



UNIVERSITI PUTRA MALAYSIA

***FACTORS INFLUENCING INTENTION TO IMPLEMENT URBAN
AGRICULTURE AMONG CITY DWELLERS***

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AGRICULTURE AMONG CITY DWELLERS**

By

NUR DALINNA IBRAHIM

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia
in Fulfilment of the Requirements for the Degree of Master of Science**

November 2017

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DEDICATION

This is for my family..



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Master of Science

FACTORS INFLUENCING INTENTION TO IMPLEMENT URBAN AGRICULTURE AMONG CITY DWELLERS

By

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November 2017

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The economic transition from agricultural based to industrial based experienced by Malaysia has led to urbanization. Urbanization has put greater pressure on various resources such as residential availability, high cost of living, transportation, social amenities and food security. Those who live in urban areas have a limited source of food as food basically is produced in the rural areas and it is not enough to support the whole population. As agricultural territories have been converted to cities, housing area and infrastructural development, this scenario has caused insufficient domestic production to meet the rising demand for many agricultural produce. Thus Malaysia is now experiencing the negative balance of trade for the past decades as the country relies on imported food. With the high urbanization rate in Malaysia, it is a positive anticipation for Malaysian especially, the city dwellers to engage in urban agriculture. Moreover, urban agriculture may be lasting solution to the urgent need of addressing issues of urban food security, urban poverty as well as environmental protection. To drive the development of urban agriculture, there is a vital need to understand the acceptance of urban agriculture among the city dwellers. However at present, the information and study on urban agriculture in Malaysia is still limited since it is just developed. It very important to understand on city dwellers' intention towards urban agriculture thus the suitable factor can be derive before embarking any program and campaign on implementing urban agriculture.

In order to understand the factors that influence a city dweller's intention towards implementing urban agriculture, this study have taken data from 1365 respondents. It is used to address the objective of the study. The factor analysis showed that perceived value, perceived behaviour control, facilitating condition, subjective norm, attitude and perceived risk were the factors influencing a city dweller's intention towards urban aquaculture. More so, multiple regression analysis showed that

knowledge, perceived usefulness and perceived value were important factors in developing an attitude to adopt the urban agriculture while facilitating condition remained the bedrock of determining perceived behavioural control. Attitude, perceived behavioural control and subjective norm also have a positive relationship with the intention to implement urban agriculture. Based on chi-square analysis, demographic profile such as age, gender, occupation, marital status and income have significant relationships with the intention to implement urban agriculture among the city dwellers.

As conclusion, the study found out that interpersonal and external influences are significant to intention to adopt urban agriculture. It has also shown that respondents are reliance on their friends, family, colleagues or social media for information regarding urban agriculture. In other words, those who are important to them can influence their intention to adopt urban agriculture. It was also revealed that senior citizens who had retired and have high income showed more interest in urban agriculture than do the youngsters and unemployed person have low intention to adopt urban agriculture. With this result, it would lead the government agency and other parties to arranging suitable program on attracting city dwellers practicing urban agriculture. Besides that, exposure on the goodness of implementing urban agriculture and creating community garden surrounding the community area is one of method for city dwellers to perceive the goodness of adopting urban agriculture.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

FAKTOR MEMPENGARUHI KEINGINAN UNTUK MELAKSANAKAN PERTANIAN BANDAR DI KALANGAN WARGA KOTA

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Peralihan ekonomi daripada sektor pertanian ke sektor perindustrian yang dialami oleh Malaysia telah mendorong kepada urbanisasi. Urbanisasi telah memberikan tekanan terhadap sumber seperti keperluan tempat tinggal, kos sara hidup yang tinggi, keperluan pengangkutan, kemudahan sosial dan keselamatan makanan. Mereka yang tinggal di bandar terdedah kepada sumber makanan yang terhad memandangkan sumber makanan biasanya dihasilkan di kawasan luar bandar dan ianya tidak mencukupi untuk menampung keperluan warga kota. Dengan pengurangan kawasan pertanian akibat pembangunan kawasan perumahan dan pembangunan infrastruktur telah menyebabkan pengeluaran makanan dalam negara tidak mencukupi untuk menampung permintaan terhadap makanan yang semakin meningkat. Disebabkan itu, Malaysia kini terpaksa mengimport makanan dari luar dan akibatnya negara menanggung imbalan dagangan yang negatif selama beberapa dekad. Dengan kadar urbanisasi yang semakin tinggi saban tahun, pertanian bandar di lihat sebagai alternatif bagi warga kota mendapatkan bekalan makanan yang segar dan murah. Selain itu, pertanian bandar merupakan jawapan bagi menangani isu keselamatan makanan di bandar, mengatasi kemiskinan bandar kerana warga kota dapat menjual hasil-hasil mereka serta memelihara alam sekitar. Bagi memacu pembangunan pertanian bandar, terdapat keperluan untuk memahami dan mengetahui penerimaan pertanian bandar di kalangan warga kota. Walau bagaimanapun, maklumat dan kajian mengenai pertanian bandar di Malaysia masih terhad memandangkan ianya baru dibangunkan. Sehubungan itu, sangat penting untuk memahami dan memperolehi faktor yang mendorong keinginan warga kota untuk melaksanakan pertanian bandar sebelum sebarang program dan kempen berkaitan dilaksanakan.

