

# The Perception And The Degree of Adoption By Urbanites Towards Urban Farming

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## Research Article

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# Abstract

This research aims at finding out which are the factors that greatly impact city dwellers' perception towards urban farming. The study also looks at the variables which strongly affect the residents' ability to grasp the idea of adopting urban farming practices in the city of Kuala Lumpur, Malaysia. The four main factors included in this study are Confidence, Societal, Naturalness, and Pleasantness. A mixed-method approach was used involving both quantitative and qualitative, of a group of 129 respondents using G-power software. Validity and reliability of the data were also tested to affirm the quality and relevance with accordance to the factors. The main findings revealed that pleasantness and confidence were strong among urbanites for adopting urban farming, in line with Cohen's R Square of more than 32%. In addition, qualitative analysis shows that while there were positive outcomes to complement the quantitative study, there was also, practical constraints that were highlighted. These constraints are space, conditions, and supply chain. Hence, this study has given two significant contributions to regulators and policymakers on urban farming.

## Background Of Research

In just the last century the world's population has greatly increased by the billions to about 7.7 billion people as of 2019. This is estimated to further grow to 9.7 billion in the year 2050 (United Nations, 2019). The way our food systems are organised worldwide is not as efficient as they could be. Tremendous amounts of food are wasted every day in the food & agricultural industry, approximately 1/3 of all food produced ends up wasted (Napolitano, 2019). A significant amount of that wastage is due to poor logistics and failure of outlets to sell everything. Wastage includes water, land, energy, and other natural resources used to produce food (Rezaei & Liu, 2017). The dilemma here is that much of these resources can be used efficiently by modern urban farming techniques which mitigate land, water, and energy but this is not always the case. In trying times like these, can we afford more wastage with a fast-growing population? Nearly 80% of Malaysians are expected to reside in urban areas by 2030 (Florida & Fasche, 2017), this could prove difficult for logistics of food supply and prices of basic foods (i.e. vegetables). These prices will increase as farms are pushed further away from urban areas and governments go as far as solely depending imports for food. The rise in the world population coupled with urbanisation means more people to feed in a concentrated area. According to research by the FAO, Jennings, Cottee, Curtis, and Miller (2015) Food systems worldwide are being redesigned to be more centralized, and for good reason, such a future with dire consequences in for food safety should not be ignored. Many newer industrial players are looking for new ways of establishing food networks in urban areas that grow and/or supply food, start-ups, to name a few in Malaysia there is CityFarm Malaysia, Plant Cartridge, UrbanFarmTech, Urban Hijau. These are gaining recognition and pioneering the effort on a commercial scale.

How are people moving along with these changes? The shift in preferences to what people eat is changing as people become more environmentally and health conscious. Major companies for example "Beyond meat" in the U.S are pioneering foods that replace meat with plant-based "meat-like products" that have gotten generally good reviews changing people's views on a vegetarian diet. Views on the meat industry are also changing as more people are educated with facts such as *"14.5% of all human-induced GHG (Green House Gas) emissions are from livestock, hence harmful to the environment"* (Gerber et al., 2013). Where sustainability is concerned plants grown with modern farming methods like hydroponics, for example, save

water (70–90%). Many set-ups are customisable that can be sustainability and more easily be implemented than traditional farming methods with the right expertise and equipment. Generally, in such systems, there is also less labour involved, no chance of soil-borne, hence minimal insect or pest infections to the crops take place resulting in less or no use of pesticides and their resulting toxicity. Certain plants tend to grow faster as well as compared to crop grown in fields. Various large crops such as corn, maize, melons are not limited to the system and can be grown (Jalava, Kumm, Porkka, Siebert, & Varis, 2014; Sharma, Acharya, Kumar, Singh, & Chaurasia, 2018). All in all, when redesigning such a system making more centralised, it is important to have the views of the stakeholders and see how to best implement it, (e.g. community farms, hydroponic/aquaponic systems and other variants) hence the point of this study. There are a variety of reasons why people won't do something and it's fair to say that each person has their own perception of and probability in grasping the idea of adopting urban farming. How can we know what are their struggles, what they lack, why they don't think of adopting let alone attempt some form of urban farming? This research paper will seek to find out more specifically the perception and the degree of adoption by urbanites towards urban farming in the Klang valley, by including 4 important factors that will help derive answers to why and ponder on solutions on how we can overcome this problem step by step. Practice theory which will be reviewed in the literature review along with factors and variables from this study and other studies are all important in understanding people's perception and degree of adopting a practice like urban farming both mentally and physically. To be clear, in this study the degree of adoption refers to how much are people likely to adopt the idea of urban farming (based on the variables being studied).

Despite growth towards a more centralized food & agricultural industry, there are still many obstacles. We still depend greatly on our old ways despite the government taking steps to stimulate urban farming. For example, the creation of the urban agriculture division under the Department of Agriculture Malaysia in 2010 to promote agricultural activities in the city to reduce the cost of living of the urban community (Shamsudin, 2017). Nearly 40% of Malaysia's Vegetable product imports account for Corn, Wheat, Soybeans, Rice, (OEC, 2018). These are the staples that fuel our economy's working people and also feed our livestock. A-lot of these can be replaced by urban farming as for importing as livestock feed there are many alternatives instead of corn that are surfacing. (which is mostly used for livestock feed). There is progress where several people and communities are embracing urban farming in Malaysia even adapting to the indoor growing of vegetables. For example, In Selangor, there are community farms in places like Subang Jaya and Petaling Jaya, but still many Malaysians rather not start their urban farms the incentive as to why is still not clear made clear (Nee, 2019). Despite this, there are still a lot of people who have no idea what urban farming is, what are its benefits, how to set it up, its importance (hence, why it may be necessary to learn). Some people know about it but don't know how to set it up, don't want to, rather not, don't have an idea of adoption in mind.

## **Problem Statement**

Urban farming has numerous factors linked to it that identify strong/positive or weak/negative perceptions towards adopting the idea of urban farming both through acceptance (mentally) and thereafter materialisation (physically). Both Perceptions and people's perspectives vary amongst urbanites around the world (Bryant, Peña Díaz, Kereita, Lohrberg, & Yokohari, 2016; Othman, Mohammad, Abd Malek, & Razak, 2020; Ramzi, Hussain, Yusoff, Tukiman, & Samah, 2019; Sanye-Mengual et al., 2018). The aim of this study is

to find what factors can be focused on, to increase the chances of a nation having significant food security through means of self-reliant and/or community-based urban farming. Besides, what hinders grasping the idea of adopting urban farming and in turn physically adopting it (materialisation). One study that mentions societal factors may help create a positive perception of urban farming (Nghadiman, Terano, Mohamed, & Sharifuddin., 2017). This study re-analysis of this factor shows different results.

