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Effect of Consumer Demographic Factors on Purchasing Herbal Products Online in Malaysia

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***Abstract*—**The availability of broadband internet and increased access to computers has been instrumental in the rise of internet literacy in Malaysia. This development has led to the adoption of online shopping by many Malaysians. On another note, the Government has supported the development and production of local herbal products. This has resulted in an increase in the production and diversity of products by SMEs. The purpose of this study is to evaluate the influence of the Malaysian demographic factors and selected attitudinal characteristics in relation to the online purchasing of herbal products. In total, 1054 internet users were interviewed online and Chi-square analysis was used to determine the relationship between demographic variables and different aspects of online shopping for herbal products. The overall results show that the demographic variables such as age, gender, education level, income and ethnicity were significant when considering the online shopping antecedents of trust, quality of herbal products, perceived risks and perceived benefits.

***Keywords*—**Demographic factors, herbal products, Malaysian consumers, online shopping, Chi-square analysis.

I. Introduction

TODAY the traditional medicine is being sought as an alternative to conventional medicine, or to compliment conventional medicinal treatment. In China, 40% of all healthcare services involve traditional medicine, while in Africa it is responsible for approximately 80%. In India there is an estimated 400,000 traditional medicine practitioners, compared to 320,000 conventionally trained medical professionals in 1991 [25].

Changes in lifestyles and self-medication are main factors contributing to the increased popularity of herbal medicine. Based on studies in the USA 74% of the population prefers a more natural approach to healthcare. People feel more inclined to prevent diseases as treatment is costly and may or may not guarantee a cure. A study by the Council for Responsible Nutrition (CRN) [3] reported that in the USA, 69% of the population is reported to use supplements in 2011 compared to 66% in 2010 and 65% 2009. Of the users in 2011, 53% said they take supplements "regularly". Vitamins and herbal supplements are examples of such self-medication, along other habits which lead to healthy living such as physical exercise and a balanced diet. Another closely related factor to the usage of herbal medicine is the perception that they are natural products and therefore safer compared to conventional drugs [3]. Based on community surveys conducted in 2009, 69.4% of Malaysians have used traditional and complementary medicine (TCAM) at least once in their life time. Furthermore, 55.6% of those surveyed have used it in the previous 12-month period [24]. While in another related study on the types of TCAM used, herbs and biological based treatments were found to be used by 88.9% of respondents to remedy health problems, while in the health maintenance category 87.3% of respondents reported using them [21]. Even when other traditional medicine or treatment is available, Malaysians still prefer using herbal based products for their health maintenance and curing illnesses. Herbal use in multiethnic Malaysia is influenced by each ethnic group and their prevalent cultural phenomena within the country. The major ethnic groups are the Malays, Chinese, Indians and the various indigenous ethnics collectively called the *Bumiputras*.

Various researchers found that even when producing herbal products based on local herbs, the supply of raw material is highly dependent on imported herbs of the same type. It was estimated that the range of imported herbal products was from 70% [14] to 90% [1]. Thus the locally produced herbal products actually rely on imported raw materials due to a shortage in the supply of local medicinal herbs. Recent steps by the Malaysian government may be a start in the right direction. Based on the National Agro-Food Policy 2011-2020, RM300 million has been allocated to increase the number of agro-entrepreneurs as well as improving their livelihood. Compared to previous agricultural policies, the exclusion of commodities based on agriculture would hopefully mean that more focus and effort is directed to other areas of the agriculture sector which needs assistance instead of the advanced and well developed commodity crops such as oil palm and rubber. This step would hopefully benefit herbal production and manufacturing as well as other food based agriculture activities such as livestock, fisheries, and others.

