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Preface

In the name of ALLAH, Most Gracious, Most Merciful and Muhammad S.A.W., the last prophet.

First and foremost I would like to congratulate the editorial board and authors of the *Borneo Akademika* journal on their success in producing this journal. This achievement is actually the result of their tireless effort in contributing thoughts and ideas to produce papers on current issues and challenges in multi-disciplinary research. To the best of my knowledge, efforts to produce a home-grown UiTM Sabah journal actually started ten years ago, and today we see the fruits of our labour and patience. This shows us that total commitment from the academic community is required in the journey towards academic publication so that joint research efforts can be enhanced.

This journal consists of twelve peer-reviewed articles based on current research topics of interest. Each topic is unique by way of its research methodology and findings in various related fields. The papers in this journal are useful to fellow researchers who share a similar interest in the field or those who are directly involved in exploring multi-disciplinary research. We hope that this publication can be a reference for academicians and students alike, particularly those in UiTM as well as the general public.

Finally, I would like to take this opportunity to acknowledge the dedication of our editorial board and invited/field editors who have in one way or another contributed to the successful publication of this journal. My gratitude goes out to all the authors who contributed articles to this publication because this journal would not have become a reality without them.

Thank you.

Datuk Dr. Hj. Abdul Kadir Hj. Rosline
Chief Editor

Prakata

Dengan Nama Allah Yang Maha Pemurah Lagi Maha Mengasihani. Salam dan Selawat ke atas Junjungan Besar Nabi Muhammad SAW rasul akhir zaman.

Pertamanya saya ingin mengucapkan setinggi-tinggi tahniah kepada sidang penyunting dan penulis artikel jurnal Borneo Akademika yang menyumbang tenaga dan idea dalam isu dan cabaran terkini kajian pelbagai-bidang. Penerbitan jurnal ini adalah keseinambungan usaha lampau yang kurang aktif semenjak hampir sepuluh tahun lalu. Jurnal ini menggambarkan keperluan komitmen yang jitu daripada warga akademia bagi megembang kesignifikanan usaha-usaha dalam penyelidikan.

Jurnal ini mengandungi dua belas artikel yang dinilai oleh penilai jemputan/bidang berasaskan kajian semasa. Setiap tajuk yang dibincang mempunyai keunikan tersendiri yang metodologi dan dapatannya dikupas berdasarkan bidang kajian yang dibuat. Usaha ini amat memberi manfaat kepada penyelidik-penyelidik terutamanya mereka yang terlibat secara langsung dalam kajian terkini pelbagai-bidang. Tambahan pula, kami berharap agar penerbitan ini akan menjadi sumber rujukan kepada ahli akademik dan pelajar terutamanya di UiTM dan juga kepada orang awam lain.

Akhirnya, kami ingin mengambil kesempatan untuk merakamkan setinggi-tinggi penghargaan kepada semua ahli sidang penyunting dan penyunting jemputan atas sumbangan yang merupakan satu lagi cara menyumbang kepada kejayaan penerbitan jurnal ini. Terima kasih khas ditujukan kepada semua penulis yang menyumbang artikel untuk tujuan penerbitan ini kerana tanpa sumbangan mereka penerbitan ini tidak mungkin dapat dijayakan.

Terima kasih.

Datuk Dr. Hj. Abdul Kadir Hj Rosline
Ketua Penyunting

Content

FACTORS AFFECTING THE IMPLEMENTATION OF GREEN PRACTICES AMONG TRADITIONAL AND COMPLEMENTARY HERBAL-BASED ENTREPRENEURS IN MALAYSIA

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ABSTRACT

Environmental issues such as global warming, pollution, climate changes, deforestation, food safety, and an increasingly threatened biodiversity have emerged as new challenges to humans and the world ecosystem. All these factors have triggered awareness among all the players in the industries to implement green practices in their business activities. The implementation of green practices increases the value of products through the processing method of marketable, consumable, and used goods. At the same time, it is able to generate income and provide profit to the producer. This is especially applicable to those in the herbal industry which involves the use of natural treasures. Growing demand for herbal products and the lifestyle of today's health-conscious consumers have increased the production of herbal products in Malaysia. Thus, this has forced all Traditional and Complementary Herbal-Based (T&CH) entrepreneurs to move towards green technology practices. In fact, the global demand for herbal products is expected to increase up to USD$600 billion by 2020. This scenario has motivated T&CH entrepreneurs to produce herbal-based products in a sustainable or green way. This paper aims to assess T&CH entrepreneurs' perception and the factors that can influence their intention to implement green practices in their business activities. Two hundred and fifty-six respondents were interviewed for this study. Descriptive statistics and factor analysis were used to analyse the information on the T&CH entrepreneurs' perception towards going green. The results indicate that the major factors determining Malaysian T&CH entrepreneurs' intention towards going green are perceived relative advantage, complexity, attitude, subjective norms, perceived behavioural control and intention.

