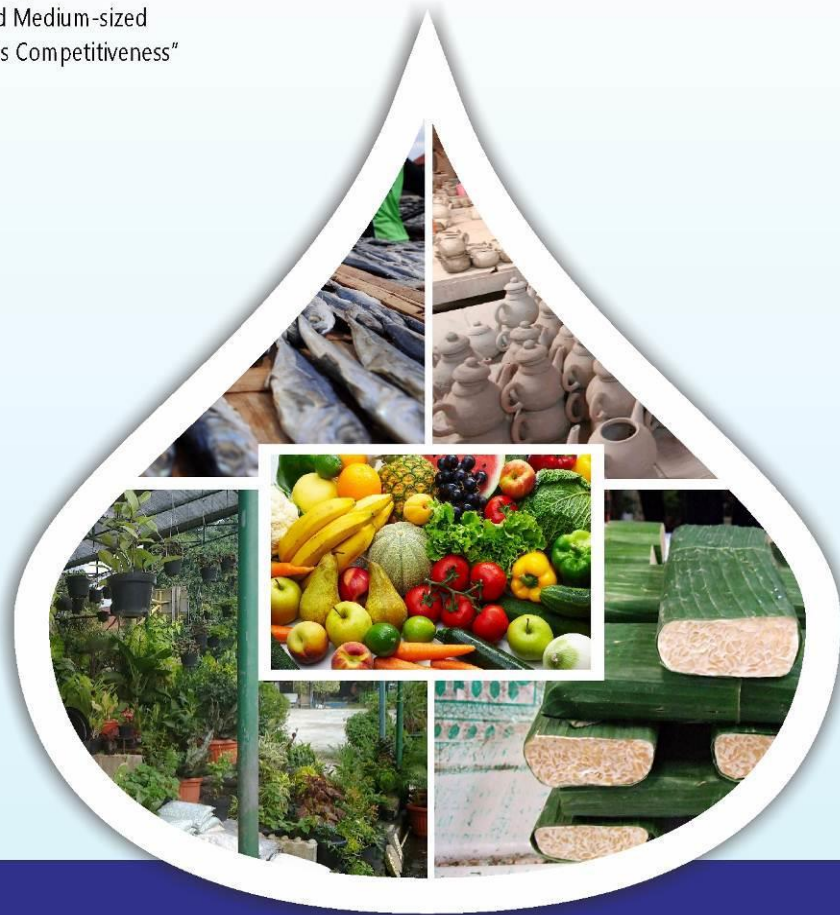




2016

"Small and Medium-sized
Enterprises Competitiveness"

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Agribusiness Development for Human Welfare



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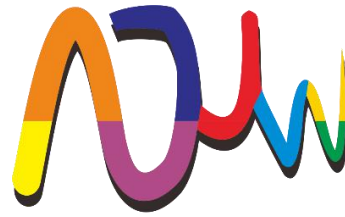
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AGRIBUSINESS
DEVELOPMENT FOR
HUMAN WELFARE

*“Small and Medium-sized
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EDITOR FOREWORD

The economic integrations by ASEAN certainly have given a major influence on Small and Medium-sized Enterprises (SMEs). Beside economic integration in the form of free trade area (FTA) that has been going on since the early 2000s, economic integration in the form of ASEAN Economic Community (AEC) has been ongoing since the beginning of 2016. Through this integration, SMEs have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market.

In order to explore ideas, concept, and innovations related to the competitiveness of SMEs, International Conference on Agribusiness Development for Human Welfare (ADHW 2016) was held in Yogyakarta on May 14, 2016. The conference organized by Department of Agribusiness Universitas Muhammadiyah Yogyakarta, in collaboration with Department of Agribusiness and Information System Universiti Putra Malaysia, Department of Agro-Industrial Technology Kasetsart University, Department of Agriculture Socio-Economics Universitas Gadjah Mada, Department of Agriculture Socio-Economics of Universitas Brawijaya, Indonesian Society of Agriculture Economics, Agribusiness Association of Indonesia. Hopefully proceedings of ADHW 2016 provide stimulus for increasing competitiveness of SMEs in ASEAN, especially in Indonesia.

Furthermore, we are grateful to Allah, the Sustainer of all word, who always makes it easy for our affairs. We would like to acknowledge with thanks to all the institution and individual who joined with resources and efforts in organizing the conference that resulted in the papers which are published in this proceeding. Special thanks to all authors and discussants who contributed with their intellectual capital and responded to our call papers. Thanks and acknowledgment are also due to all reviewers of the conference who helped in evaluating submitted papers; and to the members of the Organization Committee, who ensured smooth execution of the event.

