INFLUENCING OF POLICY CHALLENGES OF URBAN AGRICULTURE AND ECONOMIC VIABILITY ON URBAN AGRICULTURE IN LIBYA

ALI SALIH OMAR MOHAMED

ASMADDY HARIS

ABSTRACT

Urban agriculture is believed to meet this urgency and suitable for a nation that is still unstable economically and politically like Libya. A recent and growing body of literature documents the importance of agricultural production in the urban settings commonly called "urban agriculture" (UA), in affecting urban dwellers behaviour and agriculture policy makers. Urban agriculture is not about producing green vegetables only but also involving a complete process to the end users, thus it is creating job opportunities for any disadvantaged groups. This study investigates the relationship between Policy Challenges of Urban Agriculture, Economic Viability and urban agriculture to explain food security in Benghazi region in Libyan using survey of demographic factors such as population and population income. . The results of the study indicated that policy challenge of urban agriculture and economic viability of urban agriculturehad a signficant and positive effect on urban agriculture among urban people in doing agriculture in Libya. Furthermore, economic viability of urban agriculture had a signficnat and positive impact on urban agriculture.

Introduction

Urban agriculture is believed to meet this urgency and suitable for a nation that is still unstable economically and politically like Libya. A recent and growing body of literature documents the importance of agricultural production in the urban settings commonly called "urban agriculture" (UA), in affecting urban dwellers behaviour and agriculture policy makers. Urban agriculture for subsistence is largely carried out on land that is not owned by the user, which includes roadsides, riverbanks, along railroads, vacant private lands, parks, and so forth De Zeeuw, et al. (2000). Ever since the first French geographical accounts of (intra- and peri-) UA were published on Central Africa in the 1960s, scattered and isolated UA surveys by individual social scientists have gradually been giving way to institutional projects led by multidisciplinary teams Mougeot (2000).

Urban agriculture (UA) varies from the farm business to the private backyard garden that is centred on the production of local food supplies. This form of urban agriculture emerges from a structural urban problem that is linked to the increase in urban population Nugent 1999. An important contribution of UA is helping the urban poor citizens to become food secure that emerge from structural urban problems De Zeeuw, et al. (2000) and Nugent (1999).

Urban agriculture is not about producing green vegetables only but also involving a complete process to the end users, thus it is creating job opportunities for any disadvantaged groups. It is targeted that for a successful urban agriculture or horticulture can generate one job for every 100 square meter garden either in production, input supply, marketing and value-addition from producer to consumer FAO (2013).

This study investigates the relationship between policy challenge of urban agriculture, economic viability of urban agriculture and users of urban agriculture. The study also examines the role of economic viability mediates the relationship between policy challenge of urban agriculture and users of urban agriculture in Libyan. This study seeks to add to prior research focusing on UA and development of UA policy framework (UAPF) that can be used as decision criterion for UA growth and development in Libya. As noted above many of the agricultural policies are impacted by the agricultural policy instruments that are being used are capital public expenditures, subsidies, taxes (fiscal), customs duties, and land rights Bedrani, et al. (2005). The development, regular compilation and publication of some objective quantitative and qualitative criteria (indicators) are necessary to measure, monitor and inform policies with regard to UA development in Libyan region. Thus, this study intends to contribute to the understanding of the urban agricultural development policy replications by introducing an efficient UA framework that helps setting policy to stimulate UA growth and development in Libya overtime. this study will contribute to the policy implementation of urban agriculture by increasing the likelihood campaign for policy implementation of urban agriculture (see: section 1.8). Failure for sound implementation has always been the problem in the past for urban agriculture policies formation in most urban agriculture programs. Currently there are huge problems facing agricultural projects in Libya that lead to significant decrease in productivity in last decades Ahmad and Seow (2013). The public may negatively interpret this indicator as signal of systems weakness. Will the urban agriculture systems provide value to Libyan economy? These questions create the motivation and interest to investigate the urban agriculture behaviour to improve the standard of living Libya. If environmentally sustainable urban agriculture is adopted in this district, it will help reduce food insecurity not only in Benghazi region but also in Libya as a whole. Such adoption of environmentally sustainable urban agriculture also provide information for a consistent set of solutions to support the collaborative creation, management, the resource situation that influences the type of urban agriculture development and the policy implementation that should be vigorously implemented.