## Research Objectives

*The first research objective.*

To discover the perception of urban farming practices of urbanites living in the Kuala Lumpur, Malaysia, based on 4 factors, confidence, societal, pleasantness and naturalness.

*The second research objective.*

Secondly, to discover the degree of grasping the idea of adoption by urbanites in Kuala Lumpur, with relevance to the 4 factors and other literature which most will impact adoption?

## Literature Review

For this study, Social Practice theory is used as a lens to focus the efforts of all the data analyzed. According to Spaargaren, Lamers, and Weenink (2016) *“All practice theories acknowledge the important, co-constituting role of material objects in social life. One cannot claim to use a practice-based approach when neglecting the role of material objects, symbols, things, technologies and infrastructures as the crucial hardware of the social.”* Hence in this research imagery, technologies, infrastructures, are some of the essentials used. Social practice theory is becoming more and more common with regards to peoples changing behaviour towards environmental sustainability. Furthermore, social practice theory tends to make use of networks of various “critical hardware” in how the final goal is achieved (how the final form of the social practice plays out, however long it takes).

This is a framework laid out by Strengers and Maller (2011) (Fig. 1), shows the concept of including boundaries of social practice theory. People everywhere have a means of daily habit such as we are meant to head to a store to purchase food or a restaurant to eat. In this study, we are seeking what factors most influence an urbanite living in Selangor when it comes to adopting the idea of urban farming in turn and shift from the “normal way” or already established habitual way of doing things. Which variables that will set the trend for societies transition into urban farming? We must seek alternatives to already established habitual behaviour like; what actions can we take to halt peoples routine behaviour which includes going to the store to buy food, or cooking certain types of food, what would change their minds in the way they choose to consume food and with whom? (e.g. urban farming communities?). These Material infrastructures, practical, tacit, knowledge, skills, and common understandings must be replaced with something equally strong. Understanding perceptions of people will give us the clues to finding these alternatives, starting with what they ideas they strongly adopt and only then how it can be materialised.

When planning an urban farming system, we must also consider are the types of food we grow and encourage others to grow, this should meet demands on this basis of health and environmental well-being and 'what' people normally eat. In addition, a variety of nutrients and micronutrients in the foods grown must be anticipated. This is because, despite high calories in many of our foods, many significantly lack nutrients and micronutrients. A well-balanced diet so to say must be struck when deciding what to grow (Jennings et al., 2015). For example, a breakdown of basic things to consider when urban farming planning. A common vegetable dishes in Malaysian cuisine include 'Kangkong' (water spinach / Ipomoea aquatica), it is high in nutrition and generally easily to grow (Simple practical knowledge required). Where to grow it? In a location famous with local restaurants that may use it (Malaysian cuisine), grown on top of the restaurant structure, in a common area equally distant from all the restaurants. Grown by the local community, restaurant workers. Using practical vertical farming hydroponics, with the aid of nutrient solutions, seed trays...etc (this would be the materials needed) in a space tight area. Why is this mentioned? When one thinks about this practically it is a good first step, but it is not necessary that this work. Only when people themselves adopt the idea of doing urban farming, put it into practice and make it a routine will it work. The aim of this research is to contribute to finding out what are we missing?

### ***Factor 1 Confidence:***

According to Terano, Mohamed, Shamsudin, and Latif (2015) Which researched the adoption of agricultural practices by 'farmers' they made use of the theory of planned behaviour to look into the attitude, subjective norms, perceived behavioural control, awareness and knowledge related to sustainable agriculture practices, in their research they concluded that attitude and perceived behavioural control when positive, highly influence rate of adoption. Their study focused on what influenced farmers perception of urban farming using references to perceived behavioural control. According to Ajzen (2011) Perceived behavioural control is one's capacity to carry out the task, in this case of farming. Since it links to "perception". Then confidence is equally or if not more important in influencing the perception and is very well inclusive of capacity, hence one of the reasons why confidence is the main factor. Another by Ida Naziera, Rika, Zainalabidin, and Sharifuddin (2017) study suggests Confidence, in their explanation stated as 'the ease of adopting urban farming', may include aspects of time (one can be confident in adopting something provided they have time), and knowledge, this is important as the more factors are in one the higher the likelihood there will be an impact on perception/grasping the idea of adopting urban farming. Their study goes on to suggest that one would adopt urban farming if there is confidence despite there being little space in the house. This makes sense as urban farming systems are space friendly (e.g. vertical farming).

### ***Factor 2 Societal:***

Societal influence is from the point of view of how much urban farming is promoted/talked about / made use of in the area can differently affect how people view and grasp the idea of adopting urban farming. Societal aspects of urban farming perception may rely on questions such as, if my neighbour does it, I may begin to adopt it, or if there is a role model in a society like a government who highly encourages it I may adopt it, or. Some practices in society may be a high benefit for a low cost if they are people more inclined to adopt it? Definitely (Alamian & Paradis, 2012). Societies and cultures differ in their ways of thinking, and adopting to ideas (Schwartz, 2009) this study applies to Malaysian society and more specifically the residents of Klang

Valley but extracts new information from the respondent such as how much is urban farming promoted in your area? Do your friends and relatives talk about urban farming? People depend on urban farming a lot in your area to what extent do you agree/disagree. This form of questioning will show a different perspective of how people relate society to urban farming and possibly how they may grasp the idea of adopting urban farming.

### ***Factor 3 Pleasantness:***

Pleasantness may describe how one perceives an image of urban farming, if it is that he or she sees it as a positive task, whether the person sees it as clean, wants it to be clean, wants it to look a certain way (e.g. metal and skeletal like vs modern and attractive), prefers it to smell a certain way, regardless of how odd it may sound pleasantness is important in people perception of an urban farm and important in encouraging them to adopt the idea of it and start doing it. According to a study done on urban quality of life, people seek pleasantness in urban lifestyle whether it's what they eat what they do, how they live, coming to an urban area from a poor background at the end of the day is for a better and more pleasant life (D'Acci, 2014). So indeed, pleasantness may very well be an important factor in urban farming.

### ***Factor 4 Naturalness:***

This factor is significant in the food and drink industry. Individuals are more susceptible to purchase food items that are named "natural" as they feel it is more beneficial, and liberated from destructive synthetic substances (Araya, Elberg, Noton, & Schwartz, 2018). Does this have weight when applied to urban farming? Would individuals be bound to embrace the idea of adopting urban farming strongly because of naturalness? It is important to note that urban farming in itself is not 100% natural as many synthetic materials build its structure (e.g. PVC in tubings) and certain forms of urban farming for example hydroponics may use chemical fertilizers. On the planet we live in today, numerous items store bought are unnaturally treated to become bigger, grow quicker, and satisfy the needs of buyer society. Something to ponder on is will we arrive at a point where individuals state that is the last straw? Perhaps a shift to adopting more natural forms of urban farming where although equipment used is synthetic the food farmed is organic (for example aquaponics).