Keywords: Traditional and Complementary Herbal-Based Entrepreneurs (T&CHH); green technology; intention; factor analysis

ABSTRAK

Kerosakan alam sekitar seperti pemanasan global, pencemaran, perubahan iklim, penebangan hutan, isu-isu keselamatan makanan, dan biodiversiti yang semakin terancam merupakan cabaran baru kepada manusia dan ekosistem dunia. Semua faktor-faktor ini telah mencetuskan kesedaran di kalangan pemain industri untuk melaksanakan amalan hijau dalam aktiviti perniagaan mereka. Pelaksanaan amalan hijau meningkatkan nilai produk melalui kaedah pemprosesan, dan pada masa yang sama menjana pendapatan serta memberi keuntungan kepada pengeluar terutamanya dalam industri herba yang melibatkan penggunaan khazanah

semula jadi. Pengeluaran produk herba di Malaysia meningkat sejajar dengan permintaan produk herba yang semakin meningkat kerana gaya hidup pengguna yang mementingkan kesihatan pada masa kini. Ini memberi tekanan kepada semua usahawan Traditional Dan Komplementari Herba Tani (T&CH) untuk beralih ke arah amalan teknologi hijau. Malah, permintaan global bagi produk herba dijangka meningkat sehingga USD$600 bilion pada 2020. Senario ini telah menarik hasrat/niat usahawan T&CH untuk mengeluarkan produk berasaskan herba secara mampan atau hijau dalam aktiviti perniagaan mereka. Oleh itu, kertas kerja ini bertujuan menilai persepsi usahawan T&CH dan faktor-faktor yang mempengaruhi mereka untuk melaksanakan amalan hijau dalam aktiviti perniagaan mereka. Dua ratus lima puluh enam responden telah ditemubual. Statistik deskriptif dan analisis faktor telah digunakan untuk menganalisis maklumat terhadap usahawan ini ke arah perlaksanaan amalan hijau. Hasil kajian menunjukkan bahawa faktor utama yang menentukan hasrat usahawan T&CH Malaysia ke arah amalan hijau ialah kelebihan relatif, kerumitan, sikap, norma subjektif, kawalan tingkah laku dan hasrat/niat ke arah amalan hijau.

Kata kunci: Usahawan berasaskan Tradisional Dan Komplementari Herbal; teknologi hijau; hasrat/niat ke arah amalan hijau; analisis faktor

1.0 Introduction

Many factors which are causing environmental damage (such as global warming, pollution, climate change, and deforestation, plus an increasingly threatened biodiversity) have triggered awareness among upstream and downstream players in the industry to practise sustainable and environmentally friendly management (Hall, Matos, & Silverstre, 2012). These efforts are also encouraged among entrepreneurs in the herbal industry. However, in Malaysia, there are no specific guidelines for the production or manufacture of herbs using green technologies. The available guideline provided by Standards and Industrial Research Institute of Malaysia (SIRIM, 2009) focuses on managing business activities which can reduce the negative impact to the environment from the initial stage (such as preparing the land and planting, harvesting, and storage) to the packaging process. Based on the content of the guidelines, herbal product manufacturers are required to demonstrate clean handling in an environmentally friendly way, protect worker safety and at the same time, retain the quality of the herbal products. The adherence to guidelines such as Good Agricultural Practices (GAP), Good Agricultural and Collection (GACP), Malaysian Organic Scheme or *Skim Organik Malaysia* (SOM), Malaysian Good Agricultural Practice Scheme or *Skim Amalan Ladang Baik Malaysia* (SALM), Good Manufacturing Practices (GMP), and others is actually the initial step towards the implementation of green technology in order to gain international recognition. Researchers have claimed that green practices have a positive impact on the economy, social well-being of society and are environmentally friendly (Wagner & Svensson, 2010). According to Hansmann and Claudia (2001), the success in the efforts to conserve the environment and fix environmental damages has given new opportunities in business competition besides injecting added value to the activities and main processes in the business. In addition, the Ministry of Energy, Green Technology and Water (KeTTHA) in Malaysia has provided various forms of economic incentives such as loans under the Green Technology Financing Scheme (GTFS) and import duty and sales tax exemptions for equipment which is based on green practices. However, the motivation to go green is not solely dependent on factors such as education, economic factors or the need to make big changes in business operations, but is dependent on business needs and priorities instead (Tzschentke, Kirk, & Lynch, 2008). Some businesses are forced to do so because of government policies which leave them no choice but to comply with regulations. However, there are companies that genuinely want to adopt green practices in their business activities.