Literature review

Users of Urban Agriculture

This section looks into users of urban agriculture and valuation techniques. The following section discuses use and non-use values of urban agriculture. The next section discusses the application of valuation methods to urban agricultures. users of urban agriculture and valuation techniques, and the way each of these concepts related to each other. The framework focuses on urban agriculture as part of urban agriculture research process, and is presented diagrammatically in Figure 3.1. The framework enables the present research to identify the social and environmental issues that influence food security in urban settings.

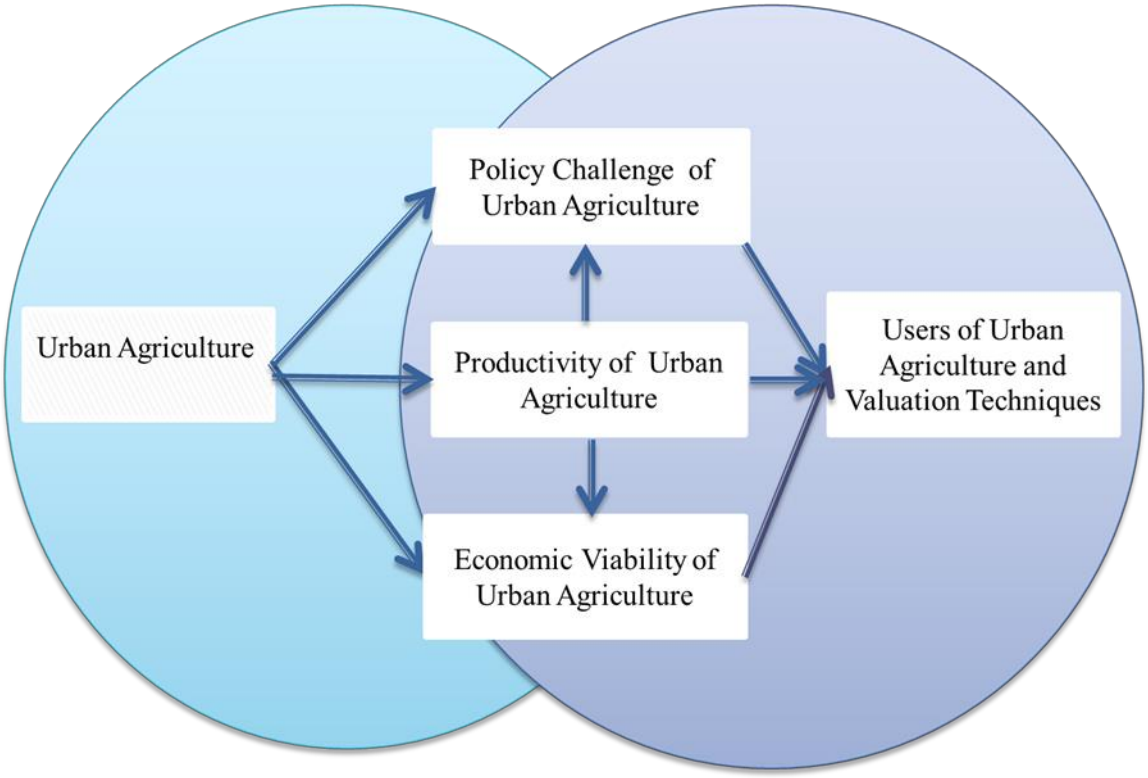

Figure 3.1: Conceptual Framework for Urban Agriculture

Urban agriculture is used to assist food security for urban dwellers. The food security issues have influenced the engagement of the urban agriculture and urban agriculture research. As the sustainability of food security shifts, so is the balance of power from traditional agriculture to urban agriculture. These issues are explained throughout the following sections

