

## Investigating the structural relationship of mass media on attitude, social influence, product safety and its impact on purchase behaviour of herbal product in Malaysia

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### CHRONICLE

### ABSTRACT

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Mass media is a crucial advertising platform and serves as an awareness platform for herbal product businesses. The rising popularity of herbal product consumption is due to the changing of lifestyle and health problems. With the increasing demand for herbal products globally, studies related to the herbal products purchase behaviour are considered very limited. Hence, the current study is written to investigate the structural relationship of mass media on attitude, social influence, product safety and its impact on purchase behaviour of Herbal products in Malaysia. By applying the Attitude-Behaviour Context Theory, this study used several variables, namely mass media toward attitude, social influence, and product safety and purchasing behaviour of herbal products. This study was designed using a quantitative approach through a survey questionnaire. A total of 467 respondents from seven states in Peninsular Malaysia have participated in this study and collected using the intercept survey. The data were analysed using structural equation modelling with a partial least square approach (SEM-PLS) and assisting SmartPLS 3.3.3. The results showed that mass media has a significant positive effect on attitude, social influence and product safety. Also, attitude, social influence and product safety have a significant positive impact on the purchase behaviour of herbal products. In conclusion, this study identified that mass media influence on attitudes is the strongest predictor, followed by the effects of the mass media on social influence. These findings indicated that the mass media play an essential role in influencing attitude, social influence, and product safety. Followed by attitude, social influence, and product safety that significantly impact the purchase behaviour of herbal products. The finding of this study provides insightful information to the entrepreneurs regarding consumers purchase behaviour.

## 1. Introduction

The continuous advertising from mass media serves as an awareness platform for herbal product businesses, as most are opting for natural claimed effects to stay healthy and generating positive responses (Cheah et al., 2019). An increase of herbal awareness and benefits as health care and alternative medicine boosted the global market for herbal products with the recorded revenue of 133,800 billion US\$ in 2018, and it was forecasted to increase to \$48.18 billion in Asia and 159,800 billion US\$

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worldwide in 2025 (QYR Research, 2019; Research and Markets, 2020). In addition, India is projected to be the fastest-growing market with a CAGR of 10.84% for 2020-2025 compared to other countries (Research and Markets, 2020). However, this report provided the global market share (sales and revenue) for world trade herbal companies in 2019 before the outbreak of COVID 19; in the recent report, the global herbal products market is revised and is expected to reach USD 166.2 billion by the year 2027. After considering the trade tensions, slow economic growth, and Covid-19 Pandemic crisis (Global Industry Analysts. Inc, 2020; Report Globe, 2020).

Meanwhile, in Malaysia, the development of the herbal industry is commonly due to the traditional practice of its ethnic diversity, which has been introduced over six centuries ago as a conventional medication by older generations to treat several illnesses (Wahab et al., 2019). Besides, Malaysia has diverse biodiversity and is one of the world's oldest rainforests with over 2,000 medicinal plants. Subsequently, Malaysia has a competitive advantage in herbal products due to its vast supply of raw ingredients, which are used to facilitate well-being or disease prevention (Ahmad et al., 2015; Alexieva et al., 2020). In addition, herbal products are preferable to conventional due to the growth of a healthy lifestyle and inexpensiveness that pushes the market size of herbal products to its maximum (El-Dahiyat et al., 2020; S. Ismail & Mohd Mokhtar, 2017; Mazhar et al., 2016). Besides, Government funding on research and development in herbal medicine is also the primary factor (Haque et al., 2020; Ismail & Mohd Mokhtar, 2016b; Rojas-Rivas et al., 2018; Wegener, 2017). Furthermore, due to the herbal industry's recognition and high economic potential (Muhamad et al., 2018), the herbal sector was selected as a new source of economic growth under the agribusiness New Key Economic Areas programme (NKEA). Consequently, the Malaysian's Government has initiated the program involving the key herbal industry players, authorities, and researchers to work on this program, and concurrently it can contribute to Malaysian GDP from RM19 billion to RM28 billion by 2027 (MIDA, 2020; Tan et al., 2020).

Several studies have shown that people gradually care about their health and want to sustain a healthy lifestyle by using products that can improve their health (Marimuthu, 2019; Shih et al., 2017). As the world is currently battling against the Covid-19 pandemic, and due to the unavailability of vaccines in the initial stages of the crisis, herbal medicine is used to slow down the spreading of the virus (Huang et al., 2020; Lee et al., 2020). In addition, it allows the herbal industry player to venture into the opportunities to diversify its product offering (Farizah et al., 2015). There are varieties of herbal products in Malaysia's market, and it was mainly due to the cultural diversity that existed in the societies. Traditional Chinese Medicine, Jammu and Ayurveda are few examples of conventional medication that uses various herbs and botanical plants as their main ingredients to cure illness or health maintenance. And they are among the preferable choices and alternatives among Asian peoples. Even though there is a tremendous increment of sales and popularity and usage of herbal products across the globe, which have sparked an interest among many others, unfortunately, the effectiveness of herbal products is not thoroughly examined. Prior studies also identified that many herbal products had not been thoroughly studied, and their use is not regulated (Bandaranayake, 2006; Holt & Chandra, 2002; G Rezai et al., 2013).

