

## CONSUMERS' PERCEPTION AND ACCEPTANCE OF FRESH AGRICULTURE PRODUCT PURCHASED THROUGH E-BUSINESS

Suhana Safari\*  
Nik Rozana Nik Mohd Masdek

### ABSTRACT

*Agriculture e-business can be viewed as trading models of buying and selling of agriculture produce through electronic means. e-Business has the potential to reduce transaction costs, improve market access, and information content of products. Generally, e-business is easy to use, and a cost-efficient system for consumers and firms. Malaysia can be considered to be at an early stage of development in online shopping, specifically in agriculture produce. Limited study has been undertaken in understanding consumers' behaviour and perception towards online shopping. Thus, this study was carried out to examine consumer perception and acceptance of e-business for agriculture produce in Malaysia. Results from the analysis found that most buyers are adult female users aged between 20 and 49 years, with a monthly income of RM1,001 to RM3,000. This group is more open to the idea of shopping for fresh produce online, and are more IT savvy. Most Malaysian users prefer to use online banking services rather than debit and credit cards. Meat and meat preparation, vegetables, and eggs are the top-most products consumed by internet users. The minimum amount spent is RM 50 and the maximum amount spent is RM500 per transaction. Bearing in mind that fresh agriculture produce is easily perishable and has a short shelf life, reliable transportation and logistics services are needed. The study also revealed that there is no significant relationship between female and male users in the level of satisfaction. It indicates that both users have an equal perception of all aspects of satisfaction. Furthermore, the study also shows a significant difference in gender preference whereby females prefer to purchase online when compared with their male counterparts. Overall, online shopping has the potential of becoming an alternative shopping channel in the future. Indirectly, it may also change Malaysian shopping trend from the conventional system to online retailing system.*

**Keywords:** e-business, e-commerce, fresh agriculture product, perception, acceptance, consumption, satisfaction, preference

---

\* Economic and Social Science Research Centre, Malaysian Agricultural Research and Development Institute (MARDI)  
e-mail : suhanasafari@mardi.gov.my

## INTRODUCTION

Application of electronic communications and computer technology (ICT) in agriculture has been brought up to date. It opens new opportunities in business, market, and in the supply chain as a whole. Borderless global business interaction through the internet between producers, vendors, and buyers is just a click away without vigorous procedures or documentations with valuable time being saved. Many terms are used in literature to describe the activities of ICT between organizations and their environments, including suppliers and customers. Basically, e-business, e-commerce, e-sourcing, and e-fulfilment are some of the commercial terms to be quoted. Generally, they refer to “doing business electronically” (Van der Vorst, Van Dongen, Nougier, & Hilhorst, 2002; Huff, Parent, Wade, Schneberger, & Newson, 2000). Archer and Yuan (2000) redefine “e-business” as technologies that provide effective and efficient ways through which corporate buyers can gather information rapidly about products and services. They can be used to evaluate the suppliers and negotiate with them, implement order fulfilment over communication links, and access post-sales services.

Penetrating into agriculture in the 21st century, e-business gives advantages to improve the marketing and trading of products (Zheng, Wu, Tian, & Zhang, 2009). It is practically similar in agriculture business, whereby the business is faced with changing into significant models of internet activities. Agriculture e-commerce is the kind of trading models whereby buying and selling of agriculture products and services are carried out electronically with the use of computer systems linked together over internet network protocols and standards (Folorunso, Longe, Akinde, & Ishola, 2004). Many theoretical benefits of e-commerce in agriculture have been identified, such as: the promotion of information flow, market transparency, and price discovery; facilitation of industry coordination; and reduction or elimination of transaction costs (Zheng et al., 2009). Molla (2007) also agrees that e-business has the potential to reduce transaction cost, improve market access, and the information content of products. In general, e-business seems to be easy to use, and a cost-efficient system for consumers and firms.