Use and Non-Use Values of Urban Agriculture

Non-market valuation arose from the desire to include the natural environment in the decision-making calculus Boyer and Polasky (2004).Typically; individuals value non-market goods for their use value and their non-use value (Henn 2000). As would be stated later in chapter four, these two types of value make up the Total Economic Value (TEV) of goods and services that are sold in markets and usually are valued via market prices. Mitchell and Carson (1989): p. 62) define the users benefits as "all the current direct and indirect ways in which an agent expects to make physical use of a public good". This class of benefits consists of direct, indirect and option use value Henn (2000).

Policy Challenges of Urban Agriculture

Although many poor households benefit from urban agriculture, land cultivation and livestock production are actually illegal in many cities Mbiba (1994). In some instances, officials ignore land cultivation, yet land tenure remains a major challenge to urban agriculture and thus providing secure tenure to land can improve the welfare of the poor, in particular, by enhancing the asset base of those, such as women, whose land rights are often neglected Deininger (2003).

However, most are launched in collaboration through use or lease agreements with public agencies, private landowners, or land trusts Nordahl (2009); Hodgson, et al. (2011); McClintock, et al. (2013). Some urban agriculture projects in post-industrial cities are even playing with the urban form, challenging current land-use management and ownership, reinventing the urban landscape, and experimenting with radical alternatives to the capitalist neoliberal organization of urban life Tornaghi (2012).). Some of the changes and claims proposed by this project for example, a call for environmentally sound farming practices or land reform, which satisfies the need for affordable and accessible cultivable land – have become evident to different governing institutions Tornaghi (2014). In the UK, for example, according to (Communities and Local Government, 2010), in March 2010 the Labour government announced that so-called 'under-used and uncared-for land' would be given to local communities in order to help

meet the unmet demand of 100,000 people on allotment waiting lists and enable them to grow their own food Tornaghi (2014).p.2)

There are currently two codes regulating urban agriculture and the use of wastewater for irrigation. These are the law on hygiene, N° 8371 of 05 July 1983, which relates to water use, and the urban code of law N° 88-05 of 20 June 1988, which relates to the urban agriculture component Sy et al. (2014). In relation to the former, Article 41 stipulates that "the discharge or deposit of solid waste, wastewater, domestic garbage, mud, faecal matter is prohibited on all lands where fruits and vegetables likely to be eaten raw and whose edible parts can come into contact with waste are grown. Manure and compost can only be applied at not less than one month before harvest Sy et al. (2014). Fruits and vegetables must be free from soil. If it is necessary to wash fruits and vegetables, only potable water shall be used and this shall be followed by the adequate straining."

This law, which is based on the World Health Organization (WHO) guideline values of 1992, needs to be updated to reflect current WHO guidelines, which no longer only consider microbiological concentration levels in irrigation water or vegetables but which now include notions of epidemiological risks linked to the reuse of wastewater in urban agriculture Sy et al. (2014). Where means are available, WHO now recommends implementing measures for domestic wastewater to be treated to at least a secondary level for use in irrigated market gardening Sy et al. (2014). However, the guidelines recommend that, whether irrigation water is treated or not, farmers comply with protective measures and good farming practices for irrigation, fertilization and disinfection of crops Sy et al. (2014).

Economic Viability of Urban Agriculture (Mediating)

Urban agriculture takes various forms at different levels of development (Nugent 2000).

Urban agriculture provides opportunities for urban dwellers and benefits users as cities grow. As cities grow, they add jobs and services, becoming more complex economically as well as physically Nugent (2000). The need for new jobs places huge demands on cities that are struggling to provide the public services that growth demands, often in the face of existing unemployment Nugent (2000). In the developing world, many of the new jobs needed are for unskilled and relatively uneducated workers, both migrants and those born in the city Nugent (2000). Urban agriculture offers a wide range of ecological functions (e.g., biodiversity, nutrient cycling, and microclimate control) and cultural functions (e.g., recreation, cultural heritage, and visual quality) that benefit the nearby community and society as a whole Lovell (2010).

