

INDONESIAN CONSUMERS' PREFERENCES FOR HERBAL PRODUCTS: THE IMPACT OF SAFETY AND ATTITUDE ON CONSUMER INTENTIONS

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Abstract

This study aimed to investigate the relationship between perceived safety and consumer intentions and to determine the effect of risk perception as a moderator of consumer purchase intentions for using herbal products. Primary data were collected via purposive sampling, with a total sample of 271 questionnaire responses collected from consumers of herbal products in Indonesia. The relationship between perceived safety, health awareness, attitudes, and intentions to purchase herbal products, was examined by applying structural equation modeling. The empirical results indicated that health awareness and attitude are necessary determinants of this phenomenon. The results show that risk perception does not moderate the effect of perceived safety and intentions to purchase. Due to the safety and risk issues in using herbal products, providing consumers with practical information will encourage more consumers to purchase herbal products. This research provides enlightenment concerning consumer preferences, makes it possible to predict consumers' purchasing behavior in respect of herbal products, and is of practical benefit for the expansion of herbal products businesses.

Keywords Herbal products, Perceived safety, Risk perception, Attitude, Consumer purchase intention

INTRODUCTION

With the rapid development of the herbal product industry in recent years, investigating consumer perceptions of herbal products has become an exciting topic of study. Herbal products no longer act only as a treatment but have also become a consumer lifestyle, although widespread issues have arisen in relation to the safety of herbal products

(Lynch & Berry, 2007; Peschel, 2007). This indicates a desire to choose natural products that are related to a healthier lifestyle (Gupta & Ogden, 2009). It is therefore exciting to further investigate consumer behavior towards herbal products.

In this context, herbs are plants which have functions for treatment. Such herbs are also known as medicinal plants (Utami & Puspaningtyas, 2013). In Indonesia, natural

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treatments derived from plant extracts are known as *Jamu* (Elfahmi *et al.*, 2014), while they are internationally known as *Herbal Medicine* (Kardinan & Ruhnayat, 2003). Of the various types of medicinal plants in the world, around 80% of species are grown and available in Indonesia (Elfahmi *et al.*, 2014; Kinho *et al.*, 2011). With the growth of herbal plants in Indonesia, herbal medicine has been known as traditional medicine for generations. *Jamu*, a traditional form of Indonesian herbal medicine is very popular and has been developed by herbal practitioners into a rational form of therapy (Elfahmi *et al.*, 2014).

Many herbs are chosen as therapy in the health sector. The use of herbal products has evolved as an alternative treatment, both as a complementary treatment and as a primary treatment (Barner *et al.*, 2010; Ali & Yadav, 2015; Ismail & Mokhtar, 2015; Ekor, 2014). It is estimated that eighty percent of the world's population in developing countries depends on herbal medicines as a health therapy. Indonesia is one example, whereby most people, especially those in rural areas use traditional herbal medicines to treat diseases. Medical practice with the use of herbal products is seen as an integral part of the culture (Mukherjee, 2002; Elfahmi, 2014; Bandaranayake, 2006). The tendency of people to use herbal products is due to the benefits of herbs (Ismail & Mokhtar, 2015) combined with the few side effects of herbal products (Alwhaibi *et al.*, 2017; Barnes, 2003).

Awareness of food safety can affect consumer behavior regarding product consumption (Canavari *et al.*, 2002). Although the safety of herbal products is a widespread issue (Peschel, 2007), empirical investigation regarding the impact of the safety of herbal products on buying intentions is still weak (Barnes, 2003). Safety awareness (Wee *et al.*, 2012) and ease of use (Elfahmi *et al.*, 2014) can influence consumer behavior towards products. In addition, it can influence consumer intentions associated with solid buying trends.

Consumers' behavior toward herbal

products is shifting along with interesting research about the benefits of herbal products. Understanding the positive benefits or potential abilities of the product stimulates a person's desire to use the product. Several recent studies highlight the function of herbal products widely used in healthcare. Chatawatee *et al.* (2022) reported the effectiveness of an herbal knee poultice to relieve pain in patients with knee osteoarthritis. Studies on alternative treatments to treat coronavirus patients reported by Rahman (2020) indicated that *Nigella sativa* and Zn herbs (herbs high in zinc) can be used to stop SARS-CoV-2 replication. Furthermore, Das (2022) states that several essential herbs such as *Embllica officinalis* and *Zingiber spp.* have immunomodulatory effects allowing them to boost immunity and protect against coronavirus.

