnaire between April to September 2018. Out of the 470 set of questionnaires distributed offline, 363 sets were returned, yielding a response rate up to 77%. The high response rate is attributed to the researchers' efforts in explaining the study purpose and assisting the respondents when required. The respondents gave their consent to provide data for academic research when they agreed to participate in the study.

### Instruments and Questionnaire Development

A self-administrated survey questionnaire is developed to collect data for this study. This questionnaire consists of few sections. A simple description of herbal medicine with the examples of commonly used herbal medicine is provided to ensure that the respondents understand the definition of herbal medicine before they answer the questionnaire. The first section asked for respondent's perceived value towards the herbal medicine. The second section included questions to determine the respondent's stage of use and the last section collect data on respondent's socio-demographic background.

The 13 items to measure the price value, quality value, and social value are adapted from Perceived Value Scale (PERVAL) created by Sweeney and Soutar (2001), while emotional value is measured with instruments adapted from Zainuddin, Tam and McCosker (2016). Details of instruments presented in Table 1. All measurements for perceived value are based on a seven-point Likert scale ranging from strongly disagree to strongly agree. To ensure the content validity for local context, these instruments were pre-tested by marketing experts and practitioners. The instruments were improved upon experts' and practitioners' advices before pilot tested on 30 samples.

**Table 1: Perceived Value Instruments**

Variable	Source	No of item	Item	Reliability
<b>Price value</b>	PERVAL, Sweeney & Soutar (2001)	4	<b><u>I think that Herbal Medicine:</u></b> 1. is reasonably priced. 2. offers value for money. 3. is a good product for the price. 4. would be economical.	.90
<b>Quality value</b>	PERVAL, Sweeney & Soutar (2001)	5	5. has consistent quality. 6. has well assured ingredient (content). 7. has an acceptable standard of quality. 8. produced by trusted producer. 9. would perform consistently.	.95

<b>Social value</b>	PERVAL, Sweeney & Soutar (2001)	4	10. would help me to feel acceptable.	.92
			11. would improve the way I am perceived.	
			12. is reliable that I often persuade other people to use herbal medicines.	
			13. is suitable that I often influence people's opinion about herbal medicines.	
<b>Emotional value</b>	Zainuddin, Tam, & McCosker (2016)	5	14. make me want to use it.	-
			15. make me feel good.	
			16. make me feel relieved.	
			17. make me feel safe.	
			18. make me feel comfortable.	

Note: Reliability measured by composite reliability.

The method proposed by Strong and Liang (2009) was applied to assess the stage of herbal medicine consumption among users. They proposed that use criteria should be applied to decide the position of the participant at herbal medicine consumption stage, rather than asking respondents to choose a stage based on a single item, a method frequently used in the past (Hirai et al, 2008). Based on Hirai et al (2008), five criteria to measure herbal medicine use are identified and transcribed into five items as in Table 2. In which, items two and three are measured using a seven-point Likert scale, ranging from very unlikely to very likely, while other questions are measured with yes, no, or not sure. Based on the answers, an individual is positioned into a stage of herbal medicine consumption (refers Table 3). For example, an individual who has never used herbal medicine, as well as has no intention and plan to use herbal medicine is positioned in pre-contemplation stage.

**Table 2: Herbal Medicine Consumption Instruments**

Item	Choice of answer
1. Have you ever use any herbal medicine?	No, Yes
2. Do you <b>intent</b> (want to but no action taken) to use herbal medicine?	Very Unlikely .... Very Likely (7-point Likert scale)
3. Do you <b>plan</b> (some actions taken, e.g. seeking for the right product, asking for price, looking for shop or supplier, saving money to buy) to use herbal medicine?	Very Unlikely .... Very Likely (7-point Likert scale)
4. How regularly have you use herbal medicine in the last six months?	No, every few month, monthly, weekly, daily
5. Do you use herbal medicine products more than six months?	No, Yes, Not sure

**Table 3: Determine Herbal Medicine Consumption Stage**

Stages	Ever use	Intention to use	Plan to use	Frequency of use (past six months)	Usage (past six months)
<b>Pre-contemplation</b>	No	‘very unlikely’, ‘unlikely’, or ‘neutral’	‘very unlikely’, ‘unlikely’, or ‘neutral’	X	X
<b>Contemplation</b>	No	‘likely’ or ‘very likely’	‘very unlikely’, ‘unlikely’, or ‘neutral’	X	X
<b>Preparation</b>	No	‘likely’ or ‘very likely’	‘likely’ or ‘very likely’	X	X
<b>Action</b>	Yes	X	X	Used at least once	No
<b>Maintenance</b>	Yes	X	X	Used at least once	Yes

Note: X - Respondents were instructed to avoid these questions based on the answer given in item 1.