Methodology and Analysis

Sampling selection

This study used the quantitative research design by collecting primary data to answer the research questions and to test the hypotheses. In this study, data was collected via a self-administered survey using random sampling method. This study used the survey method to collect the primary data. Questionnaire is designed to include two parts. The first part includes demographic information about the respondents, including age, education, position, familyIncomeas well as type of residence and UA . The second part will ask the respondents about the variables of interest in the study, which are policy challenge of urban agriculture, economic viability of urban agriculture and urban agriculture. The sample of the present study consisted of a total of 565 respondents, analyzed using Structural Equation Modeling (SEM) in order to examine causal relationships among the study latent variables.

Descriptive Statistics for Demographic Characteristics

In this study, males have represented 86% or 486 respondents among urban people in doing agriculture in Libya. However, the females were 14% or 79 respondents. Furthermore, the age of the respondents in this research was divided into five categories. Table 5 shows that the category comprising of respondents aged 41-50 had the highest percentage with 197 respondents which was 35% of the total number of respondents. This is followed by 31-40 years category represented by the 30% or 179 participants among urban people in doing agriculture in Libya.

The results also indicate 245 participants (45%) have (35-65RM) personal Income per month while 30% (170) have (66-100k) per month. Moreover, a total of 565, 85 of them have income more than 100k per month and 28 of the respondents 5% were missing

In terms of educational level, the majority of **respondents** had tertiary with 209 or 37% and high school making up 28% (158).

However, a few of the respondents had graduates (108 or 19%) and there is holders of primary school with 10% (56).In addition, most of the respondents were a number of a horticultural club 80% or 452 and 17.5% of them are not a number of a horticulture club.

With regards to type of residence, the results show concrete house had the large number of respondents 200 making up 35.3% while tiled house and apartment had 173 and 96 respondents respectively. And other residence of live represented 13% or 74 respondents among urban people in doing agriculture in Libya. Table 1 shows distribution of respondent by demographic characteristics.

Table 1 Distribution of Respondent by demographic characteristics

Category	Frequency	Percent	Category	Frequency	Percent
Gender			**N. Horticulture club**		
Male	486	86%	Yes		
Female	79	14%	No	99	17.5%
Age			Missing	452	80%
Less than 25 years	45	8%	**Type of Residence**	14	2.5%
26-30 years	68	12%	Tiled House		
31-40 years	170	30%	Concrete House	173	30.7%
41-50 years	197	35%	Apartment	200	35.3%
More than 50 years	85	15%	others	96	17%
			Missing	74	13%
Family Income			**Type of UA**	22	4%
Less than 35K	28	5%	Residential		
35-65K	254	45%	Allotment	63	11.2%
66-100K	170	30%	Guerrilla	119	21%
More than 100K	85	15%	Collective	84	14.8%
Missing	28	5%	Institutional	101	18%
Education level			Non-profit	40	7%
Primary	56	10%	Profit	113	20%
High school	158	28%		45	8%
Tertiary	209	37%			
Graduate	108	19%			
Others	34	6%			
Total	565	100%		565	100%

Descriptive Statistics for Constructs

Mean and standard deviation (S.D) of the measurement scales were calculated. This study used a five–point likert scale ranging from "1" strongly disagree to "5" strongly agree. The main goal of the study is to examine the level of urban agriculture among urban people in doing agriculture in Libya. Table 2 shows that the highest mean is Policy Challenge of Urban Agriculture with 3.552 and Productivity of Urban Agriculture with 3.507 out of a maximum 5 making up 71% and 70% respectively. Economic viability of Urban Agriculture has the lowest mean with 3.462 making up 69% and the mean of these values (overall mean) is 3.506. This means that the respondents agreed that all variables (Policy Challenge of Urban Agriculture, and Economic viability of Urban Agriculture) are essential towards Urban Agriculture among urban people in doing agriculture in Libya. In addition, the standard deviations (S.D) for all variables range from 0.723 to 0.879, which reflects existence of considerable acceptable variability within the data set. Table 2 presents descriptive statistics for all constructs.