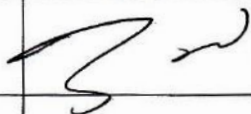
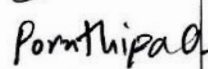

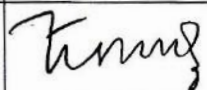
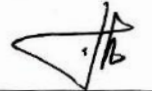
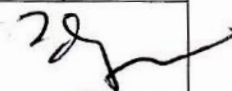
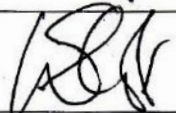
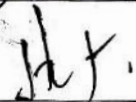
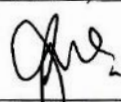

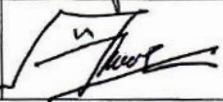
May 30, 2016

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PREFACE

Assalaamualaikum, Warahmatullaahi., Wabarakaatuh.
Dear Honorable Governor of Yogyakarta Special Province
Dear respectable Prof. Dr. Zainal Abidin Mohamed
Dear respectable Asist. Prof. Pornthipa Ongkunaruk
Dear respectable Rector of UMY Prof. Dr. Bambang Cipto, MA.
Dear all invited Guests, Speakers, and Participants of International seminar of ADHW 2016.

Alhamdulillah, all praise be to the Almighty God, so that we can be gathering here today at Muhammadiyah University of Yogyakarta in order to attend the Conference on Agribusiness Development for Human Welfare (ADHW) 2016.

Ladies and Gentlemen,

On behalf of the committee, I would like to say welcome to this International Conference on ADHW 2016 and thank you for attending our invitation.

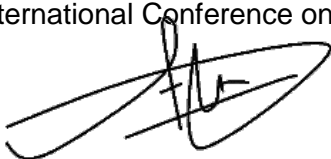
Especially, we are grateful to invited speakers, Prof. Zainal Abidin Mohamed and Asist. Prof. Pornthipa Ongkunaruk, for their willingness to share information and thoughts in this conference. As a bit report, that this conference has been attended by 85 speakers coming from five countries.

This conference entitled "Small and Medium-sized Enterprise Competitiveness". ASEAN Economic Community is the largest economic integration that is going to be implemented at the beginning of 2016 (December 31, 2015). Through this integration, SMEs will have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market. We expect that this seminar is capable of producing thoughts building SMEs within ASEAN, especially Indonesia, to face the free trade.

This event can be done by support and efforts from all sides. Therefore, I would like to say thank you to all committee members having worked hard to conduct this event. We, as the organizer committee, do apologize when there is a shortage in conducting this event.

Wassalamualaikum, Warahmatullaahi., Wabarakaatuh.

Chairman
International Conference on ADHW 2016



Dr. Aris Slamet Widodo, SP., MSc.

WORDS OF WELCOME

Assalamu'alaikum warahmatullahi wabarakatuh

Alhamdulillah, all praise be to Allah SWT, who has given us His blessings so that this International Seminar of Agribusiness Development for Human Welfare (ADHW) 2016 entitled "Small and Medium-sized Enterprises Competitiveness" can be conducted. This International Conference is held in cooperation among Agribusiness Study Program of Muhammadiyah University of Yogyakarta with Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), and Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB).

Countries of ASEAN members like Indonesia, Malaysia, and Thailand have more than 90% Small and Medium-sized Enterprises (SMEs). In general, SMEs play important role in economic developments such as in terms of employment, added value, improve foreign exchange, and economic growth. For Indonesia, the role of SMEs is limited to employment and added value, while the foreign exchange from SMEs is still low. According to the General Director of SMEs of Industrial Ministry, in 2013 the total SMEs being able to pass through export market is just under 5 percent. For that required many breakthrough and innovation so that the role of SMEs becomes real economic development, especially in Indonesia, and generally in ASEAN countries.

On behalf of Agribusiness Department of Universitas Muhammadiyah Yogyakarta, we would like to express our gratitude Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB) for all supports, sponsors, and all committee members having worked so hard that this International Conference can be conducted.

Hopefully, these synergies coming from various parties can provide contribution for developing SMEs in Indonesia and other ASEAN countries as well.

Wassalamu'alaikum warahmatullahi wabarakatuh

Head of Agribusiness Department
Universitas Muhammadiyah Yogyakarta



Ir. Eni Istiyanti, MP.



Gubernur

Daerah Istimewa Yogyakarta

Sambutan

KONFERENSI INTERNASIONAL

“AGRIBUSINESS DEVELOPMENT FOR HUMAN WELFARE”

Yogyakarta, 14 Mei 2016

Assalamu'alaikum Wr. Wb.

Salam sejahtera untuk kita semua.

Yang Saya hormati :

- Rektor Universitas Muhammadiyah Yogyakarta;
- Para Narasumber;
- Hadirin dan Para Peserta yang berbahagia,

Puji dan syukur marilah kita panjatkan kehadirat Allah SWT karena hanya atas limpahan rahmat serta karunia-Nya, kita dapat hadir pada kesempatan acara **Konferensi Internasional “Agribusiness Development For Human Welfare”** ini dalam keadaan sehat wal’afiat.

Pada kesempatan kali ini, secara ringkas Saya akan menyampaikan mengenai industri kecil menengah nasional yang menjadi tema pada pembukaan Seminar Internasional “Agribusiness Development For Human Welfare” ini.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Berdasarkan data BPS, pertumbuhan industri pengolahan nonmigas pada tahun 2015 secara kumulatif sebesar 5,04%; lebih tinggi dari pertumbuhan ekonomi (PDB) pada periode yang sama sebesar 4,79%. Pada periode Januari-Desember 2015, nilai ekspor produk industri pengolahan nonmigas mencapai USD 106,63 Milyar, dan nilai impor mencapai USD 108,95 milyar, sehingga neraca perdagangan industri pengolahan nonmigas pada periode yang sama sebesar USD 2,32 milyar (neraca defisit).