Malaysia can be considered to be at an early stage of development in online shopping, since little is known about consumer attitudes toward adopting this new shopping channel and about the factors that influence these attitudes (Eastlick & Lotz, 1999). This is especially true in the Malaysian market scenario whereby limited study has been undertaken in understanding consumers' behaviour and perceptions toward online shopping. Since e-business is still at an infant stage, consumers are less familiar and are often sceptical about it. Therefore, this study was carried out to examine consumer perceptions and acceptance of e-business for agriculture produce. It specifically focused on the Malaysian internet market of fresh agricultural product. Attention is given for fresh agricultural product: vegetables, fruits, meat and meat preparations, fish and seafood products, flowers, and eggs.

### **e-Commerce Readiness in Malaysia**

Internet is an interconnected network, which allows the usage of almost all computers worldwide by using the same standard protocol via dedicated routers and servers. It is available to be used, 24 hours a day, 7 days a week, 365 days a year, everywhere and anywhere. The arrival of the commercial use of internet and its World Wide Web (www) has been defining new e-commerce since 1993 (Zwass, 1996). With the emergence of the internet and World Wide Web as a medium for commercial transactions, it has thrust e-commerce into the spotlight. The internet has dramatically shrunk the distance between producers and consumers, who can make their purchases directly without involving the “middle man” such as retailers, wholesalers, and distributors (Khatibi, Haque, & Karim, 2006).

According to the Internet Statistic Live (2015), there are 3 billion internet users worldwide or about 40% of the world population until December 30, 2014. The main users are from China, United States of America, India, and Japan while Malaysia is ranked 124 among 198 countries in the world. Malaysian internet users are currently totalling more than 600,000, which constitute 2.24% of the total population in 2014 (nearly 30 million people). The internet usage in Malaysia has been steadily growing with an annual increment of 1.58%. In total, it contributes around 0.02% additional growth to the world internet users.

Internet had been introduced in Malaysia in 1990 by the sole Internet Service Provider (ISP) JARING, which had later been taken over by a subsidiary company of Telekom Malaysia Berhad called TMNET in 1996 (Hasan, 1997, as cited in Khatibi et al., 2006). Currently, it is still a broadband champion in leading integrated ICT by providing the fastest and latest speed of internet access in Malaysia. The expected growth in e-business is due to a rapid rise in the number of personal computers (PC) in Malaysia, as well as to the growing proportion of PCs hooked up to the internet each year (Khatibi et al., 2006). This provides greater opportunities for Malaysian retailers or individuals to conduct online businesses or to shop online. According to a survey conducted by the Companies Commission of Malaysia (CCM), there are 616 registered companies and 19,198 sole proprietorship entrepreneurs currently doing online businesses in the country. The trend is going up and the younger generation is identified as being most fascinated by it. This is prevalent in the study carried out by the Malaysian Communication and Multimedia Corporation (MCMC), which indicates that 34% of Malaysian internet users have used it for conducting business transactions, including selling and buying.

According to the Internet Users Survey (2012) carried out by MCMC with 6,144 respondents from all over Malaysia, the users were predominantly young men ranging from 20 to 49 years of age, earning a monthly income of RM 1,000 to RM 3,000 and had at least a primary educational background. They contributed 58.3% more than women respondents (42.7%), in spending time using the internet. The result showed that technology is most important with today's younger generation and this has become a new life trend. The conurbation area of the Klang Valley had been identified as having the highest usage of the technology, when compared with other states. It consisted of Selangor (24.5%)

and Kuala Lumpur (11.5%). Johor was a distant second with 12.2% users while other states had shares below 10%. The same report conducted in 2008 by MCMC revealed that the two main reasons that the users went online were to get information (94.4%) and to communicate (84.7%). This was followed by educational purposes (64.5%) and for leisure (63.5%). Only 31.8% performed internet banking while 29.2% accessed public service websites, with only 19.8% doing e-government transactions. Online stock trading drew the least with 5.9% users reporting its usage.