Untuk memahami faktor-faktor yang mempengaruhi niat warga kota untuk melaksanakan pertanian bandar, kajian ini telah mendapatkan data dari 1,365 orang responden bagi memenuhi objektif kajian. Faktor analisis mengenalpasti faktor-faktor seperti nilai di lihat (perceived value), pemudahcara (facilitating condition), kawalan tingkah laku (perceived behaviour control), norma subjektif (subjective norm), risiko di lihat (perceived risk) dan sikap (attitude) merupakan faktor yang telah dikenalpasti dapat mempengaruhi keinginan warga kota melaksanakan pertanian bandar. Analisis regresi berganda menunjukkan bahawa pengetahuan (knowledge), manfaat yang di lihat (perceived usefulness) dan nilai yang di lihat (perceived value) adalah faktor penting dalam membangunkan sikap untuk melaksanakan pertanian bandar. Pemudahcara (facilitating condition) telah di kenal pasti sebagai konstruk yang berupaya menjadi landasan untuk menentukan kawalan tingkah laku (perceived behaviour control) dalam melaksanakan pertanian bandar. Sikap (attitude), norma subjektif (subjective norm) dan kawalan tingkah laku (perceived behaviour control) di lihat mempunyai hubungan positif dengan keinginan untuk melaksanakan pertanian bandar.

Berdasarkan analisis regresi berganda yang telah dijalankan telah menunjukkan bahawa pengetahuan (knowledge), manfaat yang di lihat (perceived usefulness) dan nilai yang di lihat (perceived value) adalah kepercayaan penting dalam membangunkan sikap (attitude) untuk menerima pertanian bandar. Selain itu, berdasarkan analisis chi-square yang dijalankan melalui kajian ini mendapati demografi profil seperti umur, jantina, pekerjaan, status perkahwinan dan pendapatan warga kota mempunyai hubungan yang signifikan dengan keinginan untuk melaksanakan pertanian bandar.

Sebagai kesimpulan, kajian mendapati bahawa pengaruh interpersonal dan luaran adalah penting untuk mempengaruhi warga kota mengamalkan pertanian bandar. Ia juga menunjukkan bahawa warga kota bergantung kepada rakan, keluarga, rakan sekerja dan media social untuk maklumat mengenai pertanian bandar. Dengan kata lain, mereka yang penting kepada warga kota boleh mempengaruhi niat mereka untuk mengamalkan pertanian bandar. Ia juga mendedahkan bahawa warga emas yang telah bersara serta mempunyai pendapatan yang tinggi menunjukkan lebih banyak minat dalam pertanian bandar berbanding anak-anak muda serta mereka yang tidak berkerja mempunyai keinginan yang rendah untuk melaksanakan pertanian bandar. Berdasarkan kajian ini, ia akan membantu agensi kerajaan dan pihak lain untuk mengatur program yang sesuai untuk menarik warga kota yang mengamalkan pertanian bandar. Di samping itu, pendedahan mengenai kebaikan melaksanakan pertanian bandar dan mewujudkan kebun komuniti merupakan salah satu kaedah untuk warga kota mengetahui kebaikan mengamalkan pertanian bandar.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

BOT	Balance of Trade
ETP	Economic Transformation Program
FAO	Food Agriculture Organization
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
NAFP	National Agro-food Policy
NAP	National Agriculture Policy
NGO	Non-Government Organization
NKEA	National Key Economic Area
RUAF	Resource Centre on Urban Agriculture and Food Security
UVPP	Urban Vegetables Promotion Project
IPM	Integrated Pest Management
IT	Information Technology
WAP	Wireless Application Protocol
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

This chapter will give an introduction to the background of food sector and urbanization in Malaysia followed by the background of urban agriculture, urban agriculture development in Malaysia and trends and current situation of urban agriculture. The problem statement and the objectives of study will be discussed. Finally, this chapter will discuss the significance of the study to stakeholders.

1.1 Background of Study

1.1.1 Food Sector and Urbanization in Malaysia

Malaysia has had a rapid development since independence in 1957. Even before independence, agriculture sector has been the heart of the nation's development and began as an activity in high densely populated areas. Agriculture plays an important role in Malaysia's development such as employment provider, food supplier, export earner and raw material provider for the agro based industries (Fatimah, 2007). For three decades after independence, agriculture sector was the main contributor to the national economy with more than 25 percent of total Gross Domestic Product (GDP) (Austin and Baharuddin, 2012).

In the 1980s, the country experienced economic transition from agriculture based to industrial based. This is due to the flexible policies set by the government in order to attract foreign investments into the country and phenomena of global development in multi sectors. Malaysia's manufacturing industry has grown rapidly and has large influence in the country's economy. This is proven by the inflow of Foreign Direct Investment (FDI) in GDP, in 1970s the FDI was only 2.2% and it increased dramatically in 1992 to 8.76% (Trading Economics, 2013).

The development of the industrial sector has created the growth of new towns and migration of rural dwellers to the industrialized areas. The employment opportunities and better incentives in manufacturing and industrial sectors had encouraged the young population to migrate to urban areas and leaving old folks to take care of the agriculture sector (EPU, 2013). Beside migration, urbanization has led to a change in status from suburban to become urban area as development takes place. For example, Mak Mandin in Pulau Pinang is one of the suburban in the past but now has become an urban area by itself.

According to Department of Statistics (2011), urbanization is defined as a process in which an increasing proportion of the entire population lives in cities. Based on the last Population and Housing Census of Malaysia conducted by Department of Statistic (DOS), the level of urban population has grown dramatically from the year 1980 to 2010. As shown in Table 1.1 where the share of urban population in Malaysia grew from 34.2 percent in 1980 to 71 percent in 2010 (DOS, 2013).