Usaha pemerintah untuk memperkecil defisit di atas, salah satunya dengan cara memberdayakan Industri Kecil dan Menengah (IKM) yang merupakan bagian penting dalam perkembangan industri nasional. Sampai saat ini, Industri Kecil dan Menengah

telah berkontribusi sebesar 34,82% terhadap pertumbuhan industri pengolahan nonmigas secara keseluruhan.

Angka ini dapat tercapai karena dukungan lebih kurang 3,6 juta unit usaha, yang merupakan 90 persen dari total unit usaha industri nasional. Jumlah unit usaha tersebut telah mampu menyerap tenaga kerja sebesar 8,7 juta orang, yang tentunya berdampak pada meningkatnya ekonomi nasional serta mengurangi kemiskinan.

Industri Kecil dan Menengah (IKM) memiliki peran yang strategis dalam perekonomian nasional. Hal ini sejalan dengan Visi Pemerintah dalam Rencana Pembangunan Nasional Jangka Menengah (RPJMN) 2015-2019 yaitu *“Terwujudnya Indonesia yang berdaulat, mandiri, dan berkepribadian berlandaskan gotong royong”*.

Untuk lebih meningkatkan peran tersebut, Penumbuhan dan Pengembangan Industri Kecil dan Menengah diarahkan untuk memiliki tujuan jangka menengah guna mewujudkan industri kecil dan industri menengah yang berdaya saing, berperan signifikan dalam penguatan struktur industri nasional, pengentasan kemiskinan dan perluasan kesempatan kerja, serta menghasilkan barang dan/atau jasa Industri untuk keperluan ekspor.

Hadirin dan Saudara-saudara sekalian,

Awal tahun ini, kita telah memasuki era Masyarakat Ekonomi ASEAN (MEA). Dengan demikian, perekonomian nasional akan langsung bersaing dengan para pelaku pasar di kawasan ASEAN. Produk dan jasa termasuk investasi negara-negara anggota telah bebas memasuki pasar di kawasan ASEAN.

Dalam rangka menghadapi hal tersebut, Pemerintah mengambil langkah-langkah strategis berupa peningkatan daya saing industri dan mendorong investasi di sektor industri; di mana peningkatan daya saing industri itu sendiri dilakukan melalui penguatan struktur industri dengan melengkapi struktur industri yang masih kosong serta menyiapkan strategi ofensif dan defensif dalam akses pasar.

Pemerintah telah melakukan Penguatan Sektor IKM dengan strategi ofensif dan defensifnya melalui beberapa program pelaksanaan, diantaranya antara lain: Penumbuhan Wirausaha Baru; Pengembangan IKM melalui Pengembangan Produk IKM serta Peningkatan Kemampuan Sentra dan UPT; Pemberian Bantuan Mesin dan Peralatan Produksi; Perluasan Akses Pasar melalui Promosi dan Pameran; Fasilitasi Pendaftaran Hak Kekayaan Intelektual; Fasilitasi Sertifikasi Mutu Produk dan Kemasan; serta Fasilitasi Pembiayaan melalui Skema Kredit Usaha Rakyat (KUR).

Saya berharap agar berbagai program-program pemerintah tersebut dapat didukung secara sinergis oleh seluruh komponen masyarakat. Untuk itu, Saya berpesan kepada Saudara-saudara sekalian agar semua program pemerintah dalam bidang

Industri, khususnya dalam program pemberdayaan Industri Kecil dan Menengah, didukung dengan sepenuh hati, agar dapat lebih bermanfaat bagi masyarakat dalam rangka pengembangan industri kecil menengah.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Demikian beberapa hal yang dapat Saya sampaikan. Akhirnya dengan memohon ridho Allah Subhanahu Wata'ala, seraya mengucap "*Bismilahirrahmanirrahim*", **Konferensi Internasional "Agribusiness Development For Human Welfare"** dengan ini secara resmi Saya nyatakan dibuka. Semoga Allah SWT memberikan petunjuk, bimbingan, perlindungan dan kemudahan dalam setiap langkah dan upaya kita. Amien.

Sekian dan terima kasih.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 14 Mei 2016
GUBERNUR
DAERAH ISTIMEWA YOGYAKARTA



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CONSUMERS' INTENTION TO PURCHASE GENETICALLY-MODIFIED SOYBEAN PRODUCTS IN MALAYSIA

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ABSTRACT

In this study, the main objective is to determine the consumers' intention to buy the GM soybean products in Malaysia. In order to analyze the consumer intention, the theory of Planned Behavioral Model (hereafter TPB) is employed and a survey with 215 respondents was conducted in Klang Valley, Malaysia. Firstly, the factor analysis is used to identify the possible variables influence the consumers' intention to purchase the GM soybean product. Furthermore, the logistic regression is employed to examine the significant relationship between the influence factors to the consumers' intention to buy. In this study, the result shows that there are 4 main factors that will influence the acceptance of consumer toward GM soybean products which are consumer awareness, perceive values, knowledge and subjective norms. Furthermore, the factor score for these four identified factors are applied into the binary logistic regression and to examine the significant factors influence the probability of consumer's intention on purchase the GM soybean products. The binary logistic result shows that consumers' positive awareness, perceive values, and gender have statistically significant at 5% significance level. This indicates that there is enough statistical evidence to support that the consumers' intention to purchase the GM soybean products can be influenced by the three important factors, i.e. consumers' positive awareness; positive perceive values on the GM products, and the respondents' gender.