A statement by Professor Chaerul Anwar Nidom on CNN Indonesia (2020) explained that herbs with curcumin content can overcome various viral infections that affect the human lungs. Professor Nidom hopes that the curcumin antivirals with which we are able to ward off the hepatitis C virus and avian flu (H5N1), can also be used to combat coronavirus. The pandemic has encouraged Indonesians to consume herbal products for endurance. Professor Nidom said that traditional herbs known as *empon-empon* can be given to prevent cytokine storms due to viral infections in the lungs (CNN Indonesia, 2020). This is reinforced by the statement of Professor Mangestuti Agil, who studies traditional medicines; she has stated that it is important to strengthen immunity to avoid the coronavirus, including via the consumption of traditional herbs (UNAIR News, 2020). Some herbs such as ginger, turmeric, curcumin, and *kamijara* can boost the immune system. This encourages the use of herbs in Indonesia which has increased along with the outbreak of the pandemic.

Globally, the utilization of herbal products has increased in the health sector. (Alkhateeb *et al.*, 2006; Boullata & Nace, 2000; Brown *et al.*, 2009; Ali & Yadav, 2015;

Ismail & Mokhtar, 2015). Many people argue that herbs are natural products, and therefore do not contain chemicals, and are not synthetic products. However, there is no doubt that there are several considerations for someone deciding to choose a new product or shifting their interest to another type of product. There is no doubt that hesitation in consuming herbal products arises because consumers are concerned about the level of safety and the risks of choosing herbal medicine over conventional medicine (Ekor, 2014). Various factors that affect consumer perceptions of risk are related to product safety (Yeung & Morris, 2001).

Issues related to herbal safety are rife (Lynch & Berry, 2007; Peschel, 2007). There are consumer concerns about product quality and the potential side effects when using herbal products (Yee *et al.*, 2005). This worry is a manifestation of something unpredicted. The perceived risk is the uncertainty faced by consumers when they cannot predict the impact of their buying decisions (Mitchell, 1999). The perceived risk expression is often a reflection of previous attitudes, experiences, interpersonal, and community dynamics (Eiser *et al.*, 2012). The exclusive purchase decision is determined by the consumer's attitude towards the purchase of the product (Bredahl, 2001).

It was determined that the safety effect has a positive effect on consumers' behavioral intentions (Van Loo *et al.*, 2013; Wee *et al.*, 2012; Siu & Wong, 2002). However, the study of Yin *et al.* (2010) reported that the perception of product safety was hampered by the need for more adequate food, as consumer awareness of food safety has negatively impacted consumers' intentions to buy. The development of further research by Wekeza & Sibanda, (2019) in line with the studies of Grunert, (2005) and Michaelidou & Hassan (2008) stated that the impact of safety on intentions to purchase was not directly demonstrated.

The tendency to return to nature in the field of medicine, via the use of herbal products has become very strong in industrialized countries (Barnes, 2003; Ekor,

2014) and has a significant influence in developing countries. The results of previous studies on the impact of safety on intentions showed inconsistencies. Accurate results to understand consumer perceptions are difficult to obtain if the research is conducted solely by looking at the direct effect of perceived safety on purchase intentions, without studying moderating or other mediator variables to check purchase intentions. Based on previous research recommendations, it is important to describe whether or not safety specifically affects consumer intentions when buying herbal products, as Wandel (1994) reported that health risks would be a central theme in food-related health behavior.

LITERATURE REVIEW

Theoretical Background

Consumer perceptions towards herbal products are studied to identify consumer trends in the use of these products. This study uses the theory of planned behavior to determine the extent of consumer intentions when using herbal products. The Theory of Planned Behavior provides a framework for learning attitudes to behavior. Planned behavior can influence consumers' intentions when buying products (Ajzen, 1991). The Theory of Planned Behavior was developed from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) to predict behaviors that are not entirely under the control of individuals. The individual's intent to indicate behavior in the Theory of Planned Behavior is a combination of attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). Perceived behavioral control indicates that a person's motivation is affected by their perceptions of the level of difficulty or ease of displaying a particular behavior.