Furthermore, the limited understanding of the possible side effects has become more challenging (Ekor, 2014). The issues related to the safety of the herbal product are also alarming due to some reports contradicting the statement that the herbal product is perceived to be safe and readily available to be used (Lynch & Berry, 2007). In addition, herbal substances have been identified as potentially producing toxicity and significant adverse reactions in people (Reda et al., 2014). Now there are also cases reported connected herbal products associated with adverse side effects and toxic effects from more significant life-threatening side effects including acute liver failure, kidney failure, gastrointestinal problems to less severe side effects like sleeping disorder (Calitz et al., 2015; Corey et al., 2016; Crescioli et al., 2018; Douros et al., 2016; Gok & Ulu, 2019; Lauche et al., 2018; Lee et al., 2020; Lin et al., 2019; Navarro, 2019; Oketch-Rabah et al., 2020; Real et al., 2019; Shaito et al., 2020).

In Malaysia, the traditional medicines act was enacted in January 1992, which aims to protect customers. According to this act, each Herbal product to be marketed in Malaysia must be registered and undergo the necessary screening process. National Pharmaceutical Regulatory Agency (NPRA) is responsible for processing registration applications for herbal products. From 2016 to 2020, three thousand four hundred fifty new products were registered, and during that period, 33 products were cancelled due to adulterants issues (NPRA, 2020). The routine analytical tests conducted on 1445 samples to assess the quality of herbal products in 2020 found that 184 samples were adulterated. This screening process ensures that the products' quality, safety, and effectiveness are guaranteed before being marketed. However, quality and safety screening of herbal products conducted by NPRA is limited to the screening of counterfeit mixed substances and contaminants such as heavy metals and microorganisms only (Jantan, 2006). As a result, prior research has examined the reaction of the toxicity effect of the utilised herbal product (Abdualmjid & Sergi, 2013; Ang et al., 2003, 2005; Woolf, 2003). Ironically there is a lack of evidence on safety, efficacy, and concerns related to herbal products from in consumer perspective (Barnes, 2003; Bent, 2008; Brown et al., 2009b; Hussin, 2001; Lutz, 1999; Taufique & Vaithianathan, 2018; Wilcock et al., 2004).

In addition, a previous study identified that product safety is a significant determinant factor in quality whether the product is safe to buy or use (Chaudhuri & Holbrook, 2001; Lodorfos et al., 2006; Magkos et al., 2006; N Michaelidou & Hassan, 2008; Valeckova, 2012). Another study also has identified that product safety can affect customer attitude and purchase intention (Fleşeriu et al., 2020; Hashmi et al., 2012; S. Ismail & Mokhtar, 2015a; Kaufmann et al., 2012). The study by Golnaz Rezai

et al. (2014) and Silva and Sandika (2011) have identified that product safety is the essential factor that shapes customer attitude. Prior studies related to Herbal products have a focus on research in various areas such as Herbal consumption (Adam et al., 2017; Bellikci-Koyu et al., 2020; Brown et al., 2009a; Chaloupkova et al., 2020; Dailey et al., 2003; Khan et al., 2011; Nik Yusof Fuad et al., 2020; Nookabkaew et al., 2006; Sabery et al., 2019; Sumngern et al., 2011; Welz et al., 2018; Wilhoite et al., 2014). Customer awareness on Herbal Product (Banu Rekha & Gokila, 2015), Customer perception on Herbal Product (Karim et al., 2011; Pujari et al., 2015; Thanisorn et al., 2012). Usage Pattern (Karlowicz-Bodalska et al., 2016; Mahomoodally & Ramalingum, 2015; Ritchie, 2007; Tangkiatkumjai et al., 2013), Purchase Pattern (Archer & Boyle, 2008; Nair & Pillai, 2011). Based on the current understanding, there is a lack of studies on how mass media and product safety can influence consumers to purchase herbal products in marketing.