Keywords: Genetic Modified, Soybean products, Consumers' intention, Malaysia

INTRODUCTION

Soybean is a famous oilseed crop and it is widely used by the world population. This commodity can be processed into so many different types of products whether processed in food products such as soy milk, soy vegetable oil, tofu, soy sauce, *tempeh*, and etc. or non-food products like livestock feed. In the recent decades, soybean is mainly produced by the top five countries, namely United States, Brazil, Argentina, China, and India. Based on the United States Department of Agriculture, these top five

countries were contributed about 89% of the international soybean production in 2014, i.e. 34% from United States, 30% from Brazil, 18% from Argentina, 4% from China, and 3% from India, respectively. Due to the international higher demand for soybean, the international total exported soybean in 2014 was recorded about 117.4 million metric tonnes. However, this number of exported soybean is mainly contributed by United States, Brazil, and Argentina which are the top three exporters in the world soybean market and consists of 41%, 39%, and 7% of the total market share, respectively.³

³ See world soybean production 2014, SoyStats (2015) and downloadable from

<http://soystats.com/international-world-soybean-production/>

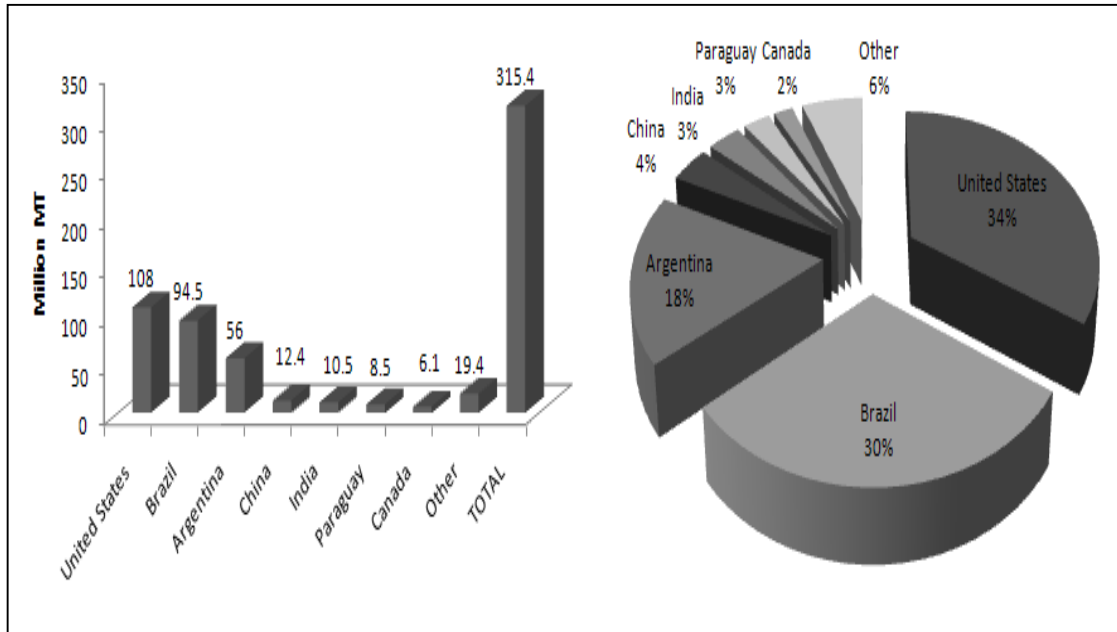


Figure 1 World Soybean Production 2014

Source: SoyStats (2015)

In 90s, the cultivation of genetically modified (hereafter, GM) crops is booming across the world and there are more than 80-fold of crops are under the GM in 1996 (Fatima et al., 2011). Since 1994, the first GM soybean was approved by the United States Department of Agriculture. After few decades, there are about 99% of all GM cultivars planted in worldwide is in GM soybean, cotton, and corn (James, 2009). Besides that, about 77% of the worldwide soybean planted area is regarded to GM soybean and only 23% is planted with non-GM. As a top three soybean exporters in the international market, i.e. United States, Brazil, and Argentina are also become as the world leaders in using GM seeds.⁴This shows that the GM cultivation is widely acceptable by the producers and farmers.

Malaysia is one of the soybean imported country and used it to produce as soybean based food product, animal feed and other raw material. According to

Tosiah, A. (2005), there are some of the soybeans products are contained GM traits and are sold commercially in the market. However, there are not all of the consumers are aware about this phenomenon because there are no transparency information put on the soybean products' label. In 2014, there are 3.8 million tonnes of corn, 1.4 tonnes of soybean meal and 577 thousand tonnes of soybean are imported by Malaysia. However, these imported crops have high percentage of genetically engineered (GE) content and only 90 thousand tonnes of imported soybeans were identity-preserved non-GE soybeans.⁵In 2010, the first imported GM soybean in Malaysia approved by Ministry of Natural Resources and Environment Malaysia is Roundup Ready Soybean from Monsanto Company, United States. After few years, there are increased to six types of different GM soybeans are imported to Malaysia as shows in Table 1.