Table 2: Descriptive Statistics for all Constructs

Variables	**Number of Items**	**Mean**	**S.D.**
Urban Agriculture	16	3.503	0.869
Policy Challenge of Urban Agriculture	19	3.552	0.723
Economic viability of Urban Agriculture	16	3.462	0.879
Total	51	3.506	0.761

4.5 Reliability and Composite Reliability

After examining the descriptive characteristics of respondents' demographic data, it was essential to examine the way respondents answered the survey questions related to the constructs presented in the conceptual framework. The term "reliability" in this study refers to the extent to which the measurement produces the same results with repeated measurement (Malhotra & Brik, 2003). The measurement of reliability provides internal consistency in the measurement of variables (Kim & Cha, 2002). The instrument's reliability is revealed to be more than 0.60 which is acceptable (Hair et al., 2006; Sekaran, 2003). This study conducted two types of reliability tests. The first type is Cronbach's alpha via the use of SPSS 18.0 and the second type is composite reliability (CR). The current study indicates the reliability (Cronbach's alpha) values ranged from 0.751 to 0.814 while composite reliability (CR) values ranged from 0.776 to 0.820. Therefore, all values for reliability and composite reliability constructs were greater than the recommended value of above 0.60. Table 3 presents reliability (Cronbach's alpha) and composite reliability for the constructs. Appendix C shows reliability (Cronbach's alph) for all items.

Table 3: Cronbach's Alpha and Composite Reliability for the Constructs

Name of Construct	Construct code	Number of items	Cronbach's alpha	Composite Reliability
Urban Agriculture	UA	16	.751	.776
Policy Challenge of Urban Agriculture,	POL	19	.814	.806
Economic viability of Urban Agriculture	EC	16	.807	.820

5 Validity of the Constructs

This study uses two types of statistical validity tests. Firstly by using SEM analysis; convergent validity was conducted essentially in the measurement model as the first type of validity tests to determine if the indicators in a scale load together on a single construct, while the discriminate validity test is the second type of validity to verify if the items developed to measure different constructs are definitely evaluating different constructs.

4.5.1Convergent Validity

According to Hair et al. (2010), convergent validity shows the extent to which indictors of a special construct converge or high proportion of variance's common. Convergent validity can be analyzed via Confirmatory Factor Analysis (CFA).

After careful deletion using modification indices (MI), Table 4.29shows that all items have loadings more than 0.50 on their underlying construct. In this case, the factor loading for the items are more than 0.50 and are acceptable if the study sample is more than 350 respondents (Hair 2006, p. 128). This, in turn, is sufficient evidence of convergent validity. Therefore, all indicators in the present study are related to their particular constructs, and thus there is satisfactory proof of the convergent validity of the model.

4.5.2. Discriminate Validity

Discriminant validity gives the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). Discriminant validity is evaluated by using Average Variance Extracted (AVE) for every construct that exceeds the squared correlation among other constructs (Fronell&Larcker, 1981).

Discriminant validity was indicated, as the AVE values are more than the squared correlations for each set of construct. In addition, the square root of the AVE for a given construct was greater than the absolute value of the correlation square of the given construct with any another factor (AVE > correlation square).

Table 4 shows that the results of the Average Variance Extracted (AVE) test for one of the construct POL IS less the recommended value of (0.5) according to (Barclay, Thompson & Higgins, 1995; Fronell&Larcker, 1981).

Table 4: Average Variance Extracted (AVE)

Constructs	CR	AVE	UA	POL	EC
UA	0.776	0.537	0.730		
POL	0.806	0.457	0.768	0.676	
EC	0.820	0.533	0.778	0.586	0.733

Average Variance Extracted (AVE) should be higher than 0.5 but we can accept 0.4. Because Fornell and Larcker (1981) said that if AVE is less than 0.5, but composite reliability (CR) is higher than 0.6, the convergent validity of the construct is still adequate. The Average Variance Extracted (AVE) for this study is 0.5.