Table 1.1 : Level of Urban Population, Malaysia

Year	Proportion of population in urban areas (percent)
1980	34.2
1991	50.7
2000	61.2
2010	71.0

(Source: DOS, 2011)

The level of urbanization by state showed Wilayah Persekutuan Kuala Lumpur and Wilayah Persekutuan Putrajaya have 100 percent level in urbanization, this was followed by Selangor and Pulau Pinang with 91.4 percent and 90.8 percent respectively. While state with lower urbanization levels were Kelantan (42.4%), Pahang (50.5%) and Perlis (51.4%) (DOS, 2011).



Figure 1.1 : Level of Urbanization by State, Malaysia, 2010

(Source: DOS, 2011)

Urbanization is a crucial factor in the country's economic health. Urbanization brings higher productivity due to multiple facilities available in the city such as basic amenities, access to education, health and social services. It brings a good sign of development and economy growth for the country. However, urbanization also leads to environmental degradation, insufficiency of agriculture areas and ever increasing demand for food (Asiama, 2005).

On the other hand, as the numbers of population increase over the years, Malaysia is facing scarcity of food supply where food production area is expected to decline from 922,000 hectares in 2010 to 841,000 hectares in 2020 (MOA, 2010). There are several factors that cause deficiency of food in a developing country which include high rates of population, change in consumer income and shifts in food consumption. To ensure sufficient food supply to the country, Malaysia has become a net food importer and confronted an annual percentage growth in the cost of food and beverages (Asgari & Yuan, 2007). Table 1.2 shows the Balance of Trade (BOT) on food from 2000-2015 showing an increasing trend over the years (DOS, 2016). The import value for food increased significantly from RM 11.3 billion (2000) to RM 45.3 billion (2015). Even though the total export bill is expanding gradually from RM 6.5 billion (2000) to RM 27.3 billion (2015), the BOT are still negative (DOS, 2016). This shows that this country is highly relying on food importation.

Table 1.2 : Statistics of External Trade, Import and Export of Food, 2000-2015

Year	Exports (MYR Million)	Imports (MYR Million)	Balance of Trade (MYR Million)
2000	6,470.3	11,393.1	-4,922.8
2001	6,581.3	12,277.0	-5,695.7
2002	7,477.0	12,439.4	-4,962.4
2003	8,424.0	12,727.6	-4,303.6
2004	10,026.4	16,482.1	-6,455.7
2005	10,754.9	17,780.2	-7,025.3
2006	11,481.5	19,967.9	-8,486.4
2007	13,850.5	23,415.9	-9,565.4
2008	17,851.7	27,969.3	-10,117.6
2009	15,790.7	26,732.1	-10,941.4
2010	18,167.4	30,252.8	-12,085.4
2011	20,561.5	34,491.9	-13,930.4
2012	20,691.9	36,090.5	-15,398.6
2013	22,100.5	38,857.4	-16,756.9
2014	25,646.7	42,642.6	-16,995.9
2015	27,369.9	45,343.5	-17,973.6

(Source: DOS, 2016)

With dependence on imported food, Malaysia is highly exposed to external forces such as rising food prices and volatile supply of food in the international market. This condition is further worsened by the adverse climate conditions, natural disasters and trade policies (Rabiul, 2012). Therefore consumers have no choice but to buy food at high prices. In many cities of developing countries, inhabitants spend 50 per cent of their income in order to afford healthy food (Maxwell, 2008). Furthermore, the increasing cost of imported food might bring about a foreign exchange gap (Ghazali *et al.*, 2007). It is crucial for a country with high population growth rates to reduce the dependence on imported food and to fill the gap between consumption and production in order to enhance food sufficiency and food security (Zulkifly *et al.*, 1986).

According to Food and Agriculture Organization (FAO), the World Food Summit of 1996 defined food security as a situation, when everyone has physical and economic access to sufficient, safe and nutritious food that meets their need at all times as well for an active and healthy life. It includes three essential elements: food availability, food access and food use. Food availability refers to the sufficient quantities of food that are available and consistent while food access includes having sufficient resources to obtain appropriate and balanced nutritious diet. In addition, food use refers to appropriate use of food based on knowledge of basic nutrition and care. Food insecurity happens when there is not enough food supplies or when people is unable to fulfilling their food requirement. Generally, people are liable to food insecurity because of challenges related to urbanization such as poverty, unemployment and unequal distribution of income.

Due to high import demand, declining food production and food insecurity, programmes and policies were formulated by the government to transform agro-food to become more dynamic. Food security has been in the forefront of Malaysia's policy making and strategic planning. It has been put in place for government to guarantee food supply. This can be seen through the number of policies that have been developed by the government. Food security has been highlighted as one of the main objective of the Third National Agriculture Policy (1998-2010) (MOA, 2010). NAP3 emphasized on agricultural transformation from a commodity-based to production of agricultural products, based on market demand, potential and consumer preferences.

The National Physical Plan (2010) (NPP) also stressed on national food security focusing on protecting the existing farm areas and enlarged prime agriculture land. Meanwhile in the National Agro-food Policy (2011-2020), government has given high priority to food security again where it has been stressed on the objective and strategic direction (MOA, 2013). Ministry of Agriculture (MOA) has planned and implementing various efforts to ensure food supply sufficiency. To further signal the significance of food security for the country, the agriculture sector has been given prominences as one of the National Key Economic Areas (NKEA) under Malaysia's Economic Transformation Programme (ETP) 2014.