## 2. Literature Review

### 2.1 Purchase Behaviour

Studies that have been conducted related to purchasing behaviour have long attracted the attention of researchers, where knowledge related to behaviour is believed to help researchers about what users think and how they will behave. Besides the understanding of purchase behaviour able to assist the entrepreneur in determining marketing plan, establish the marketing strategies and securing the business's long-term sustainability (Belland et al., 2017; Bukhari et al., 2020; Kim & Chung, 2011; Rana & Paul, 2017; Vadakepat, 2013). According to other studies, purchasing behaviour is complicated and varies by group and segment (Dangelico & Vocellelli, 2017; Shafiq et al., 2011). Furthermore, purchase behaviour plays a critical role in product performance due to its complex purchasing behaviour. Besides, the complexity of purchase decisions is based on motivational factors, culture, community, locality, family, and various other factors (Ismail & Mohd Mokhtar, 2016a; Sharma & Trivedi, 2016). Other studies related to purchasing behaviour concentrate on mental, emotional, and physical activity to meet the requirements and wants of customers who choose, acquire, and use the product (Balachandran & Hamzah, 2017; Jaiswal & Kant, 2018). Apart from that, consumers' purchasing behaviour is also affected by marketers' activities, which have inadvertently changed the way consumers behave in a particular way, prompting marketers to devise policies that would have the most impact on them (Alzubaidi et al., 2020; Kumar & Ghodeswar, 2015). A past study also identifies that environment, reference groups, family members, salespeople, cultural, social, personal, and psychological factors impact consumer purchase behaviour (Fandos & Flavián, 2006; Ramya & Ali, 2016; Vani et al., 2010). Purchase behaviour, according to Ajzen (1985), is defined as people's preparedness and willingness to buy a specific product or service. Several predictors of purchasing behaviour have been identified in previous studies, among them are intention (Bagherzad et al., 2011; Fanny Putera Perdana et al., 2019; Hung et al., 2019; Lim et al., 2016; Rana & Paul, 2017; Sreen et al., 2018; Sultan et al., 2020; Zhang et al., 2020), Subjective Norm (Li et al., 2020; Moshi et al., 2020; Tan et al., 2017; Zhang et al., 2020), Perceived Behavioural Control (Arli et al., 2018; Ibrahim et al., 2019; Judge et al., 2019; Ogiemwonyi et al., 2020; Ogiemwonyi & Harun, 2020; Richards et al., 2016)

### 2.2 Mass Media

With the increasing use of herbal products, various advertisements are now advertising the products' effectiveness locally and internationally. The continuous advertising from mass media serves as an awareness platform for herbal product businesses, as most are opting for natural claimed effects to stay healthy and generating positive responses (Cheah et al., 2019). According to Parle and Bansap (2005), advertising in mass media has increased consumer awareness and respectability and credibility of herbal products. Moreover, Nur Nadirah et al. (2016) argue that food and beverage related advertising can influence behaviour (Abdullah & Salleh, 2010). In addition, Warner and Forward (2016) also found that mass media can influence attitudes and subjective norms. At the same time, the study of Simpson et al. (2016) stated that if the buyer is exposed to repeated advertisements, then the greater the probability that it can change the consumer perception of the product and indirectly affect the purchase behaviours (Ho et al., 2016). Furthermore, mass media dramatically influences how consumers react to having a healthy diet. Unfortunately, mass media are often misleading in promoting herbal products without providing evidence scientifically. The chemical substances in herbal products can be life-threatening without many people knowing about them (Qian et al., 2019; Yeh et al., 2020). Moreover, the increase in customer awareness of herbal products due to rapid developments in mass media has been a significant challenge for business in global markets (Golnaz Rezai et al., 2013; Vadakepat, 2013). Due to the lack of study on how mass media influences potential customers about health care and healthcare-seeking behaviour (Goh et al., 2019). Thus, this study identifies three hypotheses which are:

**H<sub>1</sub>:** *Mass Media has a positive effect on attitude.*

**H<sub>2</sub>:** *Mass Media has a positive effect on social influence.*

**H<sub>3</sub>:** *Mass Media has a positive effect on product safety.*

### 2.3 Attitude

Attitude is a prevalent topic and is often the focus of social science and health behaviours researchers as it can predict consumer behaviours (Ajzen, 2001; Spears & Singh, 2004; Vries et al., 1988). In addition, attitude is also an assessment of

individuals, whether positive or negative, towards an object, individual, institution, or event (Ajzen, 2012b; Ajzen & Fishbein, 2005; Ajzen & Madden, 1986). In general, past studies have recognised the importance of attitude in assessing certain good or bad behaviours and influencing actual purchases (Ajzen & Fishbein, 1980). Consumer attitudes are often influenced by perceptions, motivations, and external variables while making judgements (Fishbein & Ajzen, 1975). Different cognitive and emotional constructs influence people's attitudes regarding products (Mihaela-Roxana & Yoon, 2010). Previous research has shown that an individual's evaluation or action, whether good or negative, is influenced by personal characteristics that influence their attitude toward Purchase behaviour (Ajzen, 2012a; Conner et al., 2001).