In Malaysia, herbal products may be considered a part of various industries. In the pharmaceutical industry, products containing herbs are classified as traditional pharmaceuticals which include herbal health supplements, ethnic pharmaceuticals and other traditional medicines in the form of tablets, capsules, powder or granules [13]. As of 2005, out of the 235 pharmaceutical companies registered in Malaysia, 148 are producers of traditional pharmaceuticals as opposed to 87 manufacturing modern pharmaceuticals. In the same year, the sales of locally produced pharmaceuticals were RM 852

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million compared to RM 443 million in 2000. Aside from traditional pharmaceuticals; herbs have also been processed into functional herbal food products which use traditional herbs with medicinal value in food products to add value to them. The global market for functional foods was estimated at US$ 66 billion in 2003, of which 50% were beverages and drinks, 25% consist of cereals and baked products, while 10% were snacks and food bars. The market for functional foods is expected to increase to US$ 176.7 billion by 2013 [18]. Some local Malaysian herbs which have been considered for research into producing functional foods include *Eurycoma longifolia* (tongkat ali), *Labisia pumila* (kacip Fatimah), *Morinda citrifolia* (mengkudu), *Orthosiphon stamineus* (misai kucing), and *Centella asiatica* (pegaga) [12].

II. The Internet in Malaysia and Online Shopping

In 1992, Malaysia's first internet service provider (ISP) went operational and started offering services. Known as JARING, the fledgling ISP recorded only around 200 personal internet users in Malaysia in 1992. Eight years later, the number of internet users grew to 3.7 million in 2000, about 15% of the total population at that time. Since then, internet users have been increasing rapidly and accounting for more and more of the population in Malaysia. Table I records the number of internet users from 2000 to 2010. As indicated, more than 60% of the population of Malaysia has access to the internet, after the relatively short time of 20 years [28]. The increase in broadband prevalence shows that more and more people are opting for the faster broadband as opposed to dial-up, and that the infrastructure in Malaysia is able to adequately support this shift in preference. New infrastructure such as the fiber optics in High-Speed Broad Band (HSBB) program, expansion of mobile broadband services (as opposed to ADSL or fixed line) and the increase in Worldwide Interoperability for Microwave Access (WiMAX) access are sure to increase the adoption of broadband internet even more in Malaysia.

TABLE I
Percentage and Number if Internet Users in Malaysia

Year	No. of Users	Population	%
2000	3,700,000	24,645,600	15.00%
2005	10,040,000	26,500,699	37.90%
2006	11,016,000	28,294,120	38.90%
2007	13,528,200	28,294,120	47.80%
2008	15,868,000	25,274,133	62.80%
2009	16,902,600	25,715,819	65.70%
2010	16,902,600	26,160,256	64.60%

(Source: IDC,2011)

This further drives the need for better services and more advanced internet infrastructure in order to hasten internet adoption in the nation. These incentives have seen the nation exceed its projected 50% internet penetration rate in 2010 by 7% [26]. In 2010, the online consumers in Malaysia spent roughly RM 1.69 billion on online shopping. The lion's share of this billion dollar pie goes to travel items, such airplane tickets, travel packages, convoy trips and other such travel services amounting to RM435mill (24%). Bill payments come up second in the list of what to spend on online for the average Malaysian online consumer, with 18% (RM329mill). Entertainment and lifestyles services and products are placed third with RM255mill, while IT and electronics claim RM218mill, 14% and 12% respectively. General insurance, fashion and beauty products along with gifts and collectibles make up for the remaining 25%; taking up RM205mill, RM181mill and RM68mill respectively.