In order to tackle the menace of food scarcity, urban agriculture would be one way to achieve sustainable urbanization and food security. Urban agriculture has been acknowledged as a tool for sustainability because it has potential to provide food. It also can be an important medium for continuous food supply, community development and improve the management of the urban environment (Pete *et. al*, 2010).

1.1.2 Urban Agriculture

Urban Agriculture is defined as an activity that produces, processes and markets food and other products, on land and water in urban and peri-urban areas by applying intensive production methods, and (re) using natural resources and urban wastes, to yield a diversity of crops and livestock's (FAO, 2012). Mougeot (2000) defined urban agriculture as an industry located within or on the fringe of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, (re)using of human and material resources, products and services found in and around that urban area, and in turn supplying human and materials resources, products and service largely to that urban area.

In addition, Resource Centre on Urban Agriculture and Food Security (RUAF) (2013) defined urban agriculture as the growing of plants and the raising of animals for food and other uses within and around cities and towns, and related activities such as the production and delivery of inputs, and the processing and marketing of products. Urban Agriculture is located within or on the fringe of a city and comprises of a variety of production systems, ranging from subsistence production and processing at household level to fully commercialized agriculture (RUAF, 2013).

The idea of growing food in cities is not a new one. It has been practiced long before the century by ancient city like Babylon. They had their hanging gardens and farms in or in the neighbourhood of urban areas. Meanwhile, during World War II, there was a place called Victory Garden where they planted vegetables, fruits and herb gardens at private residences and public parks in the United States. They utilized this area to reduce pressure on the public food supply (Job, 2013).

Urban agriculture is widespread in cities of low income countries, but western cities have the potential to increase space for food production especially in underused areas (Surya, 2008). *Through urban agriculture, farmers are creatively transforming small lots and roof areas into productive space. The term of urban agriculture in aimed at multiple approaches such as ground farming, rooftop farming, integrated farming, hydroponics and netted structures to produce food* (AbdulRazak, 2013). Due to limited spaces in urban area, maximizing crop production per unit is an important issue. The use of technologies such as integrated farming, production of food crops under controlled environment, biotech plant material and organic farming

have been adopted in urban agriculture. Today, the temperate crops which can only be planted in the highlands in the past now can be successfully grown in the lowlands under rain shelter (Abdul Razak, 2013).

In Vancouver, The Vancouver Fairmont Waterfront Hotel is taking unique and environmentally sustainable approach to the food products they serve in their hotel by producing a number of items including vegetables, fruit, herbs and organic honey on their rooftop. This roof garden demonstrates what can be done with unused spaces. The technology can save their expenses by reducing the amount of food to purchase and encourage green finger to stay fit and healthy through gardening (Richard, 2013).

Among others, Dares Salam has a successful urban agriculture. It started in 1999 through Urban Vegetable Promotion Project (UVPP) conducted by Ministry of Agriculture and Co-operatives. The objective of this project was to introduce a strategy of survival for the unemployed, the low wage earners, and women without sufficient skills to secure well-paid jobs. As a result, urban agriculture was chosen by a large number of residents, because it can offer employment, income and food security for the urban farmers and their families (Dongus, 2014). In Dares Salam, urban agriculture includes rearing of livestock (chicken and cattle), cultivation of fruit trees as well vegetable production. Most vegetable productions in the urban areas take place in home garden or on open space and it was practised throughout the whole city area. The major part of vegetables grown in home gardens is consumed by the gardeners themselves, their relatives and neighbours, whereas only few of these vegetables are sold (Teuta, 2011).

According to Ministry of Agriculture, Forestry and Fisheries (MAFF) Japan (2010), urban farming are most productive in terms of economic value of production per area and revenue. In terms of revenue per farmer, urban agriculture is two times more profitable than intermountain agriculture and around 10 percent more than agriculture in rural areas (Raquel, 2011). As one of the largest and most congested cities in the world, Tokyo is able to produce local agriculture produces enough to feed almost 70,000 city dwellers. In fact, several social and environmental functions of urban agriculture have been recognized by Japanese policy makers.

In Singapore, green vegetables such as Chinese cabbage is grown in greenhouse at over 100 nine-meter tall towers and the produce is sold at the local supermarkets. Through urban farming, the farms are able to supply one of city's supermarkets with weekly deliveries and this give an immediate benefit with reduction of 'food miles'. While in Taiwan, urban agriculture does not only provide food and supplement for household income but also agro-tourism such as leisure agriculture. The development of leisure agriculture can be divided into sightseeing farms, citizen farms and educational farm (CNN, 2012).

There are ample evidences to show that urban agriculture production has contributed to increased food security through improvement in accessibility and affordability. Neglecting urban agriculture contribution will endanger future urban food security and sustainable urban land development (Rabiul et al., 2012). Hence, the issue related to changes in cost of living, high population growth and concern for food security encouraged the city dwellers to move towards producing their own food.

1.1.3 Malaysia and Urban Agriculture

According to Federal Department of Town and Country Planning (FDTCP) Malaysia (2010), urban agriculture has been defined as an activity of producing, processing and marketing of food and agricultural products in urban and suburban areas using intensive production methods, natural resources and urban waste to produce food including crops and livestock. Integration of agriculture in urban planning system is very important for sustainable development in terms of food sources, urban greening, water and waste management and the provision of alternative recreational and educational areas. This integration will create a multifunctional land use in urban areas or as new neighbourhood design in order to perpetrate a lower environmental burden.