According to Ramayah et al. (2010), attitudes encompass the individual's practical consequences related to the behaviour. Meanwhile, attitude is a psychological emotion that is transferred through consumer evaluations, and when it is positive, it leads to positive behavioural intentions (Haque et al., 2018). Furthermore, consumer behaviours toward doing specific actions or behaviours are influenced by both internal and external sources of experience and knowledge of the object. In support of the viewpoints mentioned above, a little research has been conducted, with data indicating that attitudes directly impact behaviour rather than intention (Hashjin et al., 2014). Marinac et al. (2005) discovered that attitude influenced the use of herbal products. In a similar vein, Thongruang (2008) found that one's attitude affects their use of herbal medicine. Furthermore, Brown et al. (2009a) observed comparable effects, while Mitha et al. (2013) discovered that attitude influenced purchasing herbal products. The following hypotheses are suggested in this context.

**H<sub>4</sub>:** *Attitude has a positive effect on purchase behaviour.*

#### 2.4 Social Influence

Social influence is a second driver of behavioural intention in the TPB model. In the TPB and TRA models, social influence is used interchangeably with subjective norms (Izuagbe et al., 2019), which means that most people are important and close to an individual subjectively affecting the individual's behaviour toward executing an act. Conclusion indicates that individuals will feel social stress while performing behaviours because they are motivated to adhere to individuals, groups, or beliefs allowed by other individuals (Ajzen, 1991; Sun et al., 2019). For example, the influence from family, friends, co-workers, media and social media could lead to a customer's willingness to use and purchase herbal products. Besides, the studies related to social influence have been widely discussed in the past literature and it is generally accepted that social influence is a predictor of an individual's behaviour (Kusumawardhani et al., 2019; Li et al., 2020) which positively impacts the customer's behaviour in this context study decision to buy herbal products. Empirically, the link between social influence and customer's purchase behaviour has been proven in various settings, such as buying organics and green products (Bai et al., 2019; Basha & Lal, 2019; Mohammed, 2020; Sun et al., 2019). Zahran et al. (2012) also confirmed that social influence does influence herbal buying intention in Malaysia. This study demonstrates the social influence and the bulk of previous studies, indicating that when consumers learn that people close to them tend to buy herbal products, they will change their minds. As a result, the following assumptions are made in this study:

**H<sub>5</sub>:** *Social Influence has a positive effect on purchase behaviour.*

#### 2.5 Product Safety

The consumption of herbal products as medicine in human life has recently received much attention due to product safety concerns. Product safety generally denotes a consumer's perceptions of the safety of the desired product (Grunert, 2005; Perrea et al., 2015). Product safety does not always refer to the end product's quality but also applies to the entire production process, influencing customers' perceptions of the product's safety (Michaelidou & Hassan, 2008; Michaelidou & Hassan, 2014). This perception could then help customers in deciding whether a product is safe to buy and use. Meanwhile, prior research has identified several issues related to the adverse reaction risk regarding the safety of using herbal products (Ekor, 2014; Zhou et al., 2019). On the other hand, consumers still assume that herbal products are safe to take since they are prescribed by certified medical doctors (Boullata & Nace, 2000). Therefore, it is inferred in this study that when a consumer perceives the herbal product is safe, their intention and the actual purchase will be higher. In other words, product safety is a critical factor in influencing a product's buying behaviour or usage (Basha & Lal, 2019; S. Ismail & Mohd Mokhtar, 2016a). The link between product safety and purchase behaviour has been identified in past studies. For example, a study conducted in Lebanon revealed that product safety is one of the main factors influencing their decision to buy organic foods (Tleis et al., 2017). In a similar vein, a study by Shaharudin et al. (2010) discovered that product safety was positively related to customers' herbal medicine usage. Hence, it is hypothesised that.

**H<sub>6</sub>:** *Product safety has a positive effect on purchase behaviour.*

#### 2.6 Attitude-Behaviour Context Theory

Attitude-Behaviour Context Theory is a flexible theory explaining that one's behaviour is an inter-related outcome of internal and external factors. Behaviour (B) in many social science studies is an interactive product of both personal sphere Attitudinal

variables (A) and contextual factors (C) which by some other scholars postulated that one's behaviour is not only significantly impacted by their internal psychological factors but also the external factors that are acting upon it (Shi et al., 2019; Stern, 2000; Xu et al., 2017). According to this theory, the contextual factors (C) not only directly influence one's behaviour (B) but also indirectly influence the behaviour from its interaction with attitude (A) (Ertz et al., 2016). Other studies stated that the relationship between attitude (A) and behaviour (B) is significantly strengthened with the presence of external condition (C; sometimes known as context); behaviour is only manifested when an individual developed a positive attitude towards it and under the strong influence of contextual factors (Dhir et al., 2021). It was developed by Stern and colleagues to overcome the criticisms of its predecessor, Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB), due to its neglect of external contextual factors (Stern, 2000). This theory has been widely used in environmental-related studies, including pro-environmental behaviour, green purchase behaviour (Goh & Balaji, 2016), green consumption (Nguyen et al., 2019), which provide empirically testable hypotheses for such related studies. Thus, we believe that the ABC model is a relevant theory to study the herbal product purchase behaviour whereby the influence of mass media and product safety are present and active predictors. In this study, by using a comprehensive Attitude-Behaviour Context model theory, the interaction of attitudinal and external conditions was specified and examined; attitudinal factors (attitude and social norms) and external contextual factors (e.g., mass media and product safety) towards individual's purchasing behaviour in herbal-related products (Fig. 1).