Factor Loading Results

Table 5 shows that all items have loadings more than 0.50 on their underlying construct. In this case, the factor loading for the items are more than 0.50 and are acceptable if the study sample is more than 350 respondents (Hair 2006, p. 128). This, in turn, is sufficient evidence of convergent validity. Therefore, all indicators in the present study are related to their particular constructs, and thus there is satisfactory proof of the convergent validity of the model.

Table 5 Factor loading results

Name of Construct	Dimension	Number of Items	Items	Factor Loading
Policy Challenge of Urban Agriculture (POL)	F1 (POLa)	6	POLa1	.678
			POLa2	.824
			POLa3	.832
			POLa4	.625
			POLa5	.658
	F2 (POLb)	4	POLb7	.678
			POLb8	.796
			POLb9	.834
			POLb10	.735
	F3 (POLc)	4	POLc11	.809
			POLc12	.604
			POLc16	.509
			POLc17	.501
	F4 (POLd)	5	POLd19	.808
			POLd20	.910
			POLd21	.853
			POLd22	.574
			POLd23	.502
Economic viability of Urban Agriculture (EC)	F1 (ECa)	9	ECa2	.569
			ECa3	.527
			ECa4	.619
			ECa12	.780
			ECa17	.753
			ECa18	.813
			ECa19	.664
			ECa20	.842
			ECa21	.782
	F2 (ECb)	3	ECb8	.842
			ECb9	.793
			ECb10	.763

	F3 (ECc)	4	ECc13 ECc14 ECc15 ECc16	.530 .745 .805 .729
Urban Agriculture (UA)	F1 (UAa)	4	UAa1 UAa4 UAa5 UAa6	.561 .543 .778 .726
	F2 (UAb)	3	UAb8 UAb10 UAb11	.727 .795 .803
	F3 (UAc)	5	UAb12 UAb13 UAb14 UAb15 UAb16	.854 .846 .815 .865 .697
	F4 (UAd)	4	UAd9 UAd17 UAd18 UAa19	.826 .903 .743 .867
Total		69		

Confirmatory Factor Analysis (CFA)

The first purpose of conducting CFA was to exclude any scale item or latent factor that was not well fit and thus create the best possible measurement model. The second purpose of performing CFA was to test reliability, validity and unidimensionality of multi-item measures.

CFA analysis method was used to examine convergent validity for each variable. In addition, CFA contains several functions; these functions include testing the loading factors in every construct, estimating the measurement error in framework and confirming the instrument themselves are related to the latent variables. Therefore, CFA is deployed to determine the set of factors and construct loading items confirm the requirement that is needed to measure (Bollen, 1989).