### Data Analysis

IBM SPSS professional version 27 was used to clean and analyse the data collected. After removing the incomplete responses that have missing data and outliers, there were a total of 363 usable samples to be used for further analysis. Then, a respondent is manually positioned into a stage of herbal medicine consumption based on their answers to herbal medicine use criteria. Two Step Cluster Analysis is chosen, in line with person-centred approach, to analyse the perceived value of respondents in each TTM stage of use. This analysis allowed the inclusion of the TTM stage of use and perceived value dimensions simultaneously to examine the characteristics of respondents in each stage. Furthermore, the socio-demographic characteristics of respondents are also included in the analysis to check whether these characteristics are related to the TTM stage

### Results

The socio-demographic profile of respondents is tabled in Table 4. Out of the 363 respondents, majority were female respondents (77%). Malay/Native respondents and Chinese respondents are amounted to 74% and 12%, respectively. Most of the respondents (56%) lived in rural areas. High percentage of respondents are reported to possess good to excellent health condition (87%).

**Table 4: Socio-Demographic Profile of Respondents**

		<b>Number</b>	<b>Per cent (%)</b>
<b>Gender</b>	Male	82	22.59
	Female	281	77.41
<b>Race</b>	Malay & Native	269	74.10
	Chinese	43	11.85
	Indian	14	3.86
	Other	37	10.20
<b>Living</b>	City	156	42.98
	Rural	203	55.92
	Unreported	4	1.10
<b>Health</b>	Excellent	115	31.68
	Good	202	55.64
	Average	32	8.82
	Poor	11	3.03
	Unreported	3	0.83

#### **Herbal Medicine Use by Stage**

The prevalence of herbal medicine was high with 255 (70%) respondents claimed to have used the herbal medicine in their lifetime. Out of these users, 69% of them were in action stage and 31% were in maintenance stage, representing short-term and long-term users, respectively. While for the non-users, 16% were in pre-contemplation, 12% were in preparation, and 2% were in contemplation stage (details in Table 5).

**Table 5: Profile of Herbal Medicine Consumption**

	<b>Stages of consumption</b>	<b>Number</b>	<b>Percent (%)</b>
<b>Non-users</b>	Pre-contemplation	57	15.70
	Contemplation	8	2.20
	Preparation	43	11.85
<b>Users</b>	Action	175	48.21
	Maintenance	80	22.04
<b>TOTAL</b>		<b>363</b>	<b>100.00</b>

In view of the number of respondents in contemplation stage was low, t-test was conducted to compare the contemplation stage with pre-contemplation stage and preparation stage. Results of t-test comparison of mean is presented in Table 6. The respondents in contemplation stage were not statistically different from preparation stage, and hence the contemplation cluster were combined into preparation stage in the following analysis. The total respondents in preparation stage were sum up to 51.

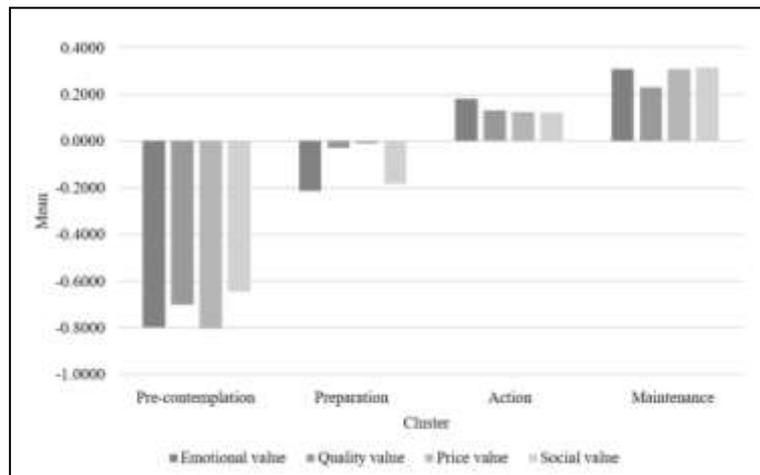
**Table 6: Mean Comparison Between Pre-Contemplation, Contemplation, and Preparation Stages**