⁴ According to Fatima et al. (2011), the GM seed market was contributed about US\$ 10.5 billion per annum to the world agriculture sectors.

⁵ Malaysia agricultural biotechnology annual report (2013). Downloadable from:

http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Biotechnology%20Annual_Kuala%20Lumpur_Malaysia_7-10-2015.pdf

According to Bashir I. (2013), there are two important information founds in his study: (i) not 100% of consumers have enough knowledge and be aware of GM products in Malaysia, and (ii) although 67% are aware of GM products, but this don't represent that the consumer can identify which product is from GM. As a consumer, there have a right to know the sources of the products' ingredient.

However, there is lack of information share from producer to their consumer. Even the GE food and ingredient labeling regulation was to take effect on 8th July 2014 in Malaysia, but, it was still not being implemented yet.⁶ In addition, there are no official announcements from the Ministry of Health Malaysia about the labeling issues.

Table 1 Varieties of GM Soybean Imported to Malaysia

Variety	Date and Year of approval	Company
Roundup Ready soybean	25 May 2010	Monsanto Company
Herbicide Tolerant soybean	28 Mar. 2012	Bayer Co (Malaysia) Sdn Bhd.
Roundup Ready2 Yield soybean	27 Nov. 2012	Monsanto Company
Imidazolinone Tolerant CV127 soybean	23 Oct. 2013	BASF (Malaysia) Sdn Bhd.
Glufosinate Tolerant/LibertyLink® soybean	11 Feb. 2014	Bayer Co (Malaysia) Sdn Bhd.
Glyphosate and Isoxaflutole Tolerant FG72	19 Dec. 2014	Bayer Co (Malaysia) Sdn Bhd.

Sources: Ministry of Natural Resources and Environment, Department of Biosafety⁷

The argument about the safety consume of GM product is a main issues to show that the acceptance level on the demand side is need to be re-clarified. Based on the ideal of food security and researcher suggestions, the GM crops are

claimed as an important product to produce and to support the current situation of increasing of world population, i.e. "feed the world" or "feed the hungry world". However, food is not just produce to eat but must also be safe. There are

⁶ Ministry of Health Malaysia was published the new "Guidelines for the labeling of foods and food ingredients obtained through modern biotechnology" in April 2013. This document is downloadable from: http://fsq.moh.gov.my/v5/images/filepicker_use

[rs/5ec35272cb-78/Perundangan/Garispanduan/Pelabelan/GUIDE-LINES-ON-LABELLING-OF-FOODS-AND-FOOD-INGREDIENTS-PRODUCED-FROM-MODERN-BIOTECHNOLOGY_%2012042013-p.pdf](http://www.biosafety.nre.gov.my/rs/5ec35272cb-78/Perundangan/Garispanduan/Pelabelan/GUIDE-LINES-ON-LABELLING-OF-FOODS-AND-FOOD-INGREDIENTS-PRODUCED-FROM-MODERN-BIOTECHNOLOGY_%2012042013-p.pdf)

⁷ See also <http://www.biosafety.nre.gov.my/>

some scientific evidences are found in the previous literatures which is the GM food have a risk to harmful the human body system and it is possible not safe to consume. For example, the GM food has a possibility cause to the human heavier uteri and higher rate of severe stomach inflammation (Carman, et al. 2013). Hence, consumer may not accept the GM product if the scientists proven is known by consumer. At the meantime, this also indicates that the consumer right is not protected in the market. In order to increase the consumer awareness on GM soybean products, the significant determinant factors must be identify.

In the nutshell, there are structure changed in Malaysia's soybean products processing channel and there are few companies are imported the GM soybean to produce food, feed and other processing purpose. However, not all the consumers are aware that soybean product is processed from imported GM soybean. The lack of information sharing to the consumer indicates that the transparency of food safety in Malaysia soybean product is needed to pay more attention. Increase of consumer awareness can force the supplier to share the information and protect the consumer right to purchase or not to purchase.

Besides that, the acceptance level of consumer on GM soybean products is needed to identify. To identify the consumer's intention to purchase GM soybean product is important. Because the producers are possible to facing the market losses if the consumers are not accept the GM product. Hence, the motivation of this study is aim to investigate the consumer intention to buy GM soybean products in Malaysia.

METHOD

In this study, we aim to investigate the consumer's intention to purchase the GM soybean products. Based on the literature reviews, the theory of Planned Behavior (TPB) proposed by Ajzen, I and Fishbein, M. (1980) is a usual method applied in the previous studies to examine the consumer intention and consumer behavior on food consumption (see Magnusson, et al., 2001; Chung, et al., 2010; Rezai, et al., 2011; Wu and Chen, 2014; Tarkiainen, A. and Sundqvist, S. 2015; and etc.). Therefore, the conceptual framework for the consumer intention to buy GM soybean products is developed based on the TPB and show in the Figure 2.