Study related to herbs has provided insight into what nature has provided to us via plants that have empirically proven benefits to health. In terms of herbal remedies and products, herbs are types of plants with medicinal properties. These natural products do not contain synthetic chemicals but are

nevertheless effective for health treatments (Utami & Puspaningtyas, 2013). Natural remedies which are mostly derived from plant extracts are known as herbal medicines. Herbal products are closely related to health; Kasl & Cobb (1966) reported that three issues were related to the health environment, namely health behavior, disease behavior, and role behavior. This explains why there are individuals who take action to prevent and control existing diseases. The health awareness model is based on the understanding that a person will take health-related measures and actions. A person's behavioral process will change when they understand the benefits of that change (Rosenstock, 1974).

Research Hypotheses

The World Health Organization (WHO) defines health as the condition of the body that is not only complete physically, mentally, and socially, but also free from disease or disability. Regarding the Health Belief Model (HBM), a person will take action when he thinks it will have a significant impact to health (Rosenstock, 1974). Health is the most common motive chosen by consumers when buying natural products (Zanoli & Naspetti, 2002). While the results of the study by Michaelidou & Hassan (2008) stated that attention to health awareness has a direct effect not only on consumer attitudes but also on consumer intentions towards products, the suggestion to explain the relationship between health and intentions is based on the

phenomenon of tendency of a positive relationship pattern. In other words, the greater the consumer's attention to health, the higher their intentions to purchase herbal products (Padel & Foster, 2005; Roitner-Schobesberger *et al.*, 2008).

H1. Health awareness will positively affect consumers' purchase intentions towards herbal products.

Attitude is a condition of a person's tendencies in relation to behavior. Attitude refers to an individual's evaluation of the value of an object. Fishbein & Ajzen (1975) stated that attitudes can influence behavior through intentions. Personal beliefs will affect attitudes and will have an impact on behavior. There is a significant relationship between attitude, purchase intentions, and behavior (Chen & Li, 2007; Shaw & Shiu, 2002). Brown *et al.* (2009) showed that an individual's culture and racial background influence their attitudes, which subsequently plays a significant role in their intentions to use herbal products. The assumed positive relationship can be explained by the idea that the stronger the attitude supporting behavior, the greater the individual's intentions will be to behave accordingly. Attitude is seen as an important factor that influences an individual's belief in understanding his behavior (Hoque *et al.*, 2018). Attitude is the strongest predictor of intentions (Heinrich, 2016).

H2. Attitude will positively affect consumers' purchase intentions towards herbal products.

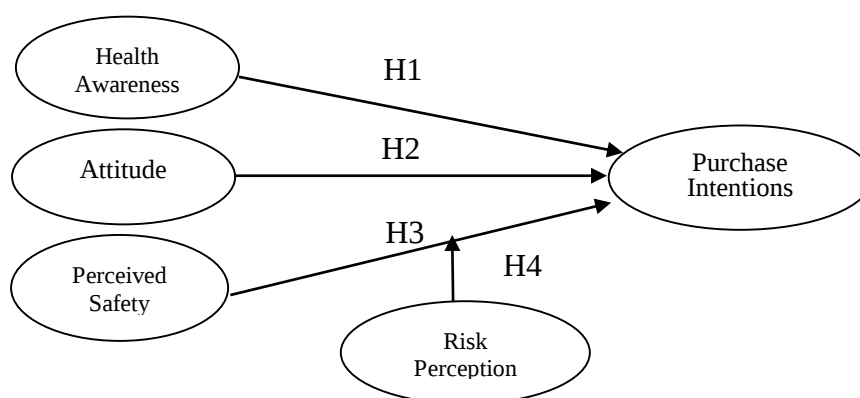


Figure 1 Conceptual Framework

Safety is a prerequisite for being protected against undesirable things and achieving an acceptable risk. Consumer awareness of product safety characterizes the need for quality products (Lockie *et al.*, 2004). Product safety can promote consumer intentions to buy herbal products (Ismail & Mokhtar, 2015). Consumers' attitudes towards safety will increase consumer interests (Michaelidou & Hassan, 2008) and influence consumer beliefs about the importance of product safety (De Silva & A.L. Sandika, 2011). The expected positive relationship between safety and intentions, follows the expectation that the higher the consumer's perception of product safety, the greater their purchase intentions towards herbal products. Product safety refers to a consumer's confidence in the safety of a product (Grunert, 2005). Consumers believe that products with naturally derived ingredients have a low risk (Williams & Hammitt, 2001).

H3. Perceived safety will positively affect consumers' purchase intentions towards herbal products.