2.0 Literature Review

The Extended Theory of Planned Behaviour (ETPB) consolidates the components of the innovation diffusion theory, which are perceived relative advantage and complexity into the TPB to investigate what determines Traditional and Complementary Herbal-Based (T&CH) entrepreneurs' intention towards green practices. Green practices are based on the evaluation of perceived relative advantage and complexity as antecedents of innovation characteristics in the attitude of the entrepreneurs, attitude towards the intention of green practices, subjective norms or social pressure (internal and external factors), and perceived behavioural control towards green practices in their business activities. In the meantime, perceived relative advantage and complexity are used to discover the perceived innovation characteristics of T&CH entrepreneurs with the aim of explaining the behavioural intention to adopt green practices among herbal manufacturing small and medium enterprises (SMEs).

Thus, this study postulates that perceived relative advantage and complexity are important antecedents of attitude towards the intention to adopt and implement green practices. This study attempts to monitor this relationship by discovering possible precursors of adoption by using the Extended Theory of Planned Behaviour. The majority of studies on green practices have focused on the Theory of Planned Behaviour (TPB) as a basis for their theoretical and conceptual framework to determine the latent construct of individual intention to behave (Chen & Tung, 2014; Han, Hsu, & Sheu, 2010; Han & Kim, 2010). The Diffusion of Innovation Theory (DOI) has been used as a basis to determine the adoption intention in individuals (Padel, 2001), in organic farming (Vaccaro, 2009), in green marketing (Janssen & Jager, 2002), in consumer behaviour (Rezai, Shamsudin, Mohamed, & Sook Ann, 2014), and in green supply chain management (Zhu, Sarkis, & Lai, 2007). The Theory of Planned Behaviour provides the basis for the theoretical framework of this study. This study attempts to explore the relationship between attitude and behaviour, norms and behaviour, and external variables and behaviour with the application of the Extended Theory of Planned Behaviour (ETPB). This is incorporated with the Perceived Innovation Characteristics in the Diffusion of Innovation (DOI) theory. A perceived innovation characteristic is considered in the model as an effort to better understand the behavioural intentions behind innovation adoption (Lim, 2009). Apart from the DOI, TPB was also integrated with the Theory of Acceptance Model (TAM) as proven by Casalo, Flavian and Guinaliu (2010), and Chen, Fan and Farn (2007).

3.0 Materials and Methods

This study used data collected from a survey, which was conducted from April 2012 until November 2012 among T&CH entrepreneurs registered under the National Pharmaceutical Control Bureau (NPCB), Malaysia. According to statistics updated by the National Pharmaceutical Control Bureau (NPCB) in 2012, there were approximately 431 T&CH entrepreneurs involved in the processing and distribution of products in Malaysia, and thus, census sampling was the most suitable method to use. The census sampling method is a data collection method which is based on the information gathered about every individual in a population. Some researchers think that the implementation of this sampling method involves high costs and is a time-consuming method of data collection. However, this method is suitable for application when the population is small and the researchers can include the entire population in the study. Zainuddin (2012) stated that census sampling can be used if specific constraints such as budget, time frame and the size of the population have been considered carefully.