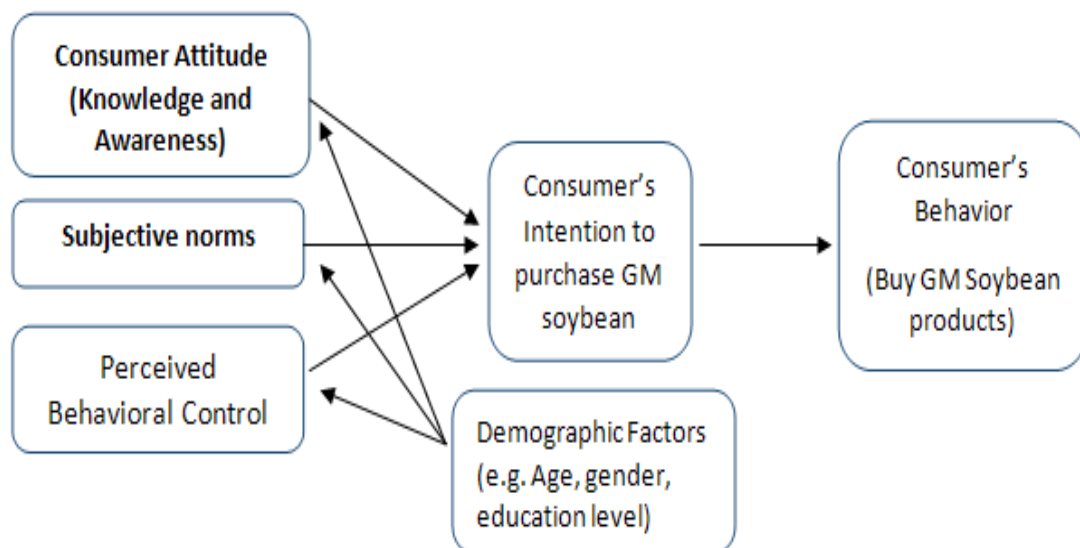


Figure 2: Conceptual Framework of the TPB Applied to GM Soybean Products Consumption in Malaysia

Sources: Modified from Ajzen, I. and Fishbein, M. (1980)

Based on the TPB, the consumer's intention is determined by four main factors which are consumer attitude, subjective norms, and perceived value. Theory planned behavior is used as a basis of the conceptual framework for the study to give a better understanding of the human behavior that will predict deliberate behavior, because behavior can be deliberate and planned (Ajzen, I. 1991). The model argues that human action is affected by 3 belief that is behavioral belief, normative belief and control belief. Behavioral belief is an individual's belief about the result of the behavior and creates the individual attitude toward it. Normative belief is referring to the individual's perception of how other will judge a particular behavior and produces subjective norms.

Control belief refer to how an individual perception control her or she over the behavior, this is connected to perceived behavioral control. (Ajzen, I. 1991). This perception is control by related factors that may facilitate or impede the performance of the behavior and depend on whether the individual perceives the behavior as easy or difficult to perform (Ajzen, I. 2005). Theory Planned Behavior also shows that behavioral intention that predicts if an individual will perform a behavior, and it can be predicted by the attitudes, subjective norm, and perceived behavior control. In brief, if the person is more favorable the person's attitude and perceived behavior control about the behavior and the more favorable the subjective norms, the stronger the person's intention toward the behavior; the stronger the person's intention, the more likely he or she will perform the behavior. (Ajzen, I. 1991).

Data Collection

This study used data collected from a survey which was carried out in July to September 2015 in Klang Valley. A total of 450 respondents is collected through the random sampling method and face-to-face interview at 10 local authority are Kuala Lumpur, MP Klang, MP kajang, MP Subang Jaya, MP Petaling Jaya, MP Selayang, MP Shah Alam, MP Ampang

Jaya, Putrajaya and MP Sepang. This area is chosen because it has the highest population in Malaysia that is 5.7 Million in 2015. The primary data obtained through the questionnaires will be first transform into a suitable form of data through few steps such as coding, inputting data, editing and dealing with missing data. In this study, Statistical Package for Social Science (SPSS) is the statistical software use to analyze the collected data.

Factor Analysis

Factor analysis is a statistical method that can be used to analyze the pattern of correlation within a set of observed variables by identifying latent variables or factors. Besides that, factors analysis is usually hired to reduce the number of factors from a large number of measured variables. A large number of variables will be grouped into a group of variables with common factor or characteristic.

Factor analysis involves in three steps in correlation matrix and used to generate all the variables. A correlation matrix is rectangular array of the correlation coefficient of the variable. Next, it extracts a set of initial factors from correlation matrix that produce from first step. Each of the variable will produces one component and is extracted from principal component analysis. Even though the analysis yields a lot of factors, the small factor loading that are less than 0.6 will be dropped. Therefore, a set of factor will be produce with the best line combination of variable that will produce more the variance in the data as a whole. Variable reduction purposes come from the basic form of model:

$$Y = b_1X_1 + b_2X_2 + \dots + b_nX_n$$

where

Y = Linear combination of principal component or principal factor

b_1, b_2, \dots, b_n = Coefficient

X_1, X_2, \dots, X_n = Variable that are highly correlated with each other

Lastly, is to rotate the retained factors. The initial factors are hard to interpret. Thus, varimax rotation is used to rotate the initial factors to produce a solution that is more meaningful and easier to be interpreted.