There are doubts about the consumption of herbal products due to concerns about the safety and risks of herbal products (Yee *et al.*, 2005). However, consumer perception studies report that consumers view herbal products as less risky than chemical drugs (Zaffani *et al.*, 2006). There is consumer confidence that herbal medicines are relatively safe and low-risk (Lynch & Berry, 2007). Risk, in general, is the likelihood of loss or perceived loss (Rousseau *et al.*, 1998). In addition, the effect of risk perception has a higher intensity than the determinant of attitude (Costa-Font & Gil, 2009). Consumers cannot predict the effect of their decisions to buy a product because of the uncertainty of risk. There is a correlation between perceived risks with marketing constructions concerning trust (Mitchell, 1999). Several factors influence the consumer's risk perception of product safety (Yeung & Morris, 2001).

H4. As a moderating effect, risk perception influences the relationship

between safety and consumer intentions to use herbal products.

METHODOLOGY

The sample initially consisted of 300 consumers of herbal products in Indonesia, with a total sample of 271 returned questionnaires deemed usable for further analysis. Data were collected via purposive sampling. The determination of the minimum sample size was 10 times the number of indicators (Hair *et al.*, 2017), as per the recommended sample size to guarantee a stable *Maximum Likelihood Estimation* (MLE). Female respondents accounted for 72.06% of the sample, while male respondents made up 26.94% of the sample. It is suspected that this is due to the fact that more women use herbal products, not only as medicine but also for personal care or beauty. The income-related characteristics of the respondents varied. It is shown that the price of herbal products is quite affordable for all respondents based on their income background. Regarding the diversity of respondents' educational levels, the sample included respondents with a variety of educational backgrounds, including postgraduate, undergraduate, high school, and elementary school.

There were two parts to the survey. The first part contained general personal information for classification purposes. In the second part, there are questions from five variables that explore the respondents' perceptions of herbal products. This study uses a five-point Likert scale, ranging from "I completely disagree" to "I completely agree". Attitude measurements were based on the research recommendations of Gupchup *et al.* (2006) and Tarkiainen & Sundqvist (2005). A measure of herbal buying frequency was also included in the questionnaire to explore the self-reported herbal buying behavior. Regarding the constructs for the variable attitude, the question item with the highest loading value was "I use herbs because they are better than other alternative medicine options" with a loading value of 0.855.

Measurements of safety were adjusted following the methods of Grunert (2005) and Michaelidou & Hassan (2008). Among the question items for the safety variable, the construct “I am very concerned about chemical additives in drugs” had the highest loading value of 0.846. The higher value indicates that strong concerns about safety are an important factor in the respondents’ decisions to use herbs. Risk perception was tested with an adjustment of the measurements of Mieres et al. (2006). For measuring risk perception, a six-item scale was developed. Five of the items were adapted from Mieres et al. (2006) and one additional item was developed. The question item with the highest loading value was “I’m worried it is just a waste of time because of lower usefulness” with a loading value of 0.908.

This study used techniques for modeling structural equations. The hypotheses were tested with Structural Equation Modeling to obtain a relatively strong analysis method with Smart PLS 3.0. The *Partial Least Square* method was used due to its ability to analyze phenomena with complexity, whether heterogeneity is observed or unobserved (Sarstedt *et al.*, 2011). A simultaneous *Partial Least Square* can combine direct relationships, moderators, and mediators (Lumpkin & Dess, 1996). The SEM-PLS

analysis consists of two-steps. The first is an assessment of the measurement model to check the validity and reliability of the data. The second is the structural model which is measured according to the test of significance to determine the goodness of fit of the model (Ghozali & Latan, 2012).

RESULT

Testing was performed by evaluating the outer model and the inner model. To check the internal consistency of the measurements, Cronbach’s alphas and composite reliability were calculated. Table I reveals that the reliabilities and validities were satisfactory as the Cronbach’s alpha values all exceeded 0.70, while composite reliability also exceeded 0.70 (Hair *et al.*, 2017). In PLS, internal consistency can be seen from Cronbach’s alpha, composite reliability, and rho_A. PLS also suggests that instead of Cronbach’s alpha and composite reliability, one should consider using rho_A to check the reliability of the PLS constructs score as recommended in Dijkstra & Henseler (2015). Thus, some limitations of Cronbach’s alpha are overcome by rho_A. The recommended value of the coefficient Rho_A is > 0.7 , while a rho_A value above 1 should not occur (Sarstedt *et al.*, 2017). The following table shows that all values of rho_A were reliable.