In conjunction to encouraging the urban people involve in green environment, Malaysia government has planned to promote urban agriculture among urban community. Urban agriculture is seen as a sustainable practice, because it benefits the social, economic and urban environment such as reducing the 'carbon footprints', reuse and recycling urban waste and support the food needs of urban population. The term urban agriculture is still new and there is only small percentage of Malaysians are aware about urban agriculture. However, the concept of urban agriculture in Malaysia has been in existence since 1974 and it is seen indirectly through the Green Book Plan (*Rancangan Buku Hijau*) and Green Earth Campaign (*Kempen Bumi Hijau*) in 2006.

The Green Book Campaign was introduced by the government more than 30 years ago. The program was launched on the 20th December, 1974 by the late Prime Minister of Malaysia, Tun Abdul Razak Hussein. The objective of the program was to encourage Malaysians to farm their own food for their daily needs. This program encouraged people to participate actively in agriculture sector. Plans set up in the Green Book includes encouraging short-term planting or intercropping in order to utilize available land and encouraging livestock rearing such as chicken, duck, cow also freshwater fish. This program proved to be successful to those who participated as part time or full time where they managed to increase their income. (Arkib, 2013).



Figure 1.2 : Green Book Plan
(Source: Arkib, 2013)

In 2006, Green Earth Program (*Program Bumi Hijau*) was introduced as an extension of the Green Book Plan. The government has taken immediate action to increase food production and productivity of agro food by introducing subsistence farming as well ensuring adequate food supply, quality food and safe food to eat. This program was launched on the 3rd of March, 2006 by Prime Minister of Malaysia, Tun Abdullah Ahmad Badawi which consists of three main components which are crops farming, livestock and aquaculture. This program encouraged people to involve in subsistence farming and integrated farming for their household consumption. By planting vegetables in their house compound with the concept of 'kitchen garden' or 'edible landscape', this will directly attach them to residential landscaping. The main goal of this program is to produce their own food. This will help to ease their financial burden due to the impact of rising food price. The continuity of the program is still on-going even though the number of participants who involve in this campaign is declining as well as the purchasing power is increasing due to strong economic growth (DOA, 2013).

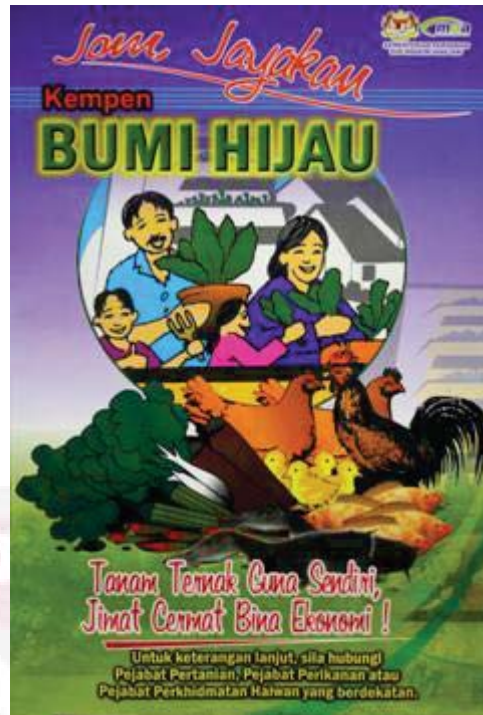


Figure 1.3 : Green Earth Program
(Source: DOA, 2013)

1.1.4 Issue and Challenges

Malaysia is expected experience a huge population growth in urban area, 75 percent by 2020 (DOS, 2011). According to Montgomery (2008), 60 percent of urban growth is due to higher birth than low death rates, while 40 percent is due to rural-urban migration or area expansions. With the number of population, city dwellers face challenges such as pollution, unemployment, crime, congestion, high cost of living, inadequate housing, inadequate social amenities and social exclusion (EPU, 2013). Among this, cost of living was the crucial challenge faced by urban population. Cost of living usually related to the averages cost of an accepted standard of living that includes food, housing, transportation, taxes and healthcare. Cost of living is frequently used to compare life in different locations around the country or the world. Based on report on household consumption expenditure survey conducted by Department of Statistics (DOS) in 2014 shown that Malaysian spend about 18 percent of their household income on food and non-alcoholic beverages while 13.4 percent on restaurants and hotels. Total spending on food is about 31.4 percent which is more than quarter of their household income.

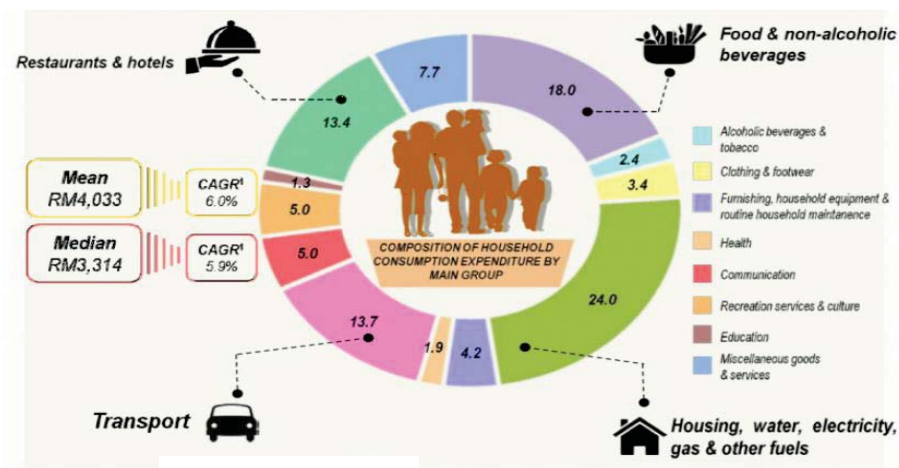
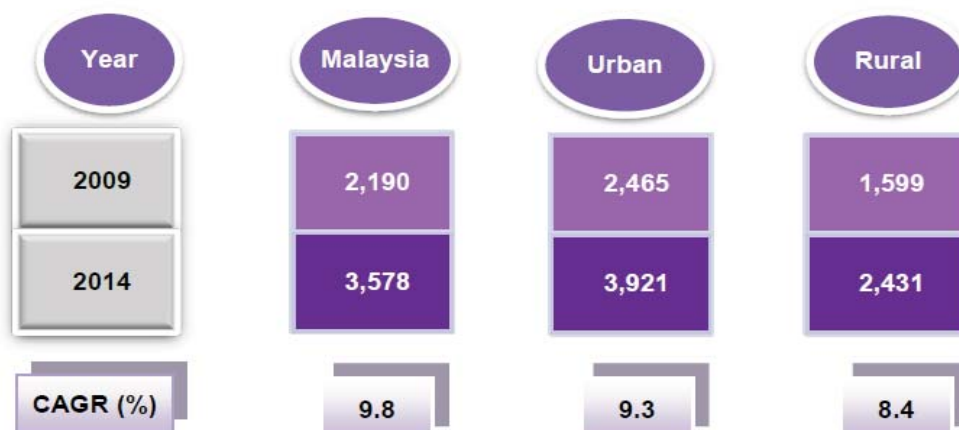