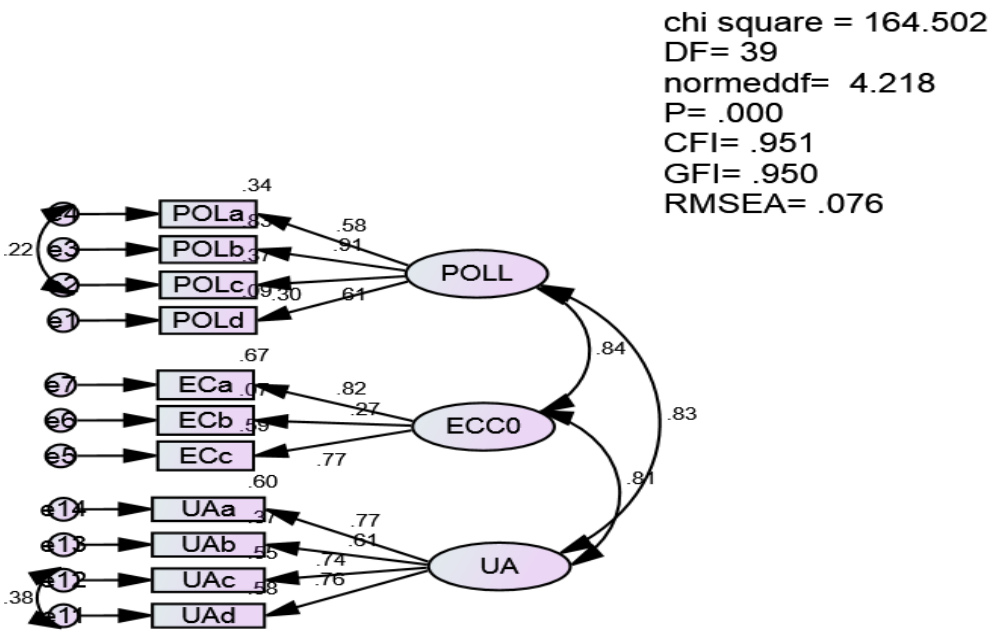

Figure 1 Measurement Model for Variables

Measurement Model

This study examines four exogenous variables which are user culture, trust and subjective norm on intention to use e-commerce. Final model showed the ratio of the chi-square to the degree of freedom was 4.218, less than 5 and RMSR was 0.051 less than 0.10 indicates a good model fit as well as the RMSEA was 0.076, less than 0.08 which is considered a good fit (Hair, et al, 2006). Also other measures indicated the GOF of the model to the data (CFI = 0.951, GFI= .950; IFI= 0.951, TLI= 0.930) which indicate that the model employed in this study is a good fit to data (Schumacker& Lomax, 2004 and Lee and Kim, 2007). Table 6And Figure 2 show measurement model for exogenous and endogenous variables.

Table 6 The Results of Measurement (Goodness-of-Fit Indices)

Indictors	Measurement Model	Acceptable value
Absolute fit indices		
Normed χ^2	4.218	Less than 5
RMSR	0.051	Less than 0.10
Incremental Fit Indices		
CFI	0.951	More than 0.90
GFI	0.950	More than 0.90
IFI	0.951	More than 0.90
TLI	0.930	More than 0.90
Parsimonious Fit Indices		
RMSEA	0.076	Less than 0.08
P-value	0.000	More than0.05

Structural model

The results of the structural model show the model fit indices such as normed χ^2 value was 4.218 less than 5, indicating sufficient fit. In addition, CFI= 0.951, GFI= 0.950, TLI = 0.930 and IFI = 0.951 which explain that the model employed in this research was a good fit to data. Moreover, the parsimonious index (RMSEA) was become the better measurement. The results indicate that RMSEA = 0.076. From the Figure 3, the squared multiple correlation or R^2 of structural model were 70% and 73% for economic viability of urban agriculture and urban agriculture respectively.