## **Relevant Past Studies And Research Gaps**

Over the course of 6000 years up till the present day, cities and various urban areas have been known to humans as hubs of trade and vast habitual developments. The concept ingrained in the minds of people has not changed, the social practice of an urban area with regards to habits of the latter remains unchanged, and although urban farming has slowly crept in during the more recently decades it will not take off until a huge societal change is initiated, this in turn may take some time. Farmers for a great number of years visited cities to sell their produce, the concept of a city being an area of farming has not even penetrated the minds of the people in today's society (Smith, 2019). In the advent of a sustainability crises that faces our world today, many studies are being carried out to study consumer behavioral patterns, one theory most used and widely recognized is the social practice theory. Social practice theory focuses on circular economic solutions especially for people in urban areas and other studies suggest that social practice is shifting its focus on more environmental concerning behaviors (Corsini, Laurenti, Meinherz, Appio, & Mora, 2019).

A study by a Malaysia group of researchers suggests a number of useful factors that influence people's incentive to practice on urban farming to name a few; confidence, societal, having a positive perception influence people's ability to practice urban farming (Ngahdiman et al., 2017). Other studies suggest transitions and possible approaches that make urban farming a suitable alternative taking into account laws, as well as types of food to be grown, even providing examples of alternative high protein sources such as crickets (Specht et al., 2019). Another local study showed the importance that people see in community farming, environmental, social, economic, and healthy lifestyles reasons (Ramzi et al., 2019). This study was done among mostly people who already do urban farming and hence therein was their perspective. Our study focuses on people who have not done urban farming before and what is their perspectives.

A foreign study in Italy suggested people's perceptions and acceptances to the idea of adopting urban farming were quite high as most people lived in houses with rooftops and rooftop farming was highly encouraged. They also showed high preference for urban farmed goods here (Sanye-Mengual et al., 2018). All these studies show interesting perspectives perhaps a comparative study sometime in the future may help us understand people's overall perceptions better.

## **Theoretical/ Conceptual Framework**

Displayed is a rendition of the framework used. In the structure there are 4 autonomous factors (Societal, Confidence, Pleasantness and Naturalness) that impact the recognition and selection of grasping of the idea of adoption and various perceptions of urban farming by urbanites. Further examination will be done other than the quantitative questioning that will contribute to the reader having a broader, clearer idea of people's perception and idea of adoption when it comes to urban farming. Studies have indicated that the accompanying Independent factors can impact individuals' recognition on Urban farming. In their particular investigations there have been questions that spread a scope of numerous different variables making these the key elements which combine a number of different factors into one bundle each (Fig. 2).

## **Methodology**

### ***Research Approach & Design***

This study aims mainly at a quantitative approach in gathering data to analysis people's perceptions towards urban farming as well as degree to which they grasp the idea of adopting urban farming, it is done with the use of carefully selected variables that by themselves also contain a number of factors in them. The research takes a slightly broad approach but the study also undertook a qualitative approach where two important questions were asked which were open ended and the findings were then categorised and coded with themes and the analysis further information on this is in the findings section. Furthermore, imagery and demographic information contribute to creating a clearer picture of what people perceive about urban farming and how we can help create systems more inclined for them to adopt to and materialise (do urban farming themselves). The research was initially designed to be a done via face to face interviews but due to a number of unforeseen events (i.e. COVID 19) the survey was rendered redundant and remade to suit an online audience with a more simplistic yet in depth approach mixed into a long survey that is easily completed in 5 minutes or under (see questionnaire in appendix)

### ***Research scope and sampling plan***

According to the G-Power index a sample of 129 is good enough for the number of variables we are targeting. The sample will take on a snowball like approach where people in the Klang valley will send it out to people they know and so forth in the end covering the threshold of respondents needed. Certain questions have been put in to regulate who responds (refer to first page of questionnaire appendix). The research scope is only within the Klang Valley of Malaysia and its residents.

### ***Research Instruments***

Other than G-Power tool used for predicting the optimum sample size needed for data collection. SPSS was used to key in cleaned and analysis data. Data was gathered using Google forms which was easily sharable via a link.

### ***Data Collection and Data Analysis***

A total of 167 responses were collected to date (14/9/2020) however during the time the data cleaned and was analysed 133 responses were used for the results shown in the findings.

## **Findings**

### ***Results***

#### ***Straight Line Error***

In order to figure out if there were people who did not genuinely answer the survey, a straight-line test (Variance Analysis) was conducted using the results keyed into SPSS. Out of the survey of n = 135, 2 respondents had straight line error and were deleted leaving the total number as n = 133.

#### ***Data Reliability & Validity Test***

##### ***Validity Tests***

The Validity test for all 5 factors ( Confidence, Societal, Pleasantness, Naturalness and the dependant variable Adoption) the KMO and Bartlett's Test, KMO measure of sampling adequacy was well above the threshold 0.60 at 0.792, hence this test was passed, Table 1.

Table 1: KMO and and Bartlett's Test

#### **KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.792
Bartlett's Test of Sphericity	Approx. Chi-Square	1971.057
	df	325
	Sig.	.000



Table 2: Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.394	28.438	28.438	7.394	28.438	28.438	3.751	14.426	14.426
2	3.140	12.078	40.516	3.140	12.078	40.516	3.333	12.821	27.247
3	2.371	9.120	49.636	2.371	9.120	49.636	3.251	12.503	39.750
4	1.858	7.147	56.783	1.858	7.147	56.783	2.982	11.469	51.219
5	1.505	5.787	62.570	1.505	5.787	62.570	2.951	11.352	62.570

Total Variance Explained TVE test for Validity was a pass. The threshold if at 50%, the test for factors had an amount of 62.570%, Table 2.

Table 3: Rotated Component Matrix Test

	Rotated Component Matrix <sup>a</sup>				
	Component				
	1	2	3	4	5
Section A Q1			.685		
Section A Q2	.403		.690		
Section A Q3			.756		
Section A Q4			.746		
Section A Q5			.786		
Section A Q6					
Section B Q1				.755	
Section B Q2				.505	
Section B Q3	.605				
Section B Q4				.795	
Section B Q5				.631	
Section B Q6				.818	
Section C Q1					.747
Section C Q2					.668
Section C Q3					.783
Section C Q4					.553
Section C Q5					.625
Section C Q6	.415				.445
Section D Q1		.881			
Section D Q2		.830			
Section D Q3		.833			
Section D Q4		.916			
Adoption Q1	.760				
Adoption Q2	.837				
Adoption Q3	.746				
Adoption Q4	.768				

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

The Last test for Validity, the Rotated Component Matrix Test, Table 3, was also a success, Whatever value that was above 0.5 and within the columns were accepted. However, there were a few questions that had to be excluded like Section A Question 6 which was below the bare minimum threshold of 0.5 somewhere < 0.40. Section B Question 3 did not align within the same column as its peers, hence, is also rejected. Section C Question 6 was also below 0.5 hence rejected. To further analyse why certain questions did not fit or obtain the threshold, the questionnaire can be reviewed in the APPENDIX.