Figure 1.4 : Composition of Household Consumption Expenditure by Main Group in Malaysia
(Source: DOS, 2016)

In term of the monthly household consumption, between 2009 and 2014 the share of the mean monthly household consumption expenditure for Malaysia rose dramatically from RM2,190 in 2009 to RM3,578 in 2014 which was 9.8 per cent per annum at the nominal value. While monthly household consumption expenditure in urban showed and increment at rate of 9.3 percent annually from RM 2,465 to RM 3,921 for the period 2009 to 2014. The monthly household consumption expenditure is expecting grow for another five year due to trend recorded in 2009 to 2014 and current economic condition.



Note: Compounded Annual Growth Rate (2009-2014 : %)

Figure 1.5 : Mean Monthly Household Consumption Expenditure (RM)
(Source: DOS, 2016)

Yet, urban dwellers have new demand patterns caused by improvement in per capita income, lifestyle changes and awareness on health. Rizov (2015) indicate that the food consumption patterns have changed to food security situation in Slovakia in 2004 to 2010. Nowadays, people are looking for natural foods because the word natural has become synonymous with safety, health and wholesomeness. The marketers have been labelling more foods as natural to imply the superiority of their products over more artificial foods in order to gain higher price. As result the consumers are willing to pay the high price to get the good food.

Agricultural activities in Malaysia had always been associated with the rural area. Because of food production area which is far from urban areas the food has to be transported and distributed. This will consume a lot of energy which is not just distance but also refrigeration along the way including the energy consume for food handling, packaging and processing. According to Centre for Environmental Education (CEE) (2013) food miles specifically affect the environment by emissions of greenhouse gases from transportation. Food miles would not encapsulate transportation only but also everything a food product goes through which contributes to its carbon footprint. This greenhouse gases are one of many factors that contribute to global warming process. Studies conducted by Natural Resources Defense Council (NRDC) (2014) reveals that food miles also caused nutrition deficiency on food due to post harvest process. The quality of agro-food may be reduced or lost due to extension from harvesting to consumption. Losses also may occur during storage due to endogenous and exogenous factors such as moisture, insects or rodents. Thus, by adopting urban agriculture, it would help reduce fuel consumption and global warming pollution associated with transporting food as well as protects the environment. By choosing local produce, we can eat fresher and tastier fruits and vegetables.

On the other hand, the land use for development purposes is expected to put pressure on food production area. Food production also has been competing with non-food activities such as biomass to replace fossil as fuel sources and industrial crops such as palm oil and rubber (Utusan, 2016). Meanwhile, the industrial crops were estimated 83.7 percent of land use and palm oil portion was about 63.4 percent of total agricultural area (DOS, 2013). Hence, the country is facing decreasing food production area year by year. According to National Agro-Food Policy (2011), the demand for fruits and vegetables is expected increase from 4.3 million tonnes in 2010 to 5.8 million tonnes in 2020 to meet the demand (Figure 1.6). Thus, the country is facing imbalance demand and supply on food.