The last few years have seen a steady increase in internet use and a growing interest in online shopping as well. This can be observed by the number of websites offering online shopping nowadays. While some are from well-funded or established companies like presto.my, www.doorstep.com.my, www.lelong.com.my or www.mudah.my, there is also an abundance of small time traders and entrepreneurs offering their online shopping services via blogs, social networking sites and forums. The items offered for purchase vary widely from scarves to groceries or hand phones, sports jerseys and any other available item. These e-commerce sites may be the main distribution method of the vendor and facilitate trade between members of the sites or are a value added service offered for the convenience of their customers. The online grocery shopping service provided by presto.com is a tangible example as Presto maintains grocery outlets in a few upscale areas of the capital city but offers its customers the option of opting out of timely grocery shopping by shopping online and thus in the long run adding value to their services. Registered users may post offers of products either new or used along with photos, price and acceptable methods of payment. Any interested party may contact them via the contact numbers displayed by the provider or newly registered users. Unlike established companies, these sites cannot guarantee the safety of the transaction or quality of the products displayed and only provides guidelines to protect themselves against scam and unscrupulous traders. Similar to these sites, small time traders offering their products through social media and blogs cannot provide a wide range of payment methods so they often demand cash-on-delivery (COD) or ask for deposits into a bank account. Most of the users who are buying used goods prefer the COD method as they can inspect the item first before making the payment. Recently more sellers are offering e-payment options like www.maybank2u.com.my or www.cimbclicks.com.my, where users with accounts at the associated banks (Maybank or CIMB) can make payments electronically with less hassle. The more savvy traders are even offering the option of the Paypal service which is a secure form of payment used globally by those who have Paypal accounts. With Paypal, the small time traders can expand their offered payment methods to be as flexible as established companies while not having to bear the cost and hassle of offering credit card verification and payment on their own.

III. Malaysian Online Herbal Store

One of the online stores of herbal products in Malaysia is the herba.com.my website. This website claims to have support from Universiti Teknologi Malaysia (UTM), Malaysian Agricultural Research and Development Institute

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(MARDI) and Federal Agriculture Marketing Authority (FAMA). Although the authenticity of such claims is hard to establish, they do increase the confidence of potential customers who visit the website. It lends a certain amount of trust towards the online vendor, which is important in any buyer-seller relationship and in particular in e-commerce [23]. The products offered are also reasonably varied and plentiful; the products are a mixture of consumer-ready products such as creams, balms and capsules, along with dried or otherwise processed raw herbs sold by the kilogram. It may be assumed that the website has elected to cater to both consumers and businesses at the same time rather than just one of the parties. While this is convenient for the vendor, the lack of focus towards one or the other may affect how each buyer perceives the vendor. A better approach may be to either focus on B2C or B2B on one website, and set up another website for the second product. Another online store for herbal products is www.rainforestherbs.com.my. However unlike herba.com.my, there are no actual online shopping options for the products. Instead there are explanations on their products and their benefits with instructions of where to buy them. There is an option to purchase online on their English website www.rainforestherbs.com, but this is aimed only for international orders. The products are varied, ranging from functional drinks and capsules, to massage oils and root shavings. When a company has a website with the option of both Malay and English languages but offer sales only through its English link it reduces the function of the Malay pages to merely informative for their products. Some other similar websites for herbal products are offering good online shopping options and experience or provide information on the products and where to buy them. It should be noted that companies running websites for herbal products shopping are limited in number at present. Herbal products offer an added requirement to the aspiring online shopping vendor; they need to be authentic. Like other physical products sold online, the potential buyer may not touch, smell or taste the herbal product sold online. However, unlike most other products, the core value of an herbal product is its ability to fulfill its claimed functionality, which is why the authenticity of the products is important to potential consumers. Users of natural products are wary of dangerous, fake or adulterated products. Their apprehension is quite justified, as data from the enforcement agency, National Pharmaceutical Control Bureau (NPCB), which oversees this matter, can clearly show this. In 2011, out of 853 products tested, 230 contained adulterants. On average, in the five year period of 2007 to 2011, 20% of the products tested were fake. These fake products are the ones containing dangerous chemicals, controlled substances and toxic materials. Therefore the online vendor has to take steps to assure the authenticity and the effectiveness of the offered products in any possible way. Products with pharmaceutical properties such as herbal products are regulated by the government of Malaysia. Under the Control of Drugs and Cosmetics Regulations Act established in 1984, each traditional complementary medicinal (TCM) product, which includes herbal products, has to be registered and licensed by the Drug Control Authority (DCA). Manufacturers have to ascribe to good manufacturing practices (GMP), while importers have to follow good storage practice (GSP). In addition, post marketing surveillance is also applicable to TCM as of 1997. But unlike controlled pharmaceutical products, herbal products can be sold without prescriptions or restrictions and only limited health claims can be made. Although it is regulated to ensure quality and safety but it is not too tightly regulated to be unattractive to SMEs who have relatively smaller capital and resources available to ensure compliance with the requirements and regulations.