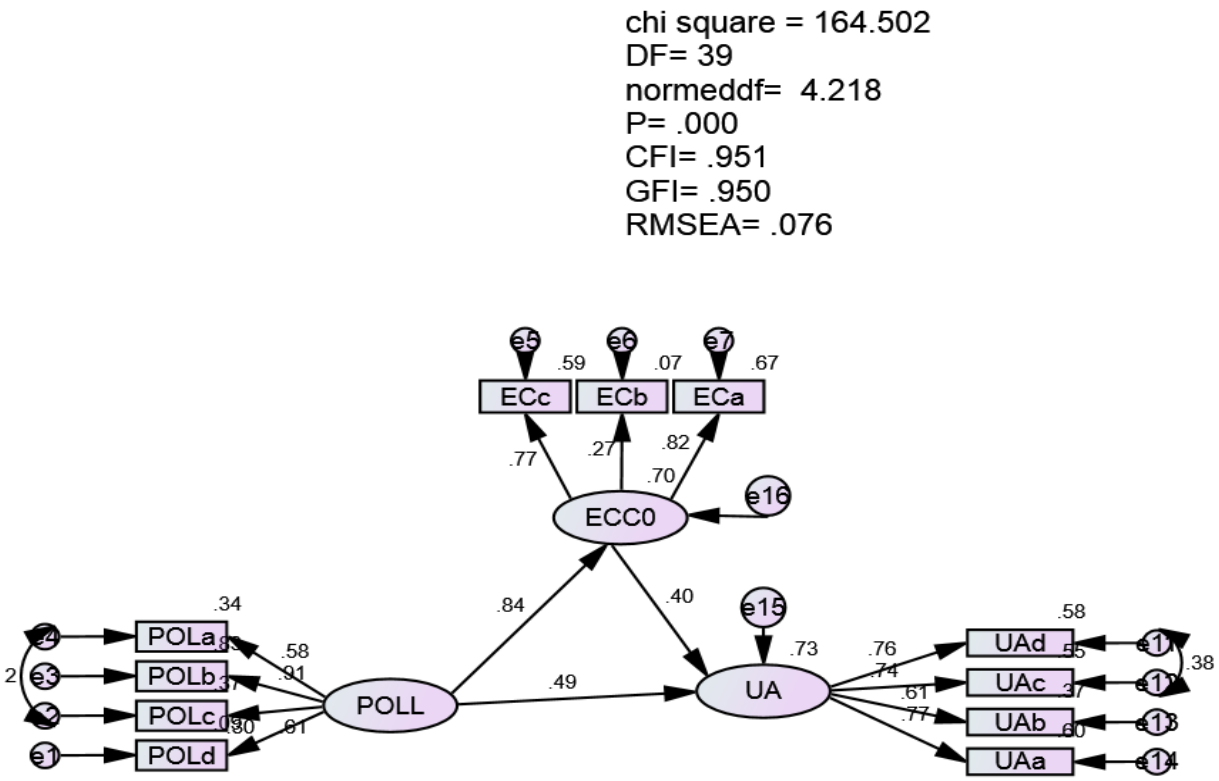

Figure 2structural **Model for Variables**

Table 7 The Results of Structural (Goodness-of-Fit Indices)

Indictors	Measurement Model	Acceptable value
Absolute fit indices		
Normed χ^2	4.218	Less than 5
RMSR	0.051	Less than 0.10
Incremental Fit Indices		
CFI	0.951	More than 0.90
GFI	0.950	More than 0.90
IFI	0.951	More than 0.90
TLI	0.930	More than 0.90
Parsimonious Fit Indices		
RMSEA	0.076	Less than 0.08
P-value	0.000	More than0.05

DESCUSSION AND CONCLUSION

This dissertation contributes to the literature on user benefits of UA on several grounds. The study empirically examine the role of food security issues, and the issues of users of units of land for UA and their performance in determining the level of users' willingness to pay for UA land, the spread of the agricultural policy instruments (such as capital public expenditures, subsidies, taxes (fiscal), customs duties, and land rights. The results of the study indicated that policy challenge of urban agriculture and economic viability of urban agriculturehad a signficant and positive effect on urban agriculture among urban people in doing agriculture in Libya. Furthermore, economic viability of urban agriculture had a signficnat and positive impact on urban agriculture. This findings are corresponded and agreed with the studies byNordahl (2009); Hodgson, et al. (2011); McClintock,

et al. (2013). This study intends to shed light on the contributing to the literature related to the users' benefits of UA activities in Benghazi region using the application of Contingent Valuation Method (CVM) in Libya. The current study not only contributed to the literature related to the CVM but also to the literature that relates users benefits of UA of Libyan region of Benghazi to urban agricultural development constraints. The impacts of CVM on users' benefits of UA on Libyan region of Benghazi may provide new insights into the issue of how CVM plays a role in UA development. UA practitioners can be categorized variously, based on a combination of tenure modality, time allocation and product destination. Differences are further observed across regions of the world, in terms of prevailing urban agriculture production systems and associated problems.

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ALI SALIH OMAR MOHAMED (4110145)
Faculty of Economics and Muamalat (FEM)
EMAIL. Aliarhoma18@yahoo.com

ASMADDY HARIS