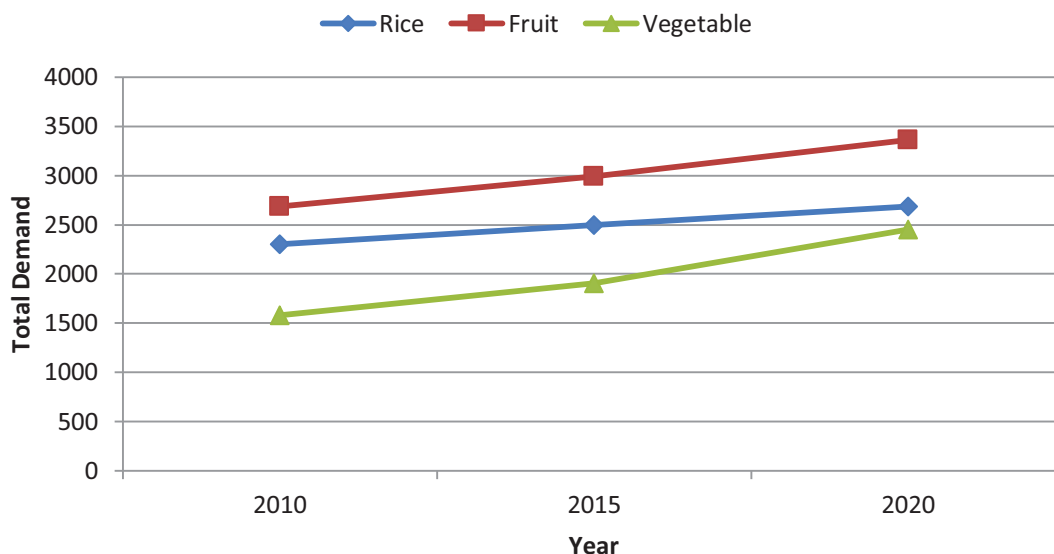


Figure 1.6 : Projected Demand for Fruits and Vegetables, 2010-2020 ('000 tonnes)
(Source: MOA, 2013)

To satisfy the quantity and diversity of food demand by population, Malaysia depends on imported food. In 1960s, dependent on import food is cheaper and existing resources were used for other purposes that were more profitable (Fatimah, 2010). But in last three decades, Malaysia agricultural import has exceeded agricultural export and until 2015 the balance of trade on food was about negative RM 17,973.6 billion and expected to continue increasing over the years. The increase in import foods has been particularly striking for basic foods such as dairy products, cereals such as rice and corn, vegetables, fruits and processed food. These import trends are influenced by responsive to trade integration, higher incomes and urbanization level which lead to diversified patterns in diet and repercussion in trade patterns.

Dependency on imported food has exposed Malaysia to volatile and unstable food supply. Import market was exposed to adverse climate conditions, new policy set up by certain country, high agricultural input price such as seed, fertilizer and labour cost and natural disaster; flood, drought and disease. As a result, rising prices on food transpire and Malaysians need to pay for food at high price. With unstable economic situation, the food price is expected to increase even more. Since city dwellers are net food buyer, they were exposed to high food price in having sufficient and healthy food for their consumption. A study conducted by Akinbajimo in 2002 found out that most developed countries and South East Asia people especially the city dwellers spend about 40 to 85 percent of their income on food (Table 1.3). Furthermore, the poor spent about 90 percent of their income on food purchases (Ruel and Garrett, 2004).

Table 1.3: Percentage of Income Spent on Food by Urban Residents in Selected Cities

City	Income Spent on Food (%)
Bangkok (Thailand)	60
LA Floride (Chile)	50
Nairobi (Kenya)	40 – 60
Dar es Salam (Tanzania)	85
Kinshasha (Congo)	60
Barnako (Mali)	32 - 64
Urban USA	9 -15

(Source: Akinbamijo *et al* , 2002)

Food availabilities are crucial for national consumption. Hence Ministry of Agriculture has taken primary initiatives through the National Agro-Food Policy (2011-2020) in order to ensure food security in the country. The primary initiatives are:

Enhancing food production through the optimization of available land, sustainable agricultural intensification and large-scale planting of rice in granaries;

Increasing and improving access to food through the availability of marketing infrastructure and promotion;

Ensuring reasonable food prices with the development of monitoring systems on food prices and early warning system on food availability; and

Ensuring food safety and nutrition through food-based social security network and food nutrition awareness campaign.

1.2 Problem Statements

The new environment at the global level are expected to affect global production and biodiversity such as increasing in food price, increasing world population, natural disaster, changes in diet and diversification of use of food commodities for bioenergy. Those who live in urban areas have no direct source of food supply as foods basically are being produced in rural areas. They ordinarily get food supplies from supermarkets and wet markets. According to World Food Programme (WFP) in 2013, the difficulty will occur, not because of insufficient supply but due to supply unable to reach consumers especially as and when due. Contribution to higher input prices and inconsistency in production leading to higher production cost and food prices. On the other hand, Malaysia has become a net food importer in order to

ensure sufficient food supply. Hence, Malaysia exposed to external force such as rising food prices due to volatile food supply. This condition worse adverse by the climate change, currency value due to economic condition and trade policy set by other countries. Thus predisposing consumers to buy food at exorbitant prices and this lead to high living cost.

Previously, the government has launched Green Earth Program with the aim of encouraging people to be involved in agriculture to produce food for their own consumption. The implementation of Green Earth Program is clear and able to move quickly for rural communities. However, it received poor responses from city dwellers. Further probe concluded that poor responses from city dwellers were due to some constraints in terms of practicality. Most city dwellers consist of a group of individuals which have careers. They prefer to engage in other recreational activities rather than farming. Furthermore, most of city dwellers find out that they have limited resources for cultivation. After several years, the interest of people to carry out this program decreased as well as the purchasing power increased due to strong economic growth.

Lately, Malaysia's government has planned to promote agriculture among urban communities to involve in urban farming. By producing own food, they can have quality and fresh produce and also can save household expenditure on food. In line with government policies which highlighted on food security, urban agriculture was the best practices for city dwellers to get better food and could save their expenses on food. Urban agriculture is parts of a movement which will continue grow and flourish nowadays. Improvement in per capita income and lifestyle created the awareness of the link between how and where food is grown. Therefore, the government is paying much intention to development urban agriculture in order to enhance food industry as well as food security. Hence, the attitude of city dwellers towards urban agriculture is an important impetus to implementing the urban agriculture policy.