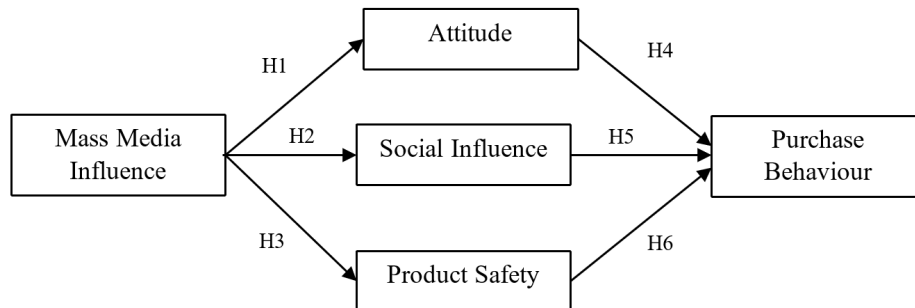


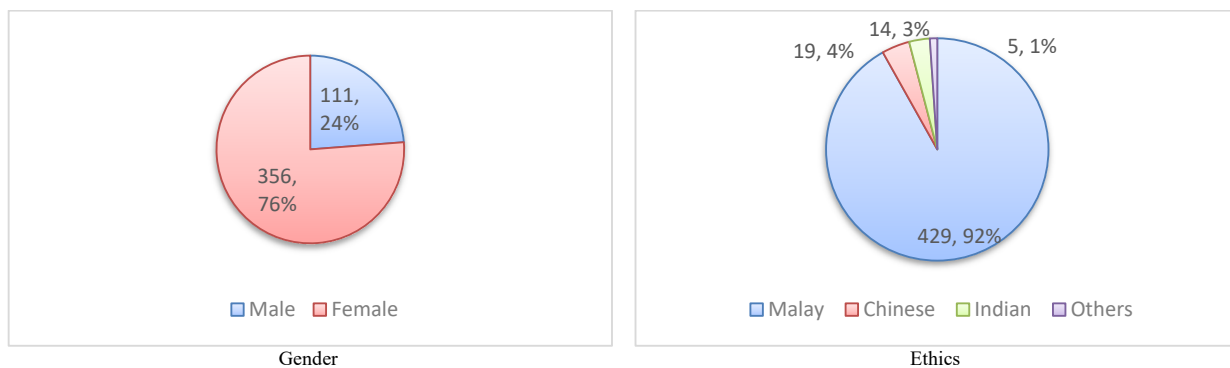
Fig. 1. Research Framework

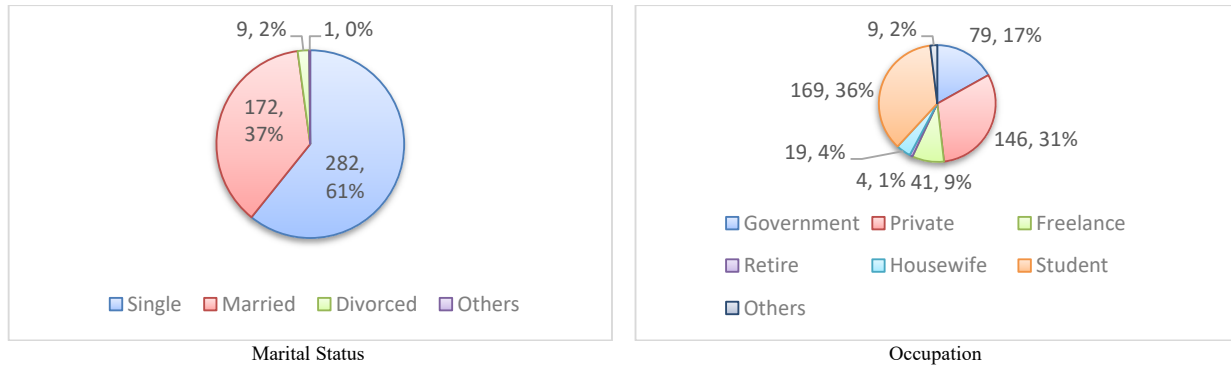
### 3. Materials and Methods

This study used a non-probability purposive sampling method due to the unavailability of a sampling frame. There are two criteria set for this study. First, they need to be 18 years old, considering young adults are mature enough to purchase herbal products, and have different purchasing behaviours than older generations. The second criterion is that they must have experience using any herbal product before. Data was collected in seven states in Peninsular Malaysia e.g., Kedah, Melaka, Negeri Sembilan, Perak, Perlis, and Selangor using intercept surveys. And to determine the sample size, this study followed the suggestion from Hair et al. (2014) and Kline (1998) that the sample size should be at least ten times the item. Therefore, the minimum sample size needed for 32 items is 320. Moreover, to overcome the non-response bias, this sample size is increased to 500 (Sakaran, 2003). This study also validated the sample size using power analysis based on Hair et al. (2017) recommendation. Based on G\*Power analysis, suggestion 129 respondents is suitable as the minimum sample size for five predictors (Faul et al., 2007). Therefore 467 surveys are sufficient, with a power of above 0.80 per cent (Hair et al., 2019).