Financial questions like Section A Question 6 couldn't find its place among its peers, one observation is that the nature of the question demands measurement of confidence in of financial capabilities related to urban farming, the scale is blurred as people possibly are not sure what the costs of setting up an urban farm are in the first place and whether or not it is cheap or expensive. Section B Question 3's observation was excluded for not fitting. This is because the question quite suddenly demands self-reflection after a few questions about other people the respondent judges. For Section C Question 6 it is a bit unclear as to why it fell below the threshold of 0.5, however one explanation could be that it demanded a deeper self-reflection of which people could not gauge in terms of how relaxed urban farming would make them. After all respondents interviewed merely have a perception and no experience of urban farming so the scale is unclear.

*Reliability Tests and Outliers*

Reliability test 1 – Cronbach Alpha for all 5 factors exceeded 0.70 threshold at 0.837. Hence the data collected is in fact reliable according to this test, Table 4.

Table 4: Reliability Statistics

<b>Reliability Statistics</b>	
Cronbach's Alpha	N of Items
.837	5

Table 5: Skewness and Kurtosis for "Confidence"

Confidence

<b>Skewness</b>	<b>-.275</b>
<b>Kurtosis</b>	<b>-.292</b>

Table 6: Skewness and Kurtosis for "Societal"

Societal

Skewness	.506
Kurtosis	-.310

Table 7: Skewness and Kurtosis for "Pleasantness"

Skewness	-.346
Kurtosis	-.151

Table 8: Skewness and Kurtosis for "Naturalness"

Skewness	-.463
Kurtosis	-.230

Table 9: Skewness and Kurtosis for "Adoption"

Skewness	-.571
Kurtosis	-.202

All Skewness and Kurtosis for all the variables are between - 1 and 1 hence this passes the first reliability test for normality. Although there are some outliers seen in societal, pleasantness and naturalness, it was chosen not to remove them as there is no need, as the results have been tested to be normal Fig. 4 - Fig. 8, Table 5 – Table 9.

## Discussions / Demographics Pie Charts

Table 10: Percentage of genders

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	62	46.6	46.6	46.6
	Female	69	51.9	51.9	98.5
	Prefer not to say	2	1.5	1.5	100.0
	Total	133	100.0	100.0	

The study has fairly balanced respondents in terms of gender (Male and Female), with 62 males and 69 females and 2 people not stating, Fig. 9 and Table 10. The following table and chart show age group among

the sample taken for this study as well as how many among live in landed or apartment/condos, Table 11 and Fig. 10.

Table 11: Percentage of ages

		<b>Age</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	39	29.3	29.3	29.3
	25-39	44	33.1	33.1	62.4
	40-60	37	27.8	27.8	90.2
	60 plus	13	9.8	9.8	100.0
	Total	133	100.0	100.0	

Some things to note among the sample taken based on the next few pie charts. 21.6% of the people in the sample have not heard about urban farming before taking the survey, while 78.4% have. Nearly half (44.3%) of the respondents have not heard about aquaponics before taking the survey, but the rest have. On the other hand, almost 70% of the respondents have heard about hydroponics before taking the survey while the rest have not. In summary this data merely suggests that roughly among the respondents, more people have heard about hydroponics than aquaponics and a solid 3/4 of the respondents in this survey have heard about urban farming before taking this survey, Fig. 11.

With respect to preference of where to do urban farming. The majority of people (more than half) wouldn't mind doing it indoors and outdoors, while a significant chunk preferred outdoors only, Fig. 12.

*Implications / Comments on Descriptive*

Table 12: Descriptive Statistics: mean and standards deviation

<b>Descriptive Statistics</b>					
	N	Minimum	Maximum	Mean	Std. Deviation
CF	133	2.00	10.00	6.5489	1.72796
SC	133	.00	10.00	3.4180	1.96615
PL	133	1.00	10.00	6.1985	1.73284
NT	133	.00	10.00	6.3496	2.29045
AD	133	1.25	10.00	6.4004	2.00070
Valid N (listwise)	133				

These descriptive results show how the respondents felt about the following factors with regards to urban farming. Among these results societal was the lowest. Hence what people feel about the societal aspect

pertaining to urban farming is weak. A study by Ngahdiman et al. (2017) reported that “*Societal influences such as family and friends and also role models such as government, public figures, and environmentalists play important roles in creating positive perception towards urban agriculture among urban dwellers*”. While what their report has found likely true, Section B Questions 1–6 (see appendix). With relevance to societal factor in this report, a different approach was taken showcasing presence of urban farming / promotion / dependence of it in society rather than the influential aspect. As a result, presence of urban farming / promotion / dependence is generally weak, hence this adds a new contribution to the knowledge base. Furthermore, a positive ‘perception’ in society does not necessarily relay to materialisation of the concept let alone the idea of adopting it.

#### Further Testing

##### *Correlation Test*

Table 13: Correlations test

		<b>Correlations</b>				
		AD	CF	SC	PL	NT
Pearson Correlation	AD	1.000	.525	.241	.450	.218
	CF	.525	1.000	.267	.317	.111
	SC	.241	.267	1.000	.307	.234
	PL	.450	.317	.307	1.000	.318
	NT	.218	.111	.234	.318	1.000
Sig. (1-tailed)	AD	.	.000	.003	.000	.006
	CF	.000	.	.001	.000	.103
	SC	.003	.001	.	.000	.003
	PL	.000	.000	.000	.	.000
	NT	.006	.103	.003	.000	.

$P < 0.05$  hence all the hypothesis is accepted. Correlation only shows the relation between two variables hence, Table 13. The coefficient test with factors 1 on 1 against each other (by effect) shows the following results: Confidence and Pleasantness by themselves against Adoption have higher values than Societal aspect and Naturalness against Adoption by themselves. A better and more relevant understanding of this would be that of the coefficient test where we put all the variables together and see what factors most influence an urbanite living in Selangor when it comes to adopting the idea of urban farming.