Variable			Mean Difference	Std. Error	Sig.
Price value	Contemplation	Pre-Contemplation	.967	.354	.052
		Preparation	.208	.361	.978
Quality value	Contemplation	Pre-Contemplation	.740	.361	.244
		Preparation	.081	.368	.999
Social value	Contemplation	Pre-Contemplation	.356	.361	.862
		Preparation	-.126	.368	.997
Emotional value	Contemplation	Pre-Contemplation	.739	.352	.223
		Preparation	.184	.359	.986

Note: all results not statistically significant.

#### **Profile of Herbal Medicine Users**

The cluster analysis has derived a fair cluster quality with Silhouette measure of cohesion and separation equal to 0.2. Four clusters were generated statistically according to the four stages. Each cluster demonstrated a distinct impression on the perceived value as compared to other clusters. Refer Figure 1 for details. As expected, the non-users in the pre-contemplation stage had the lowest level of perceived value with mean scores of emotional and price values as low as -0.80. The non-users in preparation stage also had below average mean level of perceived value but higher than those in pre-contemplation stage. For non-users in preparation stage, emotional value was the lowest (-0.21) and follows by social value (-0.18). Meanwhile, the users in action stage had above average mean value in the range between 0.12 and 0.18. The long-term users in maintenance stage had the highest perceived value, with means of emotional value, price value and social value achieved 0.31. As compared to perceived value, the socio-demographics of respondents, race, gender, and living area, had near to zero influence on the consumption of herbal medicine, and hence were not reflected in the diagram.



**Figure 1: Profile of Herbal Medicine Consumption**

Among the perceived value dimensions, the emotional value had the highest predicting power on the herbal medicine consumption stage and followed by price value, quality value, and social value. Emotional value was the highest value enjoyed by users but was also the lowest value perceived by non-users. Likewise, price value was highly appreciated by users, but was perceived as very low among non-users, particularly those in pre-contemplation stage. Quality value was perceived as the lowest value dimension by maintenance users but was perceived as the second highest value dimension by the non-users in both pre-contemplation and preparation stages. Social value, had the least predicting power, was consistently high among the different clusters, except for action cluster.

### Discussion

This current study has provided valuable knowledge on the profile of herbal medicine consumption among young adults in Malaysia. The prevalence of herbal medicine consumption among young adults was high (70%) and this result is consistent with the previous findings in Malaysia, which was 89% (Siti et al, 2009). Although most of the young adults (87%) reported to have good to excellent health, the high prevalence of herbal medicine use is observed and this could be attributed to the use of most herbal medicine for maintaining health or wellness, rather than in curing sickness (Al-Ghamdi et al, 2017; Siti et al, 2009). Further, up to 22% of young adults were long-term herbal medicine users reflecting that they were accepting herbal medicine as a mean of health care. Hence, this study provided evidence to support the availability of a potentially large herbal medicine market among young adults, particularly for health maintenance or wellness.

Consistent with past studies (Yap et al, 2014; Robinson et al, 2009), this study found that the perceived value stands out to be a more reliable predictor of herbal medicine use than the socio-demographic variables such as gender, race, health condition, and living location. This study also supports past findings (Gordon et al, 2018; Hennigs et al, 2012; Song & Kim, 2019; Wang et al, 2018) in confirming that perceived value dimensions are critical in profiling the herbal medicine users. Individual uses perceived value as a selection standard for purchasing decisions (Song & Kim, 2019). Besides, high perceived value is also positively associated with customer satisfaction (Özer et al, 2017; Pevac & Pisnik, 2018; Zainuddin et al, 2016) and hence contributes to the longer use of herbal medicine products.