### 4. Results

#### 4.1 Respondents' Demographic Profiles





**Fig. 2.** Result of Demography Profile of Respondents

Fig. 2 provides detail on respondent profiles on herbal buyers. Total of 467 respondents agreed to participate, which is equivalent to 93%. Table 1 shows that most respondents are female, 356 (76.2%) and 111 (23.8%) males. The Ethnic profile shows that the overall respondent is Malay which is 429 (91.9%), followed by Chinese 19 (4.1%), Indian 14 (3.0%) and other 5 (1.1%). The higher portion of status is single 282 (60.4%), followed by marriage respondents 175 (37.5%), divorce 9 (1.9%), and others 1 (0.2%). Finally, most respondents working in the private sector, 146 (31.3%), followed by government sector 79 (16.9%). Freelance 41 (8.8%), Retire 4 (0.9%), Student 169 (36.2%), Others 9 (1.9%).

*4.2 Data Analysis*

This study uses two statistical software, namely Statistical Package for Social Sciences (SPSS-23) and SmartPLS. SPSS was used to descriptive analysis and SmartPLS has chosen to evaluate the study’s measurement and structural model because it is aligned with its goal. WebPower analysis confirmed Mardia’s multivariate skewness (Skewness = 2.377,  $p < 0.01$ ) and multivariate kurtosis (Kurtosis = 41.014,  $p < 0.01$ ). It indicates that the data are slightly non-normal. Thus, SmartPLS is suitable for this study. This study uses a single source; therefore, it might suffer from a common method variance issue (Mackenzie & Podsakoff, 2003; Podsakoff et al., 2011; Podsakoff et al., 2003, 2012). Hence to rectify this issue, this study applied two methods: procedural using different scales between exogenous and endogenous variables using a 5-point and 7-point Likert scale. The second method is the statistical approach using collinearity analysis. It was essential to ensure that it did not have any issues with multicollinearity. According to Diamantopoulos and Siguaw (2006), the model’s VIF values must be less than 3.3 to ensure that multicollinearity was not an issue in the study. Therefore, the study’s VIF values were less than 3.3, indicating that multicollinearity was not a major concern (Table 1).

**Table 1**  
The Result of Multicollinearity test using Variance Inflation Factor (VIF)

Attitude	Mass Media Influence	Product Safety	Social influence	Purchase Behaviour
2.245	1.601	1.597	2.821	1.731

Table 2 shows the result of a multicollinearity test using Variance Inflation Factor (VIF). This study found that all VIF values are lower than 3.3, which indicated this study did not suffer from the CMV issue (Kock, 2015; Podsakoff et al., 2003). Furthermore, this study utilised the Partial Least Square (PLS) analysis to evaluate the research model using the SmartPLS 3.3.3 software developed by Ringle et al. (2015), which is a variance-based structural equation modelling (SEM). In addition, this study is to predict the relationship between variables; therefore, Partial Least Square is a better choice than covariance-based SEM (Hair et al., 2014). Moreover, Smart PLS is ideal for data that does not fulfil the normality requirements. Based on Anderson & Gerbing (1988), two-stage analytical procedures to analyse the measurement model’s validity and reliability and check the structural model. And to test the significance of path coefficients between exogenous and endogenous constructs, this study used the bootstrapping procedure (Hair et al., 2019).

*4.3 Measurement Model*

In the first stage analysis procedure, the study validated the measurement model before proceeding to the second stage, which is the structural model. The measurement model in this study is validated through twofold convergent and discriminant validities. Further, convergent validity must be established to ensure that multiple items measure the same constructs (Hair et al., 2019; Hulland et al., 2018; Syima et al., 2019). If the loading and Average Variance Extracted (AVE) values are greater than 0.5, and the composite reliability value is greater than 0.7, convergent validity has been fulfilled (Hair et al., 2017).