In this study, follow-up calls were made twice to ensure that responses from an adequate number of respondents was obtained before the data was analysed. The distribution of questionnaires through postal mail was done in April 2012. A total of 60 questionnaires from a total of 431 originally sent out were initially returned. After follow-up calls in June 2012 and assistance from the chairman of the Traditional Malay Medicine Manufacturers Association (PURBATAMA) in Malaysia, the number of returned questionnaires eventually increased to 256. A Likert Scale of 1 to 7 (where '1' represented 'strongly disagree' and '7' represented 'strongly agree') was used to measure the T&CH entrepreneurs' perception and intention towards green technology practices. Descriptive analysis was used to summarise the socio-demographic data. Meanwhile, factor analysis was used to identify the underlying factors influencing their intention (subjective norms and perceived behavioural control) towards the implementation of green practices.

4.0 Results and Discussion

4.1 *Demographic profile of the respondents*

Table 1 shows the socio-economic profile of the respondents in this study. The respondents involved in this study constituted 50.4% female and 49.6% male respondents. These comprised the managing directors, senior managers and managers of specific departments. The majority of the respondents were aged between 25 and 34 years old. In terms of education level, 81.6% of the respondents possessed tertiary level education. As for type of company, most of the herbal-based entrepreneurs (63.7%) were registered as private limited companies, 19.5% were sole proprietors and 12.1% were in partnerships. A total of 33.6% of the respondents' companies were involved in international business collaborations. In terms of forecasted annual sales, 92 of these entrepreneurs had annual sales of less than RM250,000, 149 of the entrepreneurs' annual sales ranged from RM250,000 to RM10 million, 10 of the entrepreneurs' annual sales ranged from RM10 million to RM25 million and about 5 of these entrepreneurs had forecasted annual sales of more than RM25 million per year. The majority of the entrepreneurs were involved in manufacturing and marketing activities in traditional and complementary medicine industries in Malaysia and only a small number of the entrepreneurs offered Original Equipment Manufacturer (OEM) services in this industry.

Table 1: Socio-economic profile of the respondents (n =256)

Characteristic	Percentage	Characteristic	Percentage	Characteristic	Percentage
Gender		Types of Company		Size of Company	
Male	49.6	Sole Proprietorship	19.5	Micro (1-9 employees)	30.5
Female	50.4	Partnership	12.1	Small (10-49 employees)	47.3
		Private Limited Company	63.7	Medium (50-249 employees	21.5
Age		Limited Company	2.3	Large (More than 250 employees)	0.8
18-24	9.4	Others	2.3		
25-34	46.5			Level of Company	
35-44	25.8			National	66.4
45-54	13.3	Working Experience		Multinational	33.6
55-64	4.3	Below 2 years	27		
65 and older	0.8	More than 2 years but less than 5 years	33.2	Position	
		More than 5 years but less than 10 years	28.1	Managing Director	14.8
Education level		More than 10 years but less than 20 years	10.2	General Manager	4.3
Primary	3.9	More than 20 years	1.6	Senior Manager	5.9
Secondary School	14.5			Manager	55.9
College/ University	81.6	Annual Sales Revenue		Production/ Marketing Manager	19.1
		Less than RM250,000	35.9		
		Between RM250,000 and RM 10 million	58.2		
		Between RM10 million and RM25 million	3.9		
		RM 25 million and above	2.0		

In this study, factor analysis was used to uncover the latent factors underlying the Traditional and Complementary Herbal-Based entrepreneurs' perception and intention to implement green practices and identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables. The results show five factor solutions with eigenvalues greater than 1.0 and the total variance explained was 67.949% of the total variance. KMO measure of sampling adequacy was 0.850 indicating sufficient inter-correlations while the Bartlett's Test of Sphericity was significant (Chi square=4621.588, p< 0.00). According to Tabachnick and Fidell (2001), 0.60 is the minimum value of a good factor analysis. The factor loadings ranged from 0.644 to 0.882 which achieved the required range as stated by Hair, Black, Babin and Anderson (2010). Six factors indicated the entrepreneurs' move towards green practices as shown in Table 3, namely perceived relative advantage, complexity, attitude, subjective norms, perceived behavioural control and intention. The variables of perceived innovation characteristics were categorised into two groups, which were perceived relative advantage and complexity.

Intention: This factor has a total variance of 17.488 percent and comprises seven sub-variables. The results show that the existence of intention will affect their behaviour towards green technology implementation. The results indicate that the attitude criteria of the T&CH

entrepreneurs is one of the most important factors that can motivate them to go green in their business practices.