This situation has led study to identifying the acceptance of urban agriculture since it is not widespread and limited number of study related to urban agriculture has been done previously in Malaysia. To fill the gap, this research was conducted to investigate the intention to implement urban agriculture among city dweller using Decomposed Theory of Planned Behaviour. Therefore, these objectives have been developed: (i) to identify factors that influence city dweller's intention to adopt urban agriculture; (ii) to determine the relationship between factors and city dweller's intention in undertaking urban agriculture; and (iii) to determine the relationship between city dweller's intentions with demographic profile. Descriptive analysis, factor analysis, multiple regression and chi-square analysis were conducted to analyse the data.

Thus, understanding the factors that influence city dwellers' intention towards accepting the idea of implementing urban agriculture is very important for the policy maker, before embarking on any campaign and implementation of urban agriculture among city dwellers. Besides that, this study is going to investigate whether urban agriculture able to provided opportunity for city dwellers to generate income by undertaking urban agriculture like as many developed countries. Based on previous study, urban agriculture been practiced to creating job among housewife and urban poort as well as reducing number of criminal in city.

1.3 Research Questions

In order to address the objectives of this study, structured questionnaires of closed ended with multiple choice questions were constructed for the study (Refer Appendix B). The questionnaire was prepared with the guide of literature review. Two sets of questionnaire were developed both in Bahasa Malaysia and English. This was to reduce the misinterpretation of questions and facts among the respondents. Those questions were categorized into ten sections;

Section 1: Socio demographic information – This section was designed to capture the demo-graphic profiles of the respondent. The respondents were asked about their age, gender, race, level of education, occupation profile, monthly income, marital status and house type.

Section 2: Knowledge on Urban Agriculture – For question relate to knowledge the respondents were asked whether they know about urban agriculture or not and the knowledge on goodness of urban agriculture. All questions in this section were created based on literature review.

Section 3: Attitude – The respondents were asked whether they carry positive and negative feelings toward the behaviour to adopt urban agriculture.

Section 4: Perceived Usefulness – Respondents were asked the degree to which a person believes that by implementing urban agriculture would enhance their life.

Section 5: Perceived Value – City dwellers were asked to give their judgement on benefits of implementing urban agriculture.

Section 6: Subjective Norm – The questions were related to perceived social pressure and influence of significant referents to performurban agriculture.

Section 7: Perceived Behavioral Control – Respondents were asked about their perception of the availability of skills, resources and opportunity to implementing urban agriculture.

Section 8: Facilitating Condition – The respondents were asked whether resources factor such as time, money, facility and other related factors will encourage them to adopt urban agriculture.

Section 9: Perceived Risk – The question would ask city dwellers whether the time, money and effort that they have to spend in implementing urban agriculture is worth it.

Section 10: Intention – The strength of respondent's intention to perform urban agriculture were asked in this section.

1.4 Objectives of Study

The general objective of this study is to identify factors that influence city dwellers' intention towards implementing urban agriculture. Specific objectives are:

To identify the factors that influence city dwellers' intention to adopt urban agriculture;

To determine the relationship between factors and city dwellers' intention in undertaking urban agriculture; and

To determine the relationship between city dwellers' intention with demographic profiles.

1.5 Significance of Study

Many studies were done to explore the benefits of participation and involvement in urban agriculture. The interest on advantage of urban agriculture has led to the development of policies that encourage Malaysians to implement urban agriculture. However, the extent of Malaysians to realize the concept and advantages of this activity still remains uncertain. Given the paucity of data on this topic, this study was undertaken to understand and obtain more information on city dwellers' attitude and intention towards urban agriculture. This study will be significant to the following groups;

City dwellers

This study would examine the city dwellers' understanding on urban agriculture. On the other hand, this study would be able to identify the factors that may influence their intention to adopting urban agriculture. The result of this study would assist them to implement urban agriculture by knowing factors that drive them to perform the behavioural intention.

The government

The results from this study is likely to assist government agencies and society concerning consumers' needs since the study is dealing with city dwellers' knowledge, attitude and intention towards adopting urban agriculture. Moreover, this study will help government agency and other Non-Government Organization (NGO) to arrange suitable programs to create awareness on urban agriculture. Besides that, it would help them to develop appropriate approaches to increase city dwellers' interest and understand the factors that may build up city dwellers' intention to adopt urban agriculture. This would also help government agency as policy makers to develop any policy related to urban agriculture.

Academicians and Researchers

As academicians and researchers, this study will be a platform to many other studies on the same subject matter. The study contributes to the existing literature in determining the behavioural intentions towards adopting urban agriculture. Furthermore, this study will be the source of reference for the other theory development by integrating Theory of Planned Behaviour and Technology Acceptance Model in determining the intentions towards implementing urban agriculture among city dwellers. Additionally, this study will elaborate the attitudes and intentions of city dwellers and provide hints for further research on urban agriculture.

1.6 Organization of the Thesis

This thesis consists of five (5) chapters including introduction, literature review, research methodology, results and conclusion. The first chapter briefly discusses the background of the study, agriculture sector and urban agriculture as well as problem statements, objectives and the importance of the study. Chapter two consist of review of literature on intention toward implementing agriculture activity. Chapter three describes the conceptual framework, sampling techniques and statistical analysis which were adopted in this study in order to achieve the research objectives. Analysis and the results of the study were discussed in chapter four. Finally, chapter five summarized the findings of the study and include suggestions for future studies.

1.7 Chapter Summary

Chapter one discussed the background of the study which includes the urbanization and food sector in Malaysia, urban agriculture on world perspective, urban agriculture in Malaysia and issue and challenges faced by the food sector. This chapter also confers the problem formulation, research objectives and significance of the study. In the next chapter, review of previous literature on behavioural intention would be discussed.



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