##### *Coefficient Test*

Table 14: Coefficient test

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.675	.695		.972	.333		
	CF	.486	.087	.419	5.573	.000	.868	1.152
	SC	.024	.077	.024	.314	.754	.854	1.172
	PL	.330	.091	.285	3.615	.000	.789	1.268
	NT	.066	.065	.076	1.009	.315	.878	1.139

a. Dependent Variable: AD

If you put all the four variables together and try to predict the degree (combined affect) to which people grasp the idea of adopting urban farming, we can observe the following results, Table 14. According to the Cohen if R Square is > 32% It is considered high impact; in this case the R Square is 37.1% (see below) which easily indicates high impact. There could be many reasons impacting peoples grasp of the idea of adoption, however the factors in this study account for a significant chunk of it. A good example of another factor is Economical factor which some studies have also proven (in the literature review) have a strong impact on overall adoption of the idea and materialisation of practicing urban farming. Furthermore, in this study we can see that the strongest factors that contribute to the idea of adoption are confidence and pleasantness as circled in the coefficient table. This translates to advice where if one were to set up a campaign to try and get people to adopt the idea of urban farming, one should focus on igniting people’s confidence which seems to be dormant but strong in Klang valley urbanites. As well as improving on how to make urban farming a more pleasant experience, through its practicality, its look (design / colour ) its odour.

Table 15: Model Summary

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.609 <sup>a</sup>	.371	.351	1.61187	1.971

a. Predictors: (Constant), NT, CF, SC, PL

b. Dependent Variable: AD

Additional information to guide people setting up urban farming can be found in the next subsection where results of a few qualitative questions may reveal some practical constraints or challenges people face when grasping the idea of adopting urban farming. In addition to that some images of urban farms rated ‘top 3’ of which respondent’s seemed to like may assist in what they like to see as a part of implementing urban farming in the Klang Valley, Table 15.

*Small scale Qualitative study / Urban farm preferences (Additional findings)*

Focusing on one of the qualitative questions asked. A small qualitative study was done. The question asked was "Urban farming is becoming more important as populations around the world increase." What do you think of this sentence? The objective here was to tap further into perception of urban farming among the respondents with an aspect of importance. The qualitative study concluded with the following diagram after manually coding and categorisation, Fig. 13.

The key findings in this article are for urbanites living in Malaysia, when the confidence increases together with the pleasantness the idea of adoption is stronger, together with naturalness and societal the impact is significant. However, this study has also brought about a new angle in which the qualitative analysis shows that while there were positive outcomes to compliment the quantitative study there was also, practical constraints that were highlighted. These constraints are space, conditions, and supply chain (urban farming materials / turn key solutions). Hence this study has contributed not only to satisfy the objectives of this study but has given the opportunity for urban farming planners to consider additional input into social practice theory model used, when creating an urban farming community or area to replace habitual behaviour of people that may be unsustainability / inefficiently sourcing food. As for regulators especially in the housing area to consider space in their architectural drawings in order to overcome or mitigate the constraints that were highlighted in this study. Governments and retailers can take initiatives to source for urban farming materials and make them more common place in society (anything from starter kits for hydroponics to materials, DIY urban farming, guides...etc). Below are the top 3 images that were greatly liked by respondents ranking from 1st to 3rd. The ranking is based on the average of the scales. They show peoples preference of urban farming setups they prefer and are to their liking.

The first picture one could say adheres to satisfying the space constraint that respondents refer to as well as the pleasantness factor in the eyes of the urbanite. The second picture may dwell in the zone of confidence and pleasantness, the device is a simple urban farm that a lot of people use. furthermore, something to note is that respondents may have seen it as more appealing when surrounded by a number of plants and vegetation. The third brings about a sense of positivity as previous studies have shown and is undoubtedly on the list.

## Conclusions, Limitations And Future Studies

In conclusion any campaign focused on enabling people to grasp the initial idea of adopting urban farming (before the materialise and actually do it) should focus on building upon their already strong confidence in carry out doing urban farming (despite not having done it before). Furthermore, Pleasantness should be well orchestrated in the design of various urban farms, with considerations on how it may look, as seen from some of the imagery in the additional findings, one could be advised to make sure there is space for urban farming, see that it stands out clearly in people's eyes, other senses in pleasantness should be stimulated positively as well such as touch and smell, people want something clean, and not smelly (overly smelly). Naturalness has its effect as well although not so significant, hence hydroponics which uses chemical fertilizers sometimes is still acceptable by the people, the whole setup of urban farms which use pipes and plastic materials may also be acceptable if this is the case. Finally relating societal influences and societal  $\diamond$  idea of adopting urban farming. Societal influence may create a positive image of urban farming, but a greater presence of urban farming in a society will not necessarily lead to people adopting the idea of urban farming at least not in the.

## Future studies / Limitations

- Interview more people in the business of urban farming get their opinions and how they adopted and materialised urban farming practices in society. With this information results can be triangulated.
- Get more opinions on large scale urban farming adoption and materialisation from policy makers / Land holders (i.e. community urban farm owners)
- This study is limited to one region. Therefore, do comparative studies with different countries or regions to get a better idea of diversity among social thinking and practices.
- Study depends on secondary data for other factors other than those stated, perhaps a follow up study done in a similar standardised manner including more factors could create more accurate secondary data specific to the region.

## Declarations

To be used for all articles, including articles with biological applications: Not applicable

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Authors' contributions (optional: please review the submission guidelines from the journal whether statements are mandatory): The authors have equal contributions.

Additional declarations for articles in life science journals that report the results of studies involving humans and/or animals: Not applicable

Ethics approval (include appropriate approvals or waivers): Not applicable

Consent to participate (include appropriate statements): The respondents agreed to the processing, evaluation, analysis and publication of the data.

## References

1. Alamian, A., & Paradis, G. (2012). Individual and social determinants of multiple chronic disease behavioral risk factors among youth. *BMC Public Health* 12 doi:<http://doi.org/10.1186/1471-2458-12-224>.
2. Araya, S., Elberg, A., Noton, C., & Schwartz, D. (2018). Identifying Food Labeling Effects on Consumer Behavior. *SSRN Electronic Journal*, 1. doi: 10.2139/ssrn.3195500
3. Bryant, C., Peña Díaz, J., Kereita, B., Lohrberg, F., & Yokohari, M. (2016). Urban Agriculture from a Global Perspective. In (pp. 30-37).