IV. Review of Past Studies

Risk is an inherent part of any transaction. In the case of online transactions it is even more pronounced. Limited information and customer service, not being able to physically examine the products for defects, identity theft and credit card fraud are just some of the risks consumers associate with online transactions. Regardless of whether the negative outcome actually happens, consumers have already perceived the risks involved. Perceived risk has been defined as the consumers' subjective belief of suffering a loss while pursuing a desired outcome [16]. Those who are older or more experienced with the internet perceived the risks differently than younger and less experienced users [2]. Naturally, perceived risk is negatively correlated with the intention of users to buy products online [15], [16]. The more experienced a user is at buying online, the more confident he or she becomes while perceiving less risk. Interestingly, users' perceived risk did not reduce the frequency of their online purchasing nor did it decrease it [17]. Perhaps the causes for risk are not in the users' control and are not mitigated even with experience, e.g. website security, server security, malicious malware attacks, phishing sites and others. Demographically, female users perceive more risk compared to male users [5], and a similar trend is expected in the data collected. Perceived risk has been found to be an important factor in determining the acceptance of online shopping [2], [15]-[17] while affecting attitude and intention to shop online. A perceived benefit on the other hand is what the consumer thinks he will gain from pursuing a course of action. The perceived benefits of online shopping are what makes shopping online more attractive compared to conventional shopping. For instance the convenience of shopping from home, cost savings in fuel and time, the increased variety of products, cheaper due to various online only promotions, or specialty items which are hard to come by in a conventional store. The perceived usefulness of online shopping has been shown to directly affect the attitude and intention to shop online [9]. Another core factor when considering an online consumers shopping is trust. Trust in the online shopping environment is greatly reduced compared to conventional shopping. Some of it may be because of the very way online shopping is conducted: very limited face-to-face contact, not being able to handle the product to be purchased, not receiving the product immediately and so on. It may also be because of the many risks and negative press associated with online

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shopping such as identity theft, loss of privacy, misuse of customer information by vendor, credit card fraud and others. However trust is an important factor for success in e-commerce [4], [20], therefore it is an important determinant to study further and understand deeper. Adding to the complication mentioned above, trust is a rather prickly determinant among researchers. Some have come to the consensus that trust is difficult to define and is multidimensional [7], [10], [11]. Trust is difficult to define, trust is often confused with its antecedents and outcomes, some fail to fully understand the relationship between trust and risk, levels of analysis are confused because the referents of trust are not so specific and finally failing to consider both parties, the one to be trusted and the one who trusts.

V. Methodology

A survey was conducted in order to gather information about the prospects of E-commerce for herbal products in Peninsular Malaysia. An online questionnaire was designed with a Likert scale of 1 to 7 (1 representing strongly disagree and 7 standing for strongly agree) to measure the internet users perception with regard to herbal products and the online purchase of herbal products. Data were gathered from January to August 2011 and out of 2000 questionnaire invites, 1054 questionnaire were returned signifying a response rate of about 53%. The collected data were analyzed using descriptive and χ 2 analysis. This is to describe the basic features of the data in this study. It described the respondents' profile and their perceptions with regard to online purchase of herbal products. Subsequently χ 2 analysis was carried out to uncover the relationship between selected demographic factors of the internet users and different aspects of online shopping for herbal products. These elements are crucial for the success of online shopping in Malaysia. Thus given the above scenario the following hypotheses are postulated:

(1) Ho. There is no significant difference between the respondents' demographic factors and the difficulty in evaluating the quality of herbal products while online purchasing
(2) Ho. There is no significant difference between the demographic factor of the respondents and perceived benefits of shopping online for herbal products
(3) Ho. There is no significant difference between demographic profile and perceived risks of buying herbal products online