Logistic regression

In this study, the dependent variable is the consumer intention to buy the GM soybean product (CIGM). This variable is measure by the binary value, CIGM = 1 if the respondents intent to purchase GM soybean products and 0 if the respondents not intent to buy.

Based on the theoretical framework justified at the previous section, the consumer intention is determined by five independent variables, i.e. consumer awareness (CAGM), consumer perceive value on GM soybean product (CPGM), knowledge about GM soybean product (CKGM), subjective norms (SNGM), and the demographic variables (Z). Hence, the logistic regression is re-write as:

$$\text{Logit (CIGM)} = \beta_1 + \beta_2 \text{ CAGM} + \beta_3 \text{ CPGM} + \beta_4 \text{ CKGM} + \beta_5 \text{ SNGM} + \beta_6 \text{ Z} + \varepsilon(1)$$

where

$$\text{Logit (CIGM)} = \text{natural log (odds)}$$

$$= \ln \left(\frac{P_i}{1-P_i} \right)$$

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ =estimated coefficients for independent variables

ε = stochastic term.

RESULT AND DISCUSSION

In this study, respondent have to answer 34questions, which were on 5-point Likert scale from strongly disagree to strongly agree. Table 2 is the result of Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Bartlett’s test of Sphericity for the data collected from the market survey. These two tests were first formed on all the statements to confirm the appropriateness of conduction factor analysis (Tabachnick and Fidell, 2007). In this study, the result of the KMO test showed the value of 0.897, indicating that the distinct and reliable factors is produced in this collected sampling. Besides that, the Bartlett’s Test showed

that the estimated data is adequacy (p-value less than 0.05) and this Bartlett’s test also confirm that the collected data sampling has patterned relationships amongst the variables.

Table 2 Kaiser-Meyer-Olkin and Bartlett’s test of Sphericity

KMO and Bartlett’s Test	
Kaiser-Meyer-Olkin Measure of sampling Adequacy	0.897
Barlett’s Test of Sphericity (χ^2)	2185.705
df	171
P-value	0.000

After the varimax rotation of the consumer’s response of the 19 statements relating to their knowledge, perceive values, awareness and subjective norms to accept genetic modified soybean, the factor loading from the principal component factor analysis was obtained. From the result of the rotated matrix, only items with a factor loading of at least 0.6 and above are considered significant items.

Table 3 shows the summarized result from factor analysis. The results show that four latent factors which influence the consumers’ acceptance toward genetic modified soybean products were identified. The factors were named based on the sub-variables that were found in each factors. Consumer’s awareness (F1), perception value (F2), knowledge (F3) and subjective norms (F4) which accounted for 65.699% of the total variance. The factor loading for four factors is from 0.632 to 0.866.

Consumer awareness to purchase GM is the first factor that influenced consumers’ intent to buy GM soybean with highest total variance of 37.205%. The positive awareness will affect the acceptance of consumer toward GM soybean. This shows that consumer will accept GM soybean if they have positive awareness on GM soybean products.

The second factor that influence consumer acceptance toward GM

soybean products is their perceive values. This factor explained 15.208% of the total variance. As long as GM is safe to consume, they will accept GM soybean products.

The third factor is knowledge. Knowledge is another factor that will influence their acceptance toward GM soybean products. The consumer knowledge had 7.266 % total variance. This means that knowledge of GM is important to accept GM soybean products. The last factor is subjective norms. Subjective norms or social influence of consumer will affect their acceptance toward GM soybean

products. The total variance explains for this factor is 6.019% of total variance. Thus, this means that external factor will also influence the acceptance of consumer toward GM soybean products.

The Cronbach's alpha value is determined by the reliability tests for consumers' knowledge, perceives value, awareness and subjective norms question. The total Cronbach's alpha for the consumers' knowledge, perceive values, awareness and subjective norms is 0.88. This showed that there was consistency among the theory planned or question and the model is fit for this study.

Table 3 Summary of the Factor Analysis Results

Items	Factor Loading			
	F1	F2	F3	F4
Consumer Awareness				
I will purchase GM soybean product because its quality is better than the ordinary soybean product	0.812			
I am not worry about GM soybean product because it safe	0.780			
I would buy genetic modified food/soybean products if it taste better	0.758			
I will purchase GM soybean product because it can reduce the food shortage problem	0.719			
I will purchase GM soybean product because it is no different from the ordinary soybean product	0.718			
I would buy genetic modified food/soybean if it is grown in more environment friendly way than ordinary food	0.677			
I would buy genetic modified food/soybean if it cheaper than ordinary food	0.660			
Variance (% explained)	37.205			
Consumer Perceived Value				
I think GM product is acceptable in the era		0.843		
GM soybean product or other plant based GM is appropriate to be use to created food product		0.767		
I think GM soybean is safe to consume		0.763		
I think GM soybean products can solve soybean production shortage problem		0.673		
As a consumer, I have no comment on GM soybean as long as the food product is confirmed safety to consume		0.667		
I think GM soybean is the environmentally friendly crops.		0.632		
Variance (% explained)		15.208		
Consumer Knowledge				
I have explore a lot of information about the GM food			0.866	
I can explain to other person about what is GM food			0.845	
I understand what is genetic modified (GM) mean			0.833	
I know how to differentiate the nature food with genetic modified food			0.767	
Variance (% explained)			7.266	
Subjective norms/Social Norms				
Most of the people in Malaysia do not know about GM soybean				0.767
Most of my friends think that GM Soybean is safety to consume				0.699
Variance (% explained)				6.019
Total % of variance				65.699