### **Online Grocery Shopping Availability in Malaysia**

Electronic retailing over the internet or online shopping first started in 1994 (Hsin, 2000). It is considered as one form of direct consumer marketing of non-store retailing using online channels. In Malaysia, the trend began significantly in early 2000 with limited product offers in the online market. However, e-business is not completely new; the online transaction has already been in use for two decades (Van der Vorst et al., 2002). Meanwhile, online business for fresh agricultural product has also entered the scenario. Currently, in Malaysia, eight traders or providers have been identified that are active on the internet selling fresh goods. Among these are: Tesco Online, RedTick, Presto, Food World, Grocer Express, Bonfischen Seafood Market, Fresh, and Green Cart Chicken. As an example, Presto Grocer is a Malaysian-based supermarket chain located in the Klang Valley, which offers the experience of online shopping of fresh agriculture product to its customers. Presto Grocer delivers selected pre-ordered fresh product to homes and offices in most areas in the Klang Valley. The mode of transaction for fresh production line shopping is the same with many other online shopping whereby customers will need to browse their website, select their preferred groceries, and choose when they would like them to be delivered and how to pay for them. The process is considered easy and hassle-free.

However, it is quite clear that most of these online grocery shopping providers can only entertain residents and workers of the Klang Valley area and several other big cities in Peninsular Malaysia. Costs of operation, logistics, losses, and quality are among the concerns if the online shopping for fresh product were to be made available throughout the country. In other words, the supply chain management will need certain transformations to satisfy the e-shopping process and also to satisfy customer needs.

### **Linking e-Business with Supply Chain Management**

Supply chain management is a term used to denote the integration of the physical distribution activities to effectively integrate purchasing and supply with other functions in the firm. In other words, supply chain management represents the management of two-way movement and coordination or relationship of goods, services, finances, and information along the supply chain from the raw material until it finally reaches the consumers. With the current phenomena and proliferation of e-businesses, e-retailing and e-transactions, certain transformations may be needed to manage the supply chain effectively. The application of the internet and other IT requirements is a must in agricultural e-businesses.

Reliable transportation and logistics services are equally important, bearing in mind that fresh agriculture products are easily perishable. A recent study suggests that strategic collaboration with supply chain partners and information technology alignment will enhance value creation for customers (Kim, Cavusgil, & Cavusgil, 2013). There will be a need for an integrated ICT to cater to selling and buying over the internet, a need to collaborate with finance vendors to facilitate online payments, and the need to cooperate with logistics firms to preserve freshness of the transported goods. Managing the supply chain as well as managing consumer's perceptions towards the online shopping experience is crucial to ensure their acceptance and satisfaction of fresh product online shopping.

## **RESEARCH METHODOLOGY**

A survey was conducted to obtain data and information. A stratified random sampling was selected for this study. The target group was focused only for experienced internet users of online shopping and more specifically for their purchase of fresh agriculture product in Malaysia. A structured questionnaire with closed and open-ended questions had been used. A set of questionnaire was incorporated through an electronic survey or a web-based survey. The survey was developed in collaboration with the Division of Management Information System MARDI. The development of the web-based survey was based on standard coding – Language Hypertext Markup (HTML). The system enables automatic responses to be made directly to the central database, which would verify a respondent's answer and would be able to eliminate transcription errors while preventing alteration of responses (Andrews, Nonnecke, & Preece, 2003). In addition, controlled questions could be used in the web-based system and would simultaneously be able to sort out only potential respondents who had the experience and were eligible to answer the questionnaire.

### **Statistical Analysis**

The collected data were coded and analyzed by using the Statistical Package for Social Sciences (SPSS). Frequency Distribution Analysis was used to determine a demographic profile of the survey. It was also used to determine the preferred fresh agriculture product bought by the respondents, methods of payment utilized, and the expenses by the users for online shopping.

The cross-tab and chi-square test were also used to examine the relationship between male and female shoppers on the level of satisfaction of the online shopping for fresh product and the services provided. Finally, the Independent Samples T-test was used to compare differences of means between female and male users in the spending for the most fresh agriculture product.

## RESULTS

### Demographic Profile

Of the 741 respondents involved in the survey, only 586 had experience in online shopping. The rest (155) did not have this knowledge, but were frequently using the internet. From the experienced category, 23% or 129 users had experience in online fresh agriculture product and were the sampling number of the study. A majority of non-experienced users did not try to shop online because of their fear of being cheated by the seller (57%) or were unsure of the security of the internet services (33%).