VI. Empirical Findings

A. Descriptive Analysis

The result shows that 60.9 percent of the respondents were female and the remaining 39.1 percent were male. As can be seen in Table I the majority of the respondents were Malays 57.9 percent, followed by Chinese 30.3 percent, Indians 10.1 percent, and other races (1.7 percent). From the one thousand fifty four of respondents, 63.9 percent were married while 35.3 percent were single and 0.8 percent were single parents. With regards to age the largest number of respondents 34.2 percent is aged between 25 and 34 years old. While 25.4 percent are aged between 18–24, 26.1 percent are aged between 35-54 years old. The remaining 14.3 percent of respondents are aged over 55 years old and below 18 years old, respectively 93 (8 percent) and 73 (6.3 percent). In this study, the respondents with at least SPM (high school equivalent) represent 14.4 percent of total respondents. Certificate and diploma holders account for 28.2 percent of respondents, and can be considered as currently in college. Finally, the college graduate equivalent respondents about 57 percent of the total respondents, with degree holders accounting for 46.1 percent while postgraduate degree holders are the remaining 11.3 percent. This study found that 15.1 percent earned below RM 1500, 33.5 percent earned between RM 1501 – RM 3000 per month, 35.3 percent earned RM 3001 – RM 4500 per month, 8.5 percent earned RM4501 – RM 6000 per month and a smaller percentage of respondents 7.6 percent had a monthly income above RM 6001. Malaysia is divided into thirteen states and three federal territories.

TABLE II
Social Demographic Profile of the Respondents

Characteristic	Percentage	Characteristic	Percentage
Gender		**Age**	
Male	39.1	under18	6.3
Female	60.9	18-24	25.4
Race		25-34	34.2
Malay	57.9	35-54	26.1
Chinese	30.3	55+	8
Indian	10.1	**Education level**	
Other	1.7	Primary/Secondary	14.4
Income		Diploma	28.2
Below 1500	15.1	Degree	46.1
1501-3000	33.5	Postgrad Degree	11.3
3001-4500	35.3	**Marital Status**	
4501-6000	8.5	Single	35.3
Above 6001	7.6	Married	63.9
		Single parents	0.8

B. Chi-Square Analysis

Ho. respondents' demographic factors and the difficulty in evaluating the quality of herbal products while online purchasing

The results of the χ 2-test of independence show that there is a significant relationship between all the demographic variables examined with the respondents' difficulty in assessment of herbal product quality. Although the more experienced a respondent is with the information technology such as the internet and personal computer, the more is anticipated of him for purchasing herbal products online. But yet they will have great difficulty in evaluating the quality level of a product. Therefore for some of the respondents it easier to find and evaluate herbal products at the supermarkets or convenience stores and corner shops. As far as gender is concerned, it has been reported that men are more likely to purchase online compared to women and that women have more difficulty to rely on the quality without examination the herbal products. Also single respondents

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would have less concern about herbal product quality while online purchasing, increasing the likelihood of conducting the purchase online as compared to their married counterparts. The older respondents are more likely to have more difficulties in herbal quality assessment while online shopping. The same could also be pointed out with the education level variable, as the more educated a person is, the more they see the need to identify the quality of the products which have direct relation with the health and appearance (Table III).

TABLE III
CHI SQUARE VALUES AND THE RESPONDENTS' DIFFICULTY IN ASSESSMENT OF HERBAL PRODUCT QUALITY

Demographic Variable	$\chi 2$
Gender	43.854***
Age	56.315***
Education Level	36.631***
Marital Status	26.502***

Notes: **,***Significant at 10 and 5 per cent levels, respectively

Ho. respondents' demographic factors and perceived benefits of shopping online for herbal products

Table IV summarizes the results of Chi-square test between respondent's demographic factors and their perceived benefit of shopping online. As indicated in Table IV there is a significant relationship between the demographic factors such as gender, income, age, marital status and ethnicity. In the case of perceived benefits, the significance of age, income and education level may all be tied with the degree of access to information technology and exposure to the internet. Where the younger, with a higher income and higher education level would be able to perceive the benefits of online shopping for herbal products (such as convenience, better variety and more privacy) more readily compared to other respondents. Though married people may be more wary of the risks involved in online shopping, they are also not blind to the benefits afforded by them either. Perhaps having more commitments led them to look out for shopping alternatives where they can minimize their commute time or save on fuel and get more information on the herbal products before purchasing them.