4. Corsini, F., Laurenti, R., Meinherz, F., Appio, F. P., & Mora, L. (2019). The Advent of Practice Theories in Research on Sustainable Consumption: Past, Current and Future Directions of the Field. *MDPI*, *1*, 1-19.
5. D'Acci, L. (2014). Monetary, Subjective and Quantitative Approaches to Assess Urban Quality of Life and Pleasantness in Cities (Hedonic Price, Willingness-to-Pay, Positional Value, Life Satisfaction, Isobenefit Lines). *Social Indicators Research* *115*(2). doi:10.1007/s11205-012-0221-7
6. Florida, R., & Fasche, M. (2017). *The Rise Of The Urban Creative Class In Southeast Asia*. Retrieved from Toronto, Canada: <http://martinprosperity.org/media/Rise-of-the-Urban-Creative-Class-in-Southeast-Asia.pdf>
7. Gerber, P. J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., . . . Tempio, G. (2013). *Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities*. . Rome.
8. Ida Naziera, N., Rika, T., Zainalabidin, M., & Sharifuddin, J. (2017). Factors affecting urban dwellers to practice urban agriculture. . *International Journal of Advanced Research*, *5*, 1580-1587. doi:10.21474/IJAR01/4872
9. Jalava, M., Kummu, M., Porkka, M., Siebert, S., & Varis, O. (2014). Diet Change—a solution to reduce water use. *Environmental Research Letters* *9*(7).
10. Jennings, S., Cottee, J., Curtis, T., & Miller, S. (2015). *Food In An Urbanised World: The Role of City Region Food Systems in Resilience and Sustainable Development*. Retrieved from <http://www.fao.org/fileadmin/templates/agphome/documents/horticulture/crfs/foodurbanized.pdf>
11. Napolitano, G. (2019). Stop the waste: UN food agencies call for action to reduce global hunger. *Economic Development*. Retrieved from <https://news.un.org/en/story/2019/10/1049181>
12. Nee, L. S. (2019). Urban farming: Researchers try to wean M'sia off over-reliance on imports. *The Sun Daily*. Retrieved from <https://www.thesundaily.my/local/urban-farming-researchers-try-to-wean-m-sia-off-over-reliance-on-imports-GY1313080>
13. Ngahdiman, I. N., Terano, R., Mohamed, Z., & Sharifuddin., J. (2017). FACTORS AFFECTING URBAN DWELLERS TO PRACTICE URBAN AGRICULTURE. *International Journal of Advanced Research*, *7*(7), 1580-1587. doi:<http://dx.doi.org/10.21474/IJAR01/4872>
14. OEC. (2018). Malaysia (MYS) Exports, Imports, and Trade Partners Retrieved from <https://oec.world/en/profile/country/mys>
15. Othman, N., Mohammad, S. Z., Abd Malek, N., & Razak, M. A. W. A. (2020). Deterrent Factors in Urban Farming Participation. *Environment-Behaviour Proceedings Journal*, *5*(13), 353-358.
16. Ramzi, M., Hussain, M., Yusoff, N. H., Tukiman, I., & Samah, M. A. A. (2019). Mohd Ramzi Mohd Hussain, Norul Hafizah Yusoff, Izawati Tukiman, Mohd Armi Abu Samah Community Perception and Participation of Urban Farming Activities. *International Journal of Recent Technology and Engineering*, *8*(1).
17. Rezaei, M., & Liu, B. (2017). Food Loss And Waste In The Supply Chain. *NutFruit*.
18. Sanye-Mengual, E., KathrinSpecht, ThomasKrikser, CaterinaVanni, GiuseppinaPennisi, FrancescoOrsini, & Gianquint, G. P. (2018). Social acceptance and perceived ecosystem services of urban agriculture in Southern Europe: The case of Bologna, Italy. *PLOS one*, *1*. doi:<https://doi.org/10.1371/journal.pone.0200993>

19. Schwartz, S. H. (2009). *Ethnographic journeys to cross-cultural research, Chapter: Causes of culture: National differences in cultural embeddedness*. Jerusalem Israel: Hebrew University of Jerusalem.
20. Shamsudin, N. (2017). Farming in the city. *New Straits Times*. Retrieved from <https://www.nst.com.my/opinion/columnists/2017/07/259309/farming-city>
21. Sharma, N., Acharya, S., Kumar, K., Singh, N., & Chaurasia, O. P. (2018). Hydroponics as an advanced technique for vegetable production: An overview. *Journal of Soil and Water Conservation*, 17, 364-371. doi:10.5958/2455-7145.2018.00056.5
22. Smith, M. L. (2019). *Cities The First 6000 Years*. New York: Viking.
23. Spaargaren, G., Lamers, M., & Weenink, D. (2016). *Practice Theory and Research - Exploring the dynamics of social life*.
24. Specht, K., Zoll, F., Schümann, H., Bela, J., Kachel, J., & Robischon, M. (2019). How Will We Eat and Produce in the Cities of the Future? From Edible Insects to Vertical Farming—A Study on the Perception and Acceptability of New Approaches. *MDPI*, 11. doi:<https://www.mdpi.com/2071-1050/11/16/4315>
25. Strengers, Y., & Maller, C. (2011). Integrating health, housing and energy policies: social practices of cooling. *Building Research & Information*, 39, 1-15.
26. Terano, R., Mohamed, Z., Shamsudin, M. N., & Latif, I. A. (2015). Factors Influencing Intention to Adopt Sustainable Agriculture Practices among Paddy Farmers in Kada, Malaysia. *Asian Journal of Agricultural Research*, 9, 268-275. Retrieved from <https://scialert.net/fulltextmobile/?doi=ajar.2015.268.275>
27. United Nations. (2019). *World Population Prospectus 2019: Highlights*. Retrieved from [https://population.un.org/wpp/Publications/Files/WPP2019\\_Highlights.pdf](https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf)

## Supplemental Data

Appendix is not available with this version.