The demographic profile in Table 1 shows that 55.8% of the respondents were female while 44.2% of the respondents were male. About 76.7% of the respondents had graduated with a higher education of at least a diploma. A majority of the respondents (44.2%) fell within the age range of 30-39 years. This was followed by 30.2% of those from the 20-29 years of age. Some 25.3% of the respondents were more than 40 years old. Almost 80% of the respondents were working: 41% from the public sector, 28% from private sector, and 11% were self-employed. The income distribution of the respondents was almost equally represented. A majority (42.3%) were wage earners with monthly income ranging from RM1001 to RM3000.

**Table 1: Demographic Profile**

<b>Respondent</b>	<b>Category</b>	<b>N</b>	<b>Percentage</b>
<b>Gender</b>	Male	57	44.2
	Female	72	55.8
<b>Age</b>	Below 20 years	3	2.3
	20–29 years	39	30.2
	30–39 years	57	44.2
	40–49 years	12	9.3
	Above 50 years	18	14.0
<b>Occupation</b>	Public sector	53	41.1
	Private sector	36	27.9
	Self-employed	14	10.9
	Others	26	20.1
<b>Education Level</b>	College and University	99	76.7
	Secondary school and lower	30	23.4
<b>Household Income</b>	<RM1000	11	8.5
	RM1001– RM3000	55	42.3
	>RM5001	28	21.5

### Fresh Agriculture Product Consumption

A Frequency Distribution Analysis was used to determine the different methods of payment that were used in making online purchases. Table 2 depicted that a majority of the consumers used online banking (42.6%) to make their payments for their purchases. Credit cards and debit cards shared the same percentage of about 21% indicating that both were of equal importance. Cash on delivery carried a small percentage of 16.6%, specifying that it was less used in making online purchases of agriculture produce.

**Table 2: Method of Payment**

Method of Payment	Frequency	Percentage
Credit Cards	27	20.8
Debit Cards	26	20.0
Online Banking	55	42.6
Cash on Delivery (C.O.D.)	21	16.6
<b>TOTAL</b>	<b>129</b>	<b>100</b>

The results in Table 3 show that meat and meat preparation products (21.0%) were the highest amount of fresh products bought by online shoppers. No details on the types of meat were available, but in terms of its preparations, it would either be in the fresh or frozen forms. Vegetables and eggs shared the same percentage, which was 19.7% followed by fish and seafood products (17.2%) and fruits (15.3%). The small percentage (7.0%) for fresh flowers indicated that this product was less in demand from the online shoppers. In this analysis, the total number of responses was greater than the designated sampling (129) because of the multiple choice that could be made by respondents.

**Table 3: Types of Fresh Agriculture Product**

Fresh Product	Frequency	Percentage
Vegetables	31	19.7
Fruits	24	15.3
Meat and Meat Preparations	33	21.0
Fish and Seafood Products	27	17.3
Flowers	11	7.0
Eggs	31	19.7
<b>TOTAL</b>	<b>157</b>	<b>100</b>

The minimum amount spent by online shoppers for fresh product at less than RM50 made up 36.4% of the respondents, while the maximum amount recorded at more than RM500 made up 6.8%, as shown in Table 4. Most of the transactions (39%) were for expenses between RM50 and RM100, exclusive of delivery costs. There were different sets of delivery charges depending on the service providers, such as a flat rate per delivery or even free delivery for certain amount of orders.



**Table 4: Average Transaction Expenses**

<b>Transaction</b>	<b>Frequency</b>	<b>Percentage</b>
Less than RM 50 (minimum)	43	36.4
RM50 – RM100	46	39.0
RM101 – RM200	14	11.9
RM201 – RM500	7	5.9
More than RM500 (maximum)	8	6.8
<b>TOTAL</b>	<b>118</b>	<b>100</b>