TABLE IV
CHI SQUARE VALUES AND THE PERCEIVED BENEFITS OF BUYING HERBAL PRODUCTS ONLINE

Demographic Variable	$\chi 2$
Gender	32.875***
Age	33.946***
Education Level	61.062***
Marital Status	45.500***
Income	30.1160**

Notes: **,***Significant at 10 and 5 per cent levels, respectively

Ho. respondents' demographic factors and perceived risks of shopping online for herbal products

The results of Chi-square test of independence show that there is a significant relationship between all the demographic variables and the risk associated with online shopping (Table V). Higher levels of education would help a person realize the risks associated with the act of shopping online for herbal products. Moreover, having gained a higher level of education may lead to a higher income which could indicate that the person would be able to better recognize the online risks involved. Married people are generally more wary of using their resources due to more commitments compared to those who are single. This is because they are aware that they have a family which depends on them so a married person is more likely to recognize and be swayed by the risks of online shopping for herbal products. Unsurprisingly the other factors which have been significant in the perceived risk associated with online shopping of herbal products are also significant with its perceived benefits. When perceiving the risks, naturally a rational person would consider the benefits as well in order to make a rational decision on a subject matter. Zhou et al. [27] even combined them into one "perceived outcome" to better account for both at the same time along with perceived usefulness in their Online Shopping Acceptance Model (OSAM).

With a more convenient access to herbal products via regular shops and local practitioners online shopping of herbs and risks it involves may get an unfavorable picture. Moreover, those who have to rely on imported products are understandably wary of product imitations on top of other risks associated with online shopping.

TABLE V
CHI SQUARE VALUES AND THE PERCEIVED BENEFITS OF BUYING HERBAL PRODUCTS ONLINE

Demographic Variable	$\chi 2$
Gender	28.396**
Age	12.482**
Education Level	31.246***
Marital Status	33.206**
Income	58.326***

Notes: **,***Significant at 10 and 5 per cent levels, respectively

VII. CONCLUSION

Overall, the findings of this study support the effect of demographic on online shopping antecedents of perceived benefit, perceived risk, and the difficulty in product quality evaluation. The results are consistent with Roger and Harris [19], that some variance could be expected from the slightly more feminine group of respondents here, especially considering more women approach online shopping more cautiously than men and are more apprehensive about the World Wide Web [22]. Aside from that, women were also found to be more likely than men to consume health supplements in the United States, with 74% of women using supplements as opposed to 64% of men [3]. While marital status may not have a proven effect on herbal and supplement consumption, the added financial pressure of marriage may persuade some respondents to use herbal supplements and treatment instead of costly conventional healthcare. Furthermore, some herbs are specifically used as aphrodisiacs. While marriage status is inconclusive, age is an entirely different matter. Age has been found to significantly affect herbal therapy and supplement use [6], [8]. According to

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Gardiner et al. [7], persons above 65 years old are 0.58 less likely to take herbal supplements. Education level is another important variable when considering herbal consumption. Gardiner et al. [7] found that a high school graduate is 1.53 times more likely to use herbal supplements, while respondent who have been to college are 2.23 times more likely to do so and finally college graduates are actually 3.0 times more likely to take herbal supplements. In terms of income distribution, herbal supplement and therapy use can be significantly affected. In general, the higher the income, the more likely to use herbal supplements [7].

The findings of this study may prove useful as a rough guide to some of the factors needed to be addressed when considering the online marketing of herbal products. As the government is pushing for the advancement of the agro-entrepreneurs of the industry, the internet marketing of products is essential in opening up new avenues of marketing for the entrepreneurs. Hopefully the government will not only focus on the production and expert support side of the advancement plan, but also consider providing marketing support and advice in order to fully realize the potential of local agro-entrepreneurs. Practical information such as which demographics to target, which avenue of marketing to pursue are examined to one degree or another within this study and should prove useful for such plans.

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