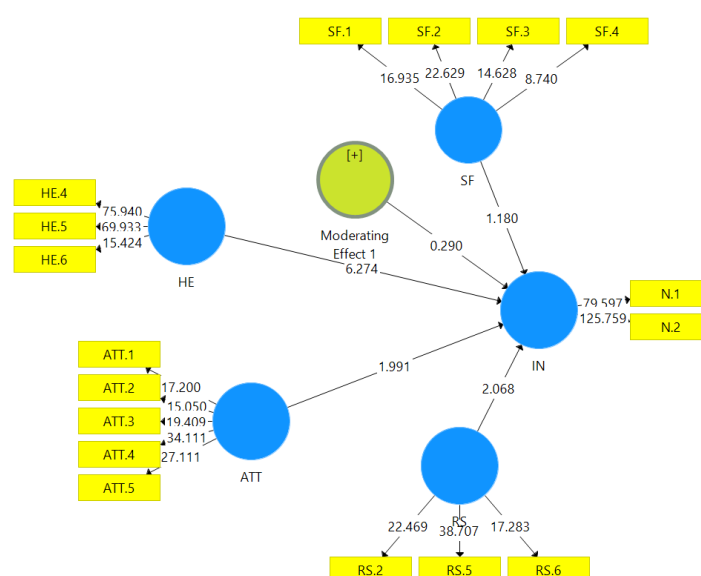


Figure 2 Structural Model

Convergent validity was tested using the values of *average variance extracted* (AVE). A variable can be accepted if the AVE value is more than 0.5 (Hair *et al.*, 2017). The table shows that the AVE value for all variables was > 0.5 . Regarding discriminant validity, this can be seen from the calculations of the square roots of the AVE values and the correlation of latent variables following the Fornell-Larcker criterion value. As shown in Table 2 the square roots of each AVE construction are greater than the highest of the other constructs. The square root of the AVE for health awareness (0.889) is the highest compared to the other variables of perceived safety (0.208), purchase intentions (0.646), and risk perception (-0.300).

From the latent values of the correlations, the variables appear to have good discriminant validity. The results of the validity test show that the data have good validities. There is both convergent validity and discriminant validity among the variables. Regarding the evaluation of the structural models to determine the significance and goodness of fit (R-squared), the model was found to be excellent and provides reasonable performance with an R-square of 0.480 for intentions. This means that the effect of the construct variables on the intention variable results in an R-square of 0.480.

The path coefficient analysis shows the direct effect of the independent variables on

Table 1. Reliability and Validity

Variable	Cronbach's alpha	rho_A	CR	AVE
Attitude	0.860	0.870	0.899	0.640
Health Awareness	0.869	0.906	0.918	0.790
Purchase Intention	0.867	0.873	0.937	0.882
Risk Perception	0.810	0.865	0.886	0.722
Perceived Safety	0.817	0.859	0.876	0.639

Source: Own Calculations Using Primary Research Data

Table 2. Fornell-Larcker Criterion

Variable	Attitude	Health Awareness	Purchase Intentions	Risk Perception	Perceived Safety
Attitude	0.800				
Health Awareness	0.521	0.889			
Purchase Intention	0.511	0.646	0.939		
Risk Perception	-0.422	-0.300	-0.382	0.849	
Perceived Safety	0.330	0.208	0.244	-0.273	0.799

Source: Own Calculations Using Primary Research Data

Table 3. Path Coefficients (Mean, STDEV, t-Value)

	Original sample estimate (O)	Mean of subsamples (M)	Standard deviation (STDEV)	T-Statistic (O/STDEV)	P Values
Attitude -> Purchase Intention	0.171	0.179	0.085	1.998	0.046
Health Awareness -> Intention	0.504	0.493	0.076	6.539	0.000
Perceived Safety -> Intention	0.047	0.052	0.038	1.232	0.218
Moderating Effect on Perceived Safety -> Intention	-0.014	-0.010	0.049	0.287	0.774

Source: Own Calculations Using Primary Research Data

the dependent variable. Results of the hypothesis tests show that hypothesis 1 is supported, the results of the path coefficient for health awareness to purchase intentions show a path coefficient p-value of 0.000, which is less than the p-value of 0.05. Thus, health awareness has a positive impact on purchase intentions. Hypothesis 2 was also supported; attitude had a positive impact on consumer purchase intentions with a p-value of 0.046 and t-statistic of 1.998. However, hypothesis 3 was not supported.