## Figures

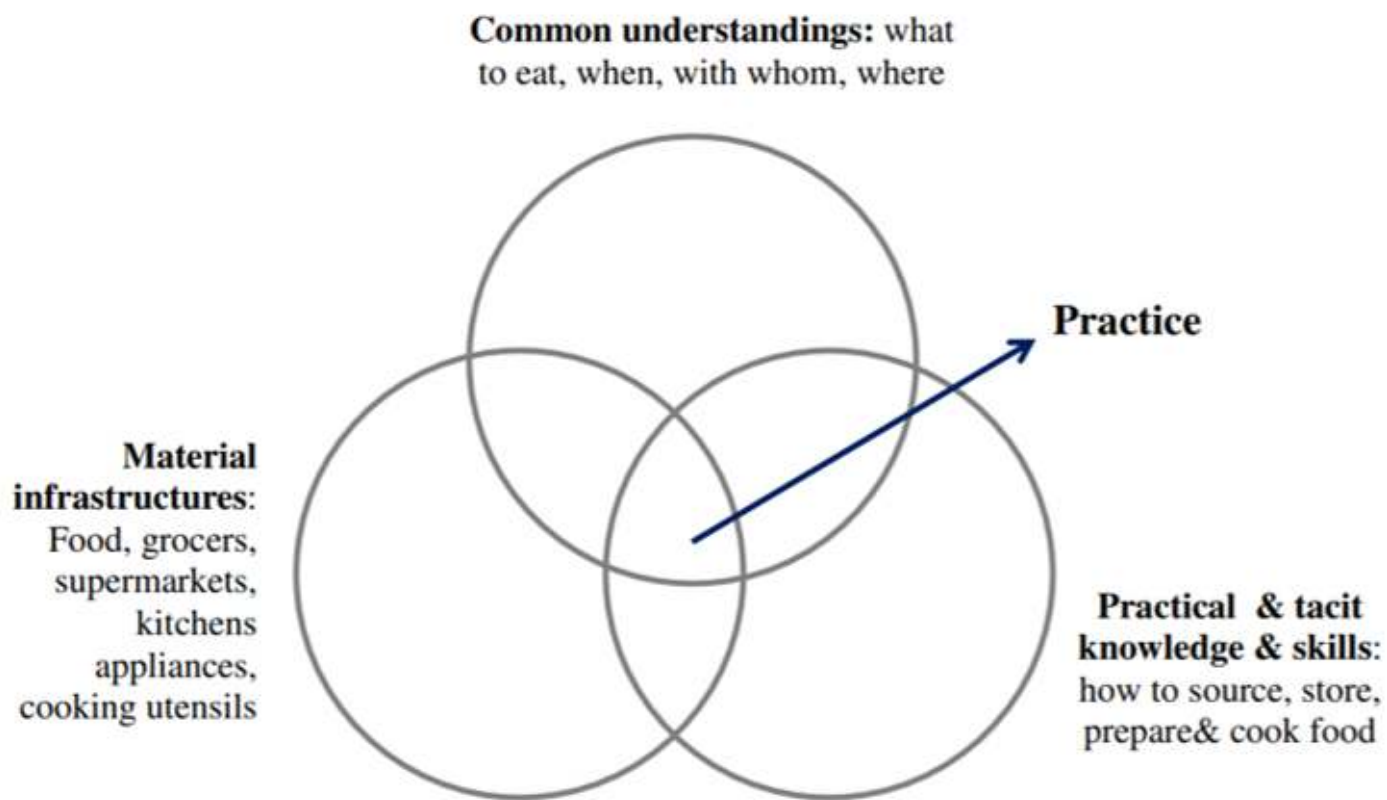


Figure 1

Adapted from (Strengers & Maller, 2011)