### Online Consumer's Satisfaction

A Crosstab analysis was used to determine the relationship between male and female online shoppers and the level of satisfaction for the services offered. Table 5 shows that 96.2% of the total respondents were satisfied with the overall services in online shopping. This was represented by 41.9% of male users and 54.3% female users. Factors listed were product specifications, quality, price, and delivery service. The Pearson chi-square results indicated that the level of satisfaction was not significantly different between females and males for online shopping of fresh agriculture product in all the factors involved ( $\alpha=0.05$ ). Nevertheless, a small response, specifically among male users (2.3%) indicated non-satisfaction with the purchase of online fresh products. Even if there was no statistically significant difference between these two groups, most of the responses from unsatisfied users disclosed that this came about by the physical conditions of goods received that were not fresh and already wilted, which subsequently caused the quality of the product to deteriorate. It was also noted that 1.5% of the remaining users (female respondents) had to put up with late delivery of their purchases. Fresh products are perishable and have a short shelf life. Therefore, they require dedicated logistic systems, air conditioning, and suitable packaging to maintain freshness and quality. Facilities of vehicles and delivery time will also affect the quality indirectly. Thus, the right selection of timing and method of delivery are important to avoid losses.

**Table 5: Online Shopping Satisfaction Level among Females and Males**

<b>Factors</b>	<b>Male</b>		<b>Female</b>		<b>Pearson chi-square *</b>	<b>Significance (p) **</b>
	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>		
Product Specifications	39.5	4.7	52.7	2.2	1.099	0.294
Quality	42.6	1.6	54.3	1.6	0.057	0.812
Price	42.6	1.6	52.7	3.1	0.301	0.584
Delivery Service	43.4	0.8	55.0	0.8	0.028	0.870
Overall Service	41.9	2.3	54.3	1.6	0.986	0.805

\*2 cells (50.0%) have expected count less than 5. Computed only for 2x2 table

\*\*Significant level at 0.05



### Online Consumer's Preference

A mean value analysis was used to identify and examine the relationship between female and male users in spending for the products in fresh agriculture product. The result of a t-test analysis as shown in Table 6 shows that there was a significant difference ( $p=0.039$ ) in the means between female and male users on purchasing online fresh agriculture product. The difference between means was 0.55 with a p-value of less than 0.05. Inspection of the two group means indicated that the female group (3.81) was more prone toward the purchase of online fresh product when compared with the male group (3.26).

**Table 6: Comparison of Male and Female Online Users on Purchasing Fresh Agriculture Product**

Variable	Mean	Std Deviation	T-test	df	p
Online spending for fresh agriculture product			-2.082	127	0.039
Males	3.26	1.370			
Females	3.81	1.544			

### DISCUSSION

The aims of this study were to determine and understand the characteristics of the Malaysian online shopping of fresh agriculture product and their relationship with demographic variables and other relevant consumer behavioural patterns. In profiling demographic characteristics, the study has revealed that most buyers are from adult female users aged between 20 and 49 years, who earned a monthly income of RM1,001 to RM3,000. Age-wise, it is not surprising that young adults make up the highest percentage of online shoppers. They are more open to the idea of shopping for fresh product online, and are more IT savvy in browsing for their needed items when compared with the older generation. The latter still prefer to shop traditionally in stores where they can observe, feel, touch, and smell the product tangibly.

In making the payment for online fresh agriculture purchases, most users prefer to use online banking services rather than debit and credit cards. However, the cash on delivery option is an alternative for online transactions and security. Meat and meat preparation products are the fresh product purchased by online users. Meat characteristics such as durability and freshness in the delivery process may be preferred. They have longer shelf-life expectancy than other fresh products. Vegetables and eggs are the second options followed by other products such as fruits, fish and seafood, and fresh flowers. To minimize the losses in agriculture produce, a dedicated logistic system delivery management is important. This is where an efficient supply chain management plays an important role. A cold truck and appropriate packaging must be used for fresh agriculture product to maintain its freshness and shelf life. The fresh logistics provider should design an efficient

delivery system to avoid traffic congestions, particularly in urban areas. The study has also revealed the amount spent by online users for fresh product. The minimum amount is at RM50 and the maximum amount is less than RM500 per transaction. The expense excludes delivery charges, which are normally not more than RM15 per delivery. There are online companies offering free delivery services if the purchases exceed a certain amount, which most probably has been covered by their profits as well as transportation cost.