Overall, these results suggest that the direct effect of health awareness and attitude play an important role in shaping intentions to purchase herbal products. The results also show that health awareness has the strongest effect on purchase intentions as seen from the highest t-statistic value among the other antecedent variables. The moderating effect was observed to determine the impact of risk perception on the relationship between perceived safety and consumer intentions. The test results for the moderating effect on the relationship between perceived safety and consumer intentions, indicate that risk does not moderate the effect of perceived safety on purchase intentions with a p-value of 0.774; this value does not meet the criteria of p-value < 0.05.

DISCUSSION

Issues related to the safety of herbal products are rife, following the popularity of herbal products (Lynch & Berry, 2007). A study from Peschel (2007) described several adverse cases related to the usage of herbal products in Europe, prompting the need for quality and safety standards. Motives and barriers can vary in consumers' decision-making to use natural products (Padel & Foster, 2005). The safety of consumed products is a concern for consumers. For herbal products, consumer risk refers to concerns about the quality of the product for health. A low-risk perception for the product will promote the consumer's intentions to use the product. Health and food safety are two aspects associated with buying intentions

(Ueasangkomsate & Santiteerakul, 2016). The spread of problems related to the safety of herbal products (Lynch & Berry, 2007) must be followed to ensure consumer protection (Boullata & Nace, 2000).

The relationship between health awareness and intentions has a significant effect ($p = 0.000$). This indicates that health has a positive influence on the purchase intentions of consumers to use herbal products. As natural products, herbal products are considered to be relatively safe and low risk (Barnes, 2003; Zaffani *et al.*, 2006). This awareness encourages consumers to try natural products and healthy food. The higher the health benefits of herbal products, the greater the intentions of consumers to use herbal products. The results of this study are also supported by what respondents say about the distribution of health responses. The two highest factors were "I choose products carefully to ensure good health" and "I think often about my health issues". This means that consumers are aware of their responsibility for health problems when using herbal products. The results of this study are in line with the study of Ueasangkomsate & Santiteerakul (2016) using data from 316 respondents in Thailand who used natural products; from the five attributes of consumer intentions, the study indicated that health was the main factor influencing consumer intentions, with $r = 0.649$, followed by local origin, environment, and safety. This study is in line with Wandel & Bugge (1997) who reported that attention to health is an important reason for consumers to use natural products.

The relationship between attitude and intentions shows that attitude positively influences consumers' intentions to use herbal products. In using herbal products, attitude provides an evaluation indicating whether using herbal products is an appropriate (beneficial) action or not. The hypothesis test results indicated a positive effect of attitude on consumers' intentions to use herbal products. It can be said that using herbal products is the right and beneficial action. A p-value of 0.046 indicates that the

higher the attitude toward using herbal products, the higher the consumers' intentions to use herbal products. This is supported by the statements of respondents on the distribution of attitude responses, with the majority of the respondents strongly agreeing with the item "I use herbs because it is profitable and beneficial." The results of this study are consistent with Tarkiainen & Sundqvist (2005) who reported that attitude is the main determinant of a consumer's tendency to consume herbal products.

The relationship between perceived safety and intentions has a p-value of 0.218. This shows that perceived safety has negative influences on consumers' purchase intentions to use herbal products. A safe product is one that is not harmful to its users. Concerning safety in herbal products, there is a need for product quality standards (Peschel, 2007). The perceived safety of herbal products may affect a person's intentions to use herbal products. However, under certain conditions and reasons, other factors may override this. Several studies on natural products, such as Grunert K. (2005) and Michaelidou & Hassan (2008), have explained that the effect of perceived safety on purchase intentions is not directly proven. Research involving 222 consumers of organic products in Arran, Scotland, by Canavari *et al.* (2002) confirmed that the contribution of safety still requires motivational support. The effect of perceived safety on intentions, appears to be significant indirectly through the mediation of several variables, such as consumer attitudes, knowledge, and motivation (Wekeza SV. & Sibanda M., 2019; Michaelidou N. & Hassan, 2008). A study by Grunert (2015) reports that perceptions of food safety have an indirect effect on consumer intentions via consumer quality perceptions as a mediator. The results of this study agree with Yin *et al.* (2010) who's research involved a survey of 432 consumers from three cities in China. This research stated that consumer intentions are strongly affected by income, degree of trust, degree of acceptance, price, and consumers' concern for self-health. It also reported that perceptions of product safety are defeated by

the need for more adequate food, therefore consumers' awareness of food safety harms consumers' intentions to purchase.