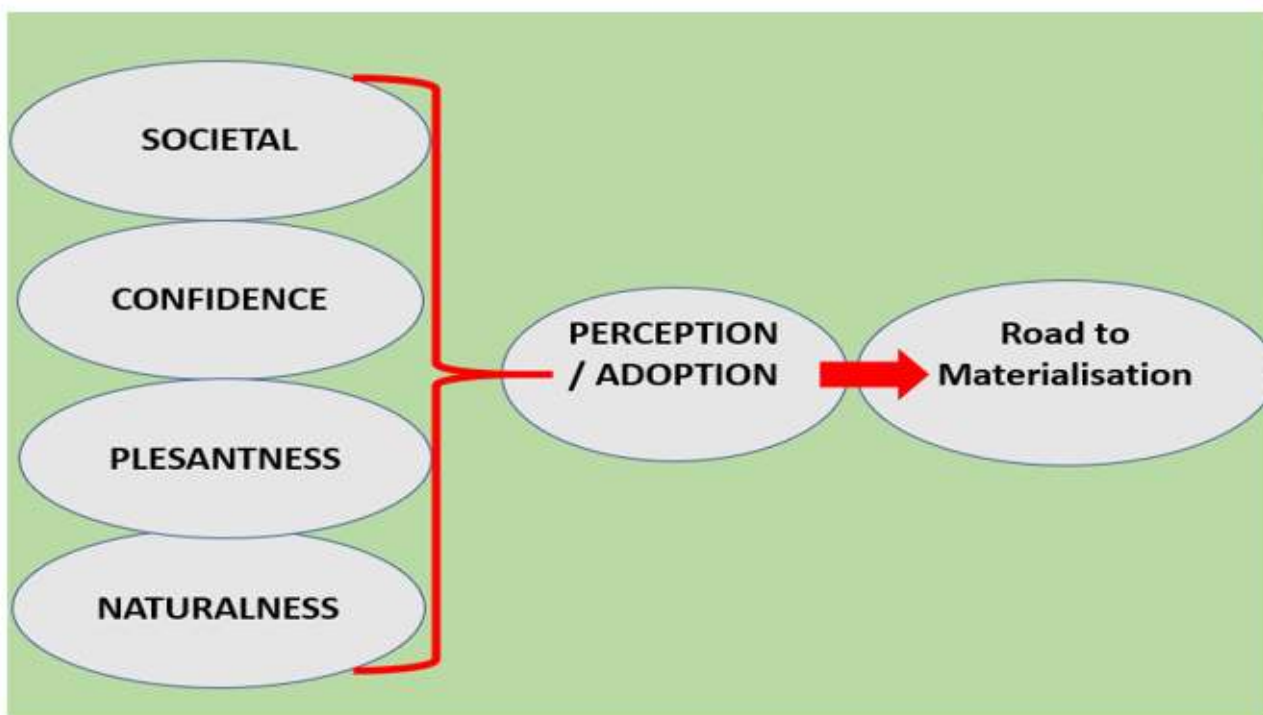


Figure 2

# Conceptual Framework

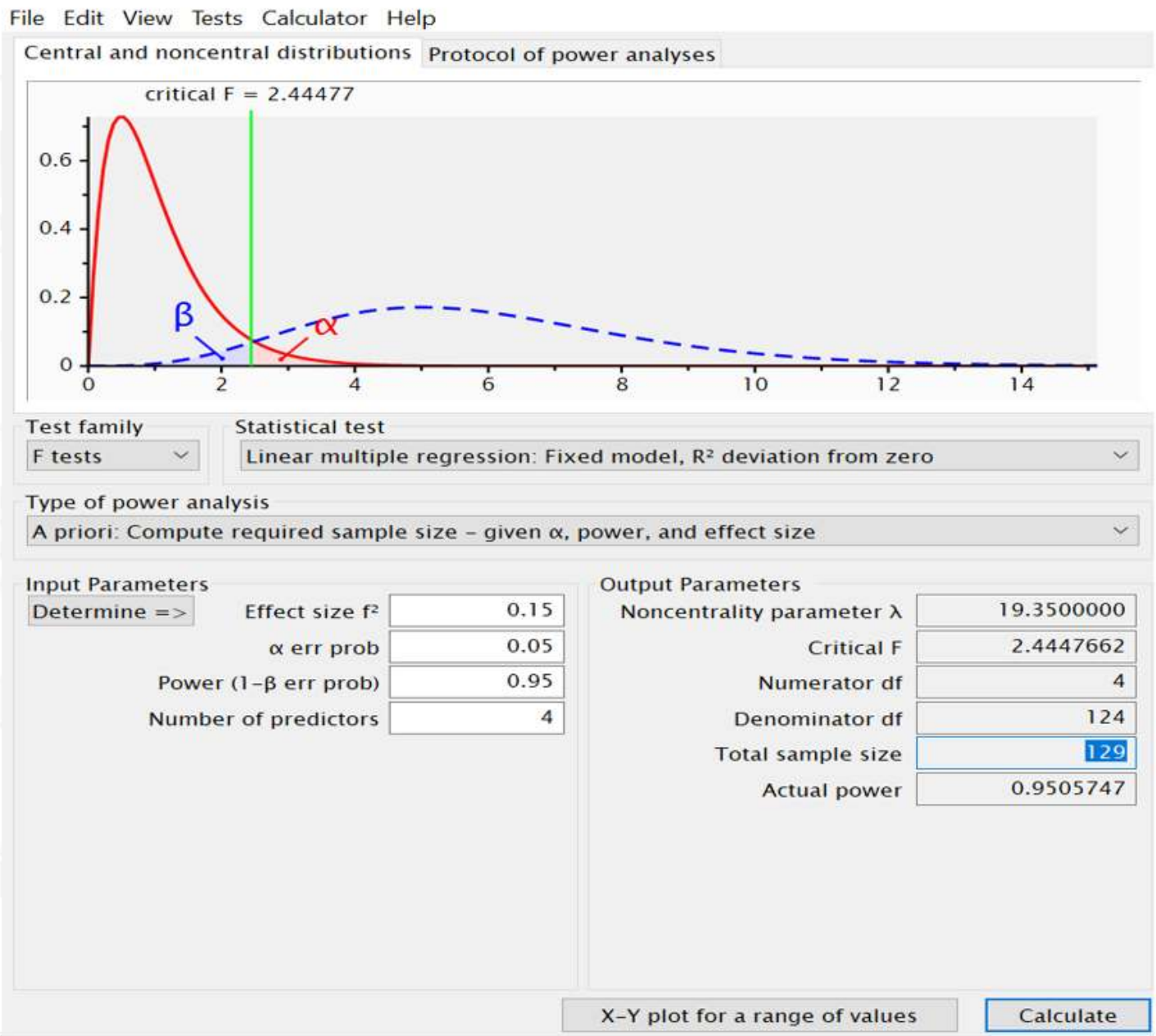


Figure 3

SPSS findings

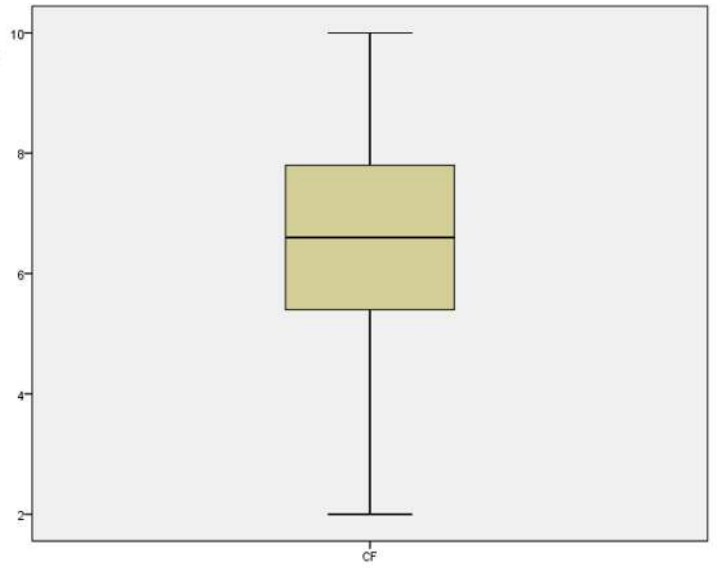
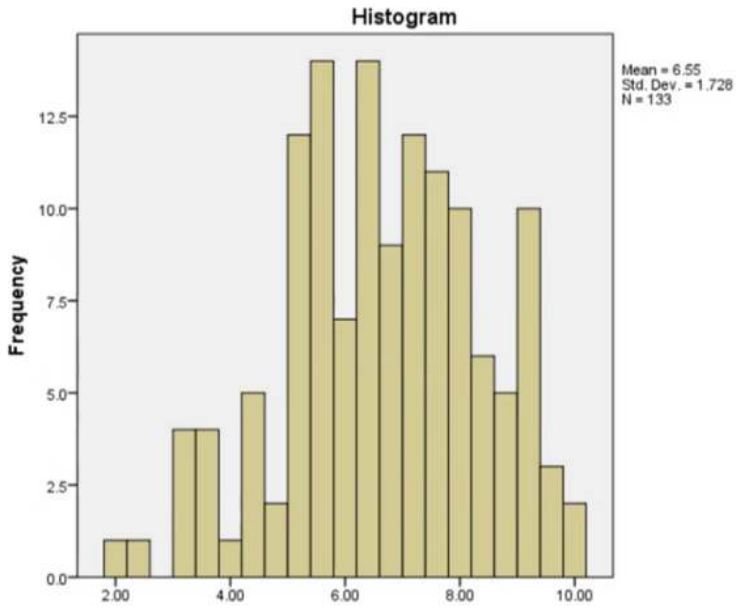


Figure 4

Test for "Societal"

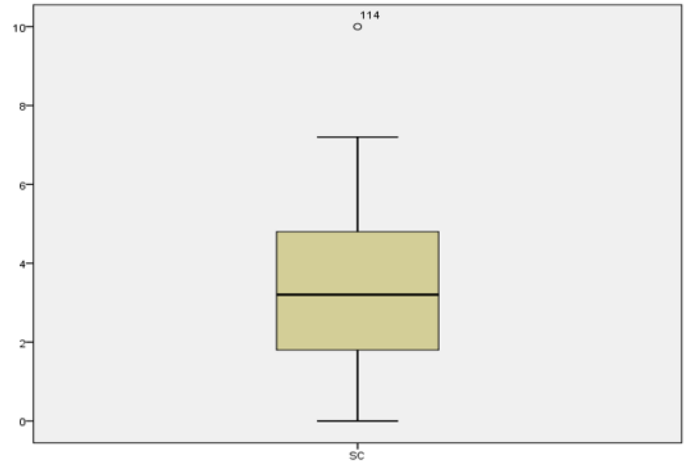