**Table 2**  
The Result of Construct Validity and Reliability

Construct	Item	Loading	CR	AVE
Attitude	A1	0.86	0.94	0.75
	A2	0.88		
	A3	0.85		
	A4	0.84		
	A5	0.90		
Mass Media Influence	MMI1	0.85	0.91	0.72
	MMI2	0.88		
	MMI3	0.89		
	MMI4	0.76		
Product Safety	PS1	0.82	0.83	0.72
	PS2	0.87		
Purchase Behaviour	PB1	0.84	0.89	0.66
	PB2	0.82		
	PB3	0.80		
	PB4	0.80		
Social Influence	SI1	0.87	0.93	0.78
	SI2	0.88		
	SI3	0.89		
	SI5	0.89		

Note: AVE=average variance extracted, CR=composite reliability PS3, PS4 was deleted due to low loading

Table 2 displays the result of construct validity and reliability. This study found that all value of loading, Composite Reliability (CR) and AVE values have been met the threshold levels. Next, Hair et al., (2020) suggested the second procedure is the discriminant analysis determined through Heterotrait-Monotrait (HTMT). This procedure is based on the recommendation from Franke and Sarsted (2019). Furthermore, this procedure is considered superior compared to the Fornell-Larcker criterion. The discriminant validity is confirmed if the Heterotrait-Monotrait (HTMT) values are lower than 0.85.

**Table 3**  
The Result of Discriminant Validity using Heterotrait-Monotrait (HTMT)

	Attitude	Mass Media	Product Safety	Purchase Behaviour	Social Influence
Attitude					
Mass Media	0.66				
Product Safety	0.78	0.58			
Purchase Behaviour	0.71	0.54	0.62		
Social Influence	0.76	0.61	0.75	0.67	

Table 3 shows that all HTMT values are lower than 0.85, it means that the studied variables fulfil the discriminant validity.

#### 4.4 Structural Model

In the second stage, the analysis procedure is the structural model; at this stage, a 95 per cent confidence interval was applied with 5,000 bootstrapping (Hair et al., 2019). The result of hypothesis testing, as seen in Table 4 below:

**Table 4**  
The Result of Hypothesis Testing

Path Analysis	Beta	SE	t-value	Sig.	LL	UL	R <sup>2</sup>	f <sup>2</sup>
Mass Media Influence → Attitude	0.587	0.034	17.155	0.000	0.527	0.639	0.344	0.525
Mass Media Influence → Social Influence	0.545	0.039	13.962	0.000	0.477	0.612	0.297	0.422
Mass Media Influence → Product Safety	0.418	0.042	10.014	0.000	0.351	0.486	0.175	0.212
Attitude → Purchase Behaviour	0.393	0.062	6.385	0.000	0.293	0.497	-	0.095
Social Influence → Purchase Behaviour	0.231	0.066	3.523	0.000	0.121	0.338	0.416	0.034
Product Safety → Purchase Behaviour	0.083	0.047	1.741	0.041	0.006	0.165		0.007

Table 4 indicates that Mass Media has a significant positive effect on Attitude, Social Influence and Product Safety. The value of the standardized regression coefficient of Mass Media to Attitude was 0.587, t-value is 17.155 and significant at the level  $p < 0.001$ . It means that by assuming an increase in Mass Media of 1 percent would give an effect on increasing Attitude by as much as 58.7 percent. Further, Mass Media to Social Influence was 0.545, t-value is 13.962 and significant at the level  $p < 0.001$ . It means that by assuming an increase in Mass Media of 1 percent would give an effect on increasing Social Influence by as much as 54.5 percent. Also, Mass Media to Product Safety was 0.418, t-value is 10.014 and significant at the level  $p < 0.001$ . It means that by assuming an increase in Mass Media of 1 percent would give an effect on increasing Product Safety by as much as 41.8 percent.

Besides that, this study also examines the effect of Attitude, Social Influence and Product Safety on Purchase Behaviour. The result shows that Attitude, Social Influence and Product Safety have a significant positive effect on Purchase Behaviour. The value of the standardized regression coefficient of Attitude to Purchase Behaviour was 0.393, t-value is 6.385 and significant at the level  $p < 0.001$ . It means that by assuming an increase in Attitude of 1 percent would give an effect on increasing Purchase Behaviour by as much as 39.3 percent. Further, the value of the standardized regression coefficient of Social Influence on Purchase Behaviour was 0.231, t-value is 3.523 and significant at the level  $p < 0.001$ . It means that by assuming an increase in Social Influence of 1 percent would give an effect on increasing Purchase Behaviour by as much as 23.1 percent. Lastly, the value of the standardized regression coefficient of Product Safety on Purchase Behaviour was 0.083, t-value is 1.741 and significant at the level  $p < 0.05$ . It means that by assuming an increase in Product Safety of 1 percent would give an effect on increasing Purchase Behaviour by as much as 8.3 percent. As a result, this study confirmed that the proposed hypotheses i.e., H1, H2, H3, H4, H5 and H6 were supported.