Social Factor: This factor has a total variance of 15.525 percent and includes seven sub-variables. These are the particular attitudes towards the society and the business counterparts which have led the T&CH entrepreneur towards the implementation of green practices. Hence, the social factor is an important motivation for entrepreneurs in implementing green technology practices.

Attitude: This factor has a total variance of 11.923 percent and comprises six sub-variables.

Perceived Relative Advantage: This factor has a total variance of 9.191 percent with four sub-variables. Thus, the results show dominant innovation characteristics for T&CH entrepreneurs in Malaysia in adopting and implementing green technology practices.

Perceived Behavioural Control: The Perceived Behavioural Control (PBC), with a total variance of 8.175 percent, indicates T&CH entrepreneurs' perception of their ability to perform a particular behaviour (Ajzen, 2002). Controlling beliefs about the obstacles, limitations, requirements, and opportunities which may ease or complicate the execution of the behaviour in question shapes the perceived behavioural control of the entrepreneurs.

Complexity: This factor has a total variance of 5.647 percent and comprises two sub-variables. The results indicate the difficulty or ease of applying green practices.

The Cronbach's alpha scores in every construct show a value of more than 0.70, demonstrating high internal consistency. The intention to adopt green practices shows a high value of alpha at 0.929 and PBC shows the lowest alpha value at 0.759 as presented in Table 2.

Table 2: The results of the reliability test

	Cronbach's alpha score
Intention	0.941
Subjective Norm	0.916
Attitude	0.853
Perceived Relative Advantage	0.828
Perceived Behavioural Control	0.759
Complexity	0.779

Table 3: Summary of factor analysis results

Items	Factor Loading					
	F1	F2	F3	F4	F5	F6
Intention						
T7	.759					
INT8	.817					
INT9	.836					
INT10	.796					
INT11	.882					

INT12	.867					
INT13	.856					
Variance (% of variance explained)	17.488					
Items	Factor Loading					
	F1	F2	F3	F4	F5	F6
Subjective Norm						
SUB9		.755				
SUB10		.838				
SUB11		.853				
SUB12		.788				
SUB13		.785				
SUB14		.750				
SUB15		.713				
Variance (% of variance explained)		15.525				
Attitude						
ATT7			.704			
ATT8			.705			
ATT9			.769			
ATT10			.770			
ATT11			.690			
ATT12			.839			
Variance (% of variance explained)			11.923			
Perceived Innovation Characteristic1						
PRA1				.765		
PRA2				.788		
PRA3				.780		
PRA4				.831		
Variance (% of variance explained)				9.191		
Perceived Relative Advantage						
PBC1					.742	
PBC2					.819	
PBC3					.644	
PBC8					.724	
Variance (% of variance explained)					8.175	
Complexity						
COM1						.865
COM2						.783
Variance (% of variance explained)						5.647
Total percentage of variance						67.949

5.0 Conclusion

The overall findings show that there T&CH entrepreneurs have strong intention to implement green practices. The awareness of preserving natural heritage (through environmentally friendly business practices) and responsibility to the surrounding communities indicate that they have a positive response towards adopting the green technology concept in the near future. The three independent factors that affect the intention of the T&CH entrepreneurs to implement green technology practices are (1) knowledge and attitude (attitude of the

entrepreneurs towards green technology practices from the business performance perspective), (2) subjective norms (competitors, suppliers, employees, business counterparts in herbal-based industries, customers, and the surrounding communities as well as motivation factors to comply with green technology practices), and (3) perceived behavioural control (green manufacturing practices, green distributing practices, green transportation practices, green warehousing practices, and green technology benefits).

The results of the factor analysis in this study have shown all the factors that will influence the T&CH entrepreneurs' intention to implement green technology in their business practices. These include perceived relative advantage, complexity, attitude, subjective norms, perceived behavioural control, and intention towards the implementation of green practices. The entrepreneurs may begin to take the initiative to adopt green practices because they believe that this effort will have a positive impact on company performance through economic factors (Tzschentke, Kirk, & Lynch, 2008), profit balancing (Choi & Gray, 2008), customer pressure (Eltayeb & Zailani, 2009), and influence from the stakeholder (Lee, 2008; Setthasakko, 2007).

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