Regarding the effect of risk perception as a moderator on the relationship between perceived safety and intentions, the results indicate that risk perception does not moderate the effect of perceived safety on the intentions of consumers to use herbal products. The results of risk perception as moderator on the impacts of perceived safety and purchase intentions have a p-value of 0.774. This value does not meet the rule of thumb p-value <0.05 , therefore it is stated that risk perception does not moderate the relationship between safety and intentions. The results of the four hypotheses are explained by the argument that risk is an unpredictable uncertainty. Risk can lead to an unpleasant result of a decision or action taken. In the case of herbal products, the risk can relate to product quality. Consumers have concerns about product quality and functionality. These concerns can affect consumers' perceptions of the safety of the product. Siu & Wong (2002) and Wee *et al.*, (2012) researched consumer behavior towards organic products, reporting that safety influences a consumer's intentions to use the product. Rousseau *et al.*, (1998) define risk as the possibility of loss or perceived loss. In a study of the herbal product market in India, Sharma *et al.* (2008) reported that other factors, besides safety, influenced a person when using herbal products; these included effectiveness, cultural acceptance, and having fewer side effects.

Risk is an uncertainty that cannot be predicted. Risk perception can be in the form of a person's concerns about time risks, psychological risks, social risks, or even financial risks. Consumers' concerns regarding time risk, such as using herbal products will be a waste of time, due to unsatisfactory results, can be eliminated by choosing standardized herbs. Currently, many herbs are standardized and react faster than traditional herbs. On the other hand, consumer concerns about the psychological and social risks, such as feeling

uncomfortable with themselves, or their surroundings are no longer the case. Nowadays, there are many herbal communities in society, including the unity of herbal specialists, or herbal clinics. This reduces consumer concerns about the risks that may arise from using herbal products. This explanation shows that risk does not necessarily strengthen or weaken the relationship between safety and consumer intentions when using herbal products. Other factors can affect consumer decisions regarding concerns of product safety. This is supported by the research of Yin *et al.* (2010) which reported that perceptions of product safety were offset by needs for more adequate food.

The research discussed above as a whole reveals appealing things. *First*, several antecedents influence purchase intentions for herbal products, namely attitude and health awareness. High consumer health awareness plays a significant role in intentions to use herbal products. *Second*, empirical results show that perceived risk does not moderate the effect of perceived safety on purchase intentions. Risk refers to an aversion that is not individually constant but varies for the same person in different decision frameworks (Mulino *et al.*, 2009). This explains that risk can trigger different responses. *Third*, it shows that of the variables in this study, health awareness has the strongest influence on consumer intentions to use herbal products. This is apparent from the highest t-statistic value of the dependent variable purchase intentions. In the context of herbal products, if the consumer has superior awareness that he will get great benefits from using the product, he will have high purchase intentions. This also stimulates further investigation regarding health benefits, consumer buying behavior, and the distribution of herbal products from a marketing perspective.

CONCLUSION

This study used a behavioral approach applying The Theory of Planned Behavior

and considering that a person will take measures according to their state of health. This study also adds several independent and moderation variables. The results of the data analysis lead to the conclusion that health and attitudes affect consumers' intentions to use herbal products. However, perceived safety does not affect consumer purchase intentions. It is likely that perceived safety will have a significant impact on actual buying behavior. The test of moderating effects indicated that risk does not moderate the effect of perceived safety on consumer intentions towards herbal products.

The empirical results are particularly relevant for the market of herbal products with health concepts. On the contrary, aside from safety and risk factors, health benefits appear to be more likely to drive consumer demand for herbal products. It can also be concluded that the Theory of Planned Behavior is well applied to health-related behavior research. This can be developed further by adding consumer understanding of herbal products through mediation to minimize the risk perceived by consumers. This is expected to improve purchasing behavior, as it will be possible to predict consumers' purchasing behavior for herbs and their intentions to purchase herbal products.

LIMITATIONS

This study used a questionnaire-based survey method. There is a possibility of subjective elements in each respondent's answer. To unravel these limitations, data collection can be followed by interviews and focus group discussions to obtain more objective results. The sample of respondents can be expanded to other areas so that generalizations are not limited.

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