In addition, this study reported the value of determination coefficient ( $R^2$ ), and effect size ( $f^2$ ). The  $R^2$  values were 34% for attitude, 30% for social influence, 18% for product safety, and this shows that attitude, social influence, and product explain 42% of the Purchase Behaviour. Meanwhile, to measure the effect size, the study used Cohen (1988) guidelines,  $f^2 \geq 0.02$  (Small),  $f^2 \geq 0.15$  (Medium), and  $f^2 \geq 0.35$  (Large). The analysis shows that three of six constructs have the following effect size, attitude 0.524, social influence 0.422, product safety 0.211. And this indicates that mass media influence has the biggest effect size on attitude. The next findings for the purchase behaviour show that attitude with a small effect size (0.094) has the biggest effect on purchase behaviour.

## 5. Discussion

This study investigates the structural relationship of mass media on attitudes, social influences, product safety and its impact on purchase behaviour. The analysis results show that the influence of mass media has a positive relationship with attitude H1, social influence H2, product safety H3. The findings of these three hypotheses prove that the impact of the mass media is significant on these variables. The more positive the information presented by the mass media will make the attitude of buyers more positive in influencing the purchase of herbal products. The finding of several suggested a strong relationship between mass media influence and consumer attitude (Borhan et al., 2017; Khalek, 2014; Sumngern et al., 2011). In addition, the effects of the social influence will give a positive statement or opinion to the people closest to the individual known as the reference group, which plays a vital role in influencing them to use herbal products. A similar finding has also been proved by Ismail (2012) in which mass media are significantly affecting Social Influence. Moreover, the influence of the mass media on product safety is also significant because the mass media can be used as channel-to-channel information so that buyers are aware of the content of the mixture of ingredients used during the manufacturing process of herbal products. In addition to ensuring that consumers are safe and confident in herbal products. The influence of the mass media is seen as essential to convey accurate product safety information, and the result is similar to the previous finding (Chen, 2008; Ismail & Mokhtar, 2015b; Napoli, 2010)

The study's findings in hypothesis 4 concluded that the more positive the attitude of buyers towards herbal products, the more positive the desire to buy those products. Therefore, marketers should be aware that the consumer attitude is vital in stimulating their desire to purchase. A positive attitude can increase confidence and evaluate the effectiveness of herbal products in influencing the purchase of such products. The importance of attitudes towards herbal products will help marketers formulate promotional strategies to convince consumers to buy their products (Chaniotakis et al., 2010; Maichum et al., 2016; Rahnama, 2016; Syima et al., 2019). Hypothesis 5 shows the effect of social influence was found to influence purchase behaviour. And this suggests that social influences are capable of changing consumers' feelings, attitudes, and behaviours. The study results have indicated that social influences have influenced the purchase of herbal products and suggest that consumers or buyers of herbal products refer to other individuals before purchasing (Hadiwijaya, 2015; Ismail & Mokhtar, 2016; Policarpo & Aguiar, 2020). Further hypothesis 6 finds that product safety can influence purchases behaviour and clearly shows that customers prefer to buy herbal products when they are confident with the product safety and can lead them to purchase the herbal products. Furthermore, the herbal products available in Malaysia are indeed easy to obtain and can be used without the supervision of a physician. From a practical point of view, product safety is essential to consumers because they feel that these herbal products are organic and natural, safe, have no side effects, and do not need special supervision.

## 6. Conclusion

In conclusion, this study has successfully identified the determinant factors of Attitude, Social Influence, Product Safety and Purchase Behaviour. Also, this study has enhanced the understanding of the factors that influence the purchase behaviour of herbal products. Furthermore, the findings will be helpful to entrepreneurs interested in knowing the fundamental factors that influence the purchase behaviour of herbal products and benefit when drawing up their marketing strategy. The result suggests a positive attitude towards herbal products play an essential role in influencing purchase behaviour. Meanwhile, the analysis showed that the relationship between social influence and purchase behaviour was significantly positive; this finding was also supported by several previous studies that showed that social influence plays a vital role in influencing purchase behaviour. Product safety is also an important determinant to purchase behaviour due to its ability to determine whether a product is safe



to be bought and used. To ensure that there are no side effects related to the use of herbal products among consumers, entrepreneurs should be more sensitive to the mixture of ingredients used during the manufacturing process so that it does not harm the consumers.

Furthermore, the results of this study have also revealed that in deciding to use herbal products, the process has a lot of control of the will, where consumers need a lot of resources such as time, information, and the level of confidence in the product before they can make the right decision. In addition, the Government can increase buyers' awareness about the use of unregistered products to avoid the possibility of side effects due to the use of herbal products. In addition, to overcome the issue of herbal product toxicity, the Government can monitor advertisements claims of product effectiveness without solid scientific facts, by-product entrepreneurs. Furthermore, the demographic variables such as gender, ethnicity, status, and occupation make the customer's mindsets different from one another, which can help entrepreneurs identify the right products and target groups and be more competitive.

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