The results also show that there is no significant relationship between female and male users in the level of satisfaction in shopping online for fresh product. This indicates that both users have an equal perception of all aspects of satisfaction, which include product classification, quality, price, delivery service, and the overall service in their online shopping. As a user, these criteria are a normal aspect in buying goods either in the conventional way or through the online system. Finally, this study has found that there is a significant difference in the gender categories for users in spending the most for products in fresh agriculture product. The result shows that more of the female group preferred to purchase online fresh agriculture produce when compared with the male group. Undeniably, women in Malaysia still practise the traditional cultural value where women are expected to hold the responsibility of doing the household chores such as cooking, cleaning, washing, and child-caring. Thus, when it comes to buying groceries or fresh product intended for the family's meals, the tasks are still mostly done by women, whether at the market or via online.

## **CONCLUSION**

It is concluded that fresh agriculture online shopping in Malaysia may still be in its infant stage. However, the general acceptance from consumers using the facility is positive. The trend is going up and has a potential impact on businesses. This new emerging concept of retailing has captured the interest of many parties, retailers, and businesses, financial institutions, telecommunication service providers, the government, and many more. This study has managed to identify and understand the characteristics of online shoppers in Malaysia. Online shopping has the potential of becoming an alternative shopping channel and not least for the fresh agriculture product. All these will come about, provided that an efficient and proper supply chain management, especially in terms of IT integration and alignment, payment arrangements, and of course the crucial logistics are enhanced to ensure a smooth transaction of fresh agriculture product from the premises to the consumers' doorsteps. All in all, this new phenomenon of shopping online may change the shopping trend in the near future, which cannot be easily challenged by the conventional retailing method.

## References

- Archer, N., & Yuan, Y. (2000). Managing business-to-business relationships throughout the e-commerce procurement life cycle. *Internet Research*, 10(5), 385-395.
- Andrews, D., Nonnecke, B., & Preece, J. (2003). Electronic survey methodology: A case study in reaching hard-to-involve Internet users. *International Journal of Human-computer Interaction*, 16(2), 185-210.
- Eastlick, M. A., & Lotz, S. (1999). Profiling potential adopters and non-adopters of an interactive electronic shopping medium. *International Journal of Retail & Distribution Management*, 27(6), 9-19.
- Folorunso, O., Longe, H. O. D., Akinde, A. D., & Ishola, K. A. (2004). A framework for establishing agriculture e-commerce. Agric-ECRC: Resource Centre, Nigeria. *J. Comp. Sci. Applic*, 10, 141-149.
- Internet Users Survey (2012). *Statistical Brief Number Fifteen*. Malaysia : Malaysian Communication and Multimedia Corporation.
- Huff, S. L., Parent, M., Wade, M., Schneberger, S., & Newson, P. (2000). *Cases in Electronic Commerce*. McGraw-Hill Higher Education.
- Hsin, T.H. (2000). Online shopping: A fad or a revolution. *Journal of Social Sciences*, 13(1-3), 25.
- Internet Statistic Live (2015). Retrieved 12 Feb 2015, from [www.internetlivestats.com/internet-users/](http://www.internetlivestats.com/internet-users/).
- Kim, D., Cavusgil, S. T., & Cavusgil, E. (2013). Does IT alignment between supply chain partners enhance customer value creation? An empirical investigation. *Industrial Marketing Management*, 42(6), 880-889.
- Khatibi, A., Haque, A., & Karim, K. (2006). E-commerce: A study on internet shopping in Malaysia. *Journal of Applied Sciences*, 6, 696-705.
- Molla, A. (2007). Exploring the space and practice of e-business in the fair trade supply chain. In *Proc. of 9th Int'l Conf. on Social Implications of Computers in Developing Countries, São Paulo, Brazil*.
- Van der Vorst, J. G., Van Dongen, S., Nougquier, S., & Hilhorst, R. (2002). E-business initiatives in food supply chains. Definition and typology of electronic business models. *International Journal of Logistics*, 5(2), 119-138.
- Zheng, X., Wu, C., Tian, D., & Zhang, X. (2009). B2B e-marketplace adoption in agriculture. *Journal of Software*, 4(3), 232-239.
- Zwass, V. (1996). Electronic commerce: Structures and issues. *International Journal of Electronic Commerce*, 3-23.