Binary Logistic regression

In this study, the Binary logistic model was used to examine the significant relationship between estimated factors

with the consumer's intention to purchase the GM soybean products. The estimated result for the binary logistic regression is summarized in the table 4. The dependent

variable is the consumer intention on acceptance the GM soybean product and it's recorded as ordinary data. The consumer intention to purchase is proxy by a dummy variable which 1 is refer to who are answer "yes" and intending to accept genetic modified soybean products and 0 for otherwise. The binary logistic result shows that there three independent variables (consumer's awareness, consumer perceive value, and gender) are statistically significant to determine the consumer's acceptance level on the GM soybean products.

Table 4 Estimated Logistic models for Consumers' acceptance toward genetic modified soybean products

Variables	Estimated Coefficient	SE	Significant level	Exp (b)
Awareness	1.163***	0.226	0.000	3.202
Perceive Value	1.293***	0.237	0.000	3.642
Knowledge	-0.286	0.199	0.152	.752
Subjective norms	0.163	0.185	0.378	1.177
Gender	-0.072**	0.357	0.049	.496
Age	-0.187	0.184	0.308	.826
Education level	-0.199	0.318	0.531	.820
Constants	0.329**	0.138	0.017	1.389
Diagnostic Test				
-2log likelihood	206.366 ^a			
Cox and Snell R square	.330			
Nagelkerke R square	.443			
Hosmer and Leme shows test	.484			

Notes: ***, and ** denotes as statically significant at 1% significance level and 5% significance level, respectively.^arepresent a maximum likelihood estimation.

The estimated logistic result shows that the awareness of consumer is an important positive factor to determine the consumer intention to buy the GM soybean product. The estimated coefficient shows positive value of 1.163 and significant at 1% significance level. Besides that, the estimated exponent coefficient for the awareness is 3.202 which indicates that the respondent who have positive awareness then the respondent will more intent to buy the GM soybean product with 3.202 times more

intent to buy GM soybean products than consumers' who do not accept the GM soybean.

Consumer perceives value toward GM products also an important factor that influences the intention of consumers to purchase the GM soybean products. The estimated consumer perception coefficient show positive value in 1.293 and statistically significant at 1% significance level. This illustrated that we have enough evidence to reject the null hypothesis and conclude that the consumer who have good perception on GM products will have higher intention to accept the GM soybean products. The estimated exponent coefficient for the consumer perceives value is 3.642, indicating that the consumers who have positive perceives values on the GM products will show 3.642 times more intent to buy the GM soybean products than the consumers' who are have negative perceives value on GM food products.

Furthermore, the third important factor determine the consumer intention to purchase GM soybean food product is gender. Gender play an important role in determines the consumer's intention toward GM soybean products. In this logistic regression, the gender is a proxy by a dummy variable. If the respondent is male then will give a record of "1" and "0" is represent the female. In table 4, the estimated coefficient for gender is -0.072 and it is statistically significant at 5% significance level. It means that male is more willing to accept GM soybean products compare to female. This may due to increase of awareness of GM among male than female. Besides that, the result also shows that the male will give 0.496 times more intent to purchase the GM soybean products than the female consumer.

Based on the Table 4, the other determinant variables are not statistically significant to determine the consumer intention to buy the GM soybean food products, namely knowledge on the GM products, subjective norm, age of consumer, and their education level. Since, the p-value for these four variables

is greater than 0.1 or 10% significance level. Hence, we have no enough statistical evidence to support that these variables are important to influence the consumer intention to buy the GM soybean food products.

CONCLUSION

In this study, we aims to investigate the factor influence the consumer intention to purchase GM soybean products. Based on the factor analysis, there are 4 main factors will influence the acceptance of consumer toward GM soybean products which are consumer awareness, perceives value, knowledge and subjective norms. Furthermore, the factor score for these four variables are applied into the binary logistic regression and to examine the significant factors influence the probability of consumer's intent to purchase the GM soybean products. The binary logistic result shows that consumers' awareness, perceives value, and the respondents' gender have statistically significant at 5% significance level. This indicates that there is enough statistical evidence to support that the consumers' intention to purchase the GM soybean products can be influenced by the three important factors, i.e. consumers' positive awareness; positive perceives value on the GM products, and the gender.

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Discussion from Parallel Session

PAPER TITLE	Consumers' intention to Purchase Genetically- Modified Soybean Products in Malaysia
AUTHOR	Welson Chin Vui Son, Kelly Wong Kai Seng, and Juwaidah Sharifuddin
DISCUSSION	
QUESTION	- Why knowledge is not a significant factor for consumer to purchase GM Soybean product
ANSWER	- Knowledge beat awareness the more aware the consumers are the more it is influence their decision to buy the product
SUGGESTION	<ul style="list-style-type: none"> - Explain more about possitive awareness because the variable it seem to me, more rely on consumer's perception - Choose the participants who have perfect knowledge for future.



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