This study confirmed that the herbal medicine users are heterogeneity and could be categorised into two clusters, short-term (in active stage) and long-term (in maintenance stage) users, supporting findings by past studies (Donaldson et al., 2018; Hirai et al., 2008; Welz et al, 2019). Both user groups had higher perceived value than non-users on the herbal medicine were reflecting that they were appreciating the benefits from using herbal medicine. In contrast with short-term users, long-term users had a high perceived value for herbal medicines. The finding confirmed Song and Kim (2019) and Moliner (2009) that users with high perceived value were experiencing higher satisfaction and were more likely to repurchase the herbal medicines. Drawing on the high perceived value by the maintenance (long-term) users as compared to action (short-term) users, this study concludes that the higher the perceived value by a user, the more likely a user consumes herbal medicine for a longer period.

Results of this study also highlighted that the non-users were not identical, in which a group of future potential users was identified within the non-users. There were two groups of non-users identified, a group of the non-users, in pre-contemplation state, had very low perceived value on the herbal medicine and were not interested to use herbal medicine. In contrast, their counterpart in the preparation stage exhibited much higher perceived value on the herbal medicine and expressed intention or plan to use herbal medicine. This potential user group did not used herbal medicine, likely due to lack of knowledge on herbal medicine, uncertainty over the effectiveness and product origin, as well as avoiding the expensive pricing of such products (Jang et al., 2017; Noorhosseini, Fallahi, Damalas & Allahyari, 2017). Although these potential users did not consume herbal medicines, this study justified the need to target them as the prospect herbal medicine consumers.

Current study also confirmed that users are normally concerned with multi-dimensional perceived value of herbal medicines. This finding is consistent with previous findings on complementary and traditional medicines (Bahall, 2017; Dodds et al, 2014; Rhee et al, 2017). Among the perceived value dimensions, emotional value is the most critical perceived value appreciated by herbal medicine users and this is in line to findings by past studies (Bahall, 2017; Dodds et al, 2014; Rhee et al, 2017) in the appreciation of emotional value of using herbal medicines. The herbal medicine users agreed that use of herbal medicine can provide them with feeling good, relieved, safe, and comfortable. Meanwhile, the herbal medicines users also appreciated price value, in which they agreed that the herbal medicines are reasonably priced, economical, and value for money.

### **Implications**

This study contributed to the body of knowledge by confirming the heterogeneity among herbal medicine users and non-users. Acknowledging the differences between the users would allow future research to investigate and compare the impacts of heterogeneity on consumers' intention and satisfaction. This study provides the basis to enhance the awareness of stakeholders on herbal medicine as well as complementary and traditional medicine consumption, as a whole. Marketers and complementary and traditional health practitioners, armed with this knowledge, could prepare and implement their marketing campaigns and health initiatives efficiently. Marketing strategy should concentrate on promoting the various benefits of using herbal medicine on order to engage with the prospect consumers and turning short-term customers to become long-term customers. Further, marketers and practitioners could plan for more valuable during- and after-sales services to enhance the perceived value of users, particularly the young adults, who were appreciating multi-dimensional perceived value.

### Limitations and Future Studies

This study has several limitations. First, this study collected data from only two cities in Malaysia, due to constraints to move to other cities to collect, and hence the samples might not be generalised or representative to the whole young adult population in Malaysia. Next, this study asked respondents to recall the past experiences in using herbal medicine. The respondent may encounter potential recall biases and might give data that did not reflect actual herbal medicine usage. Future study could further investigate the profiles of herbal medicine users by comparing the users in different age groups. Furthermore, future study could examine the factors predicting the perceived value of herbal medicine such as previous experience (Robinson et al, 2009), family and social influences (Hirai et al, 2008; Liwa et al, 2017; Yap et al, 2014), personal beliefs (Robinson et al, 2009), as well as health consciousness (Yap et al, 2014) to understand what shaped the value perception of herbal medicine users.

### Conclusion

This study contributed valuable knowledge, by empirically investigating the characteristics of young herbal medicine users. Consumers are shown to differ in their value perception towards herbal medicine products. This study also suggested that value perception could usefully predict consumer intention to use the herbal medicine products. The implications of this study is helping the marketers and practitioners to plan for better marketing strategies in attracting and engaging with young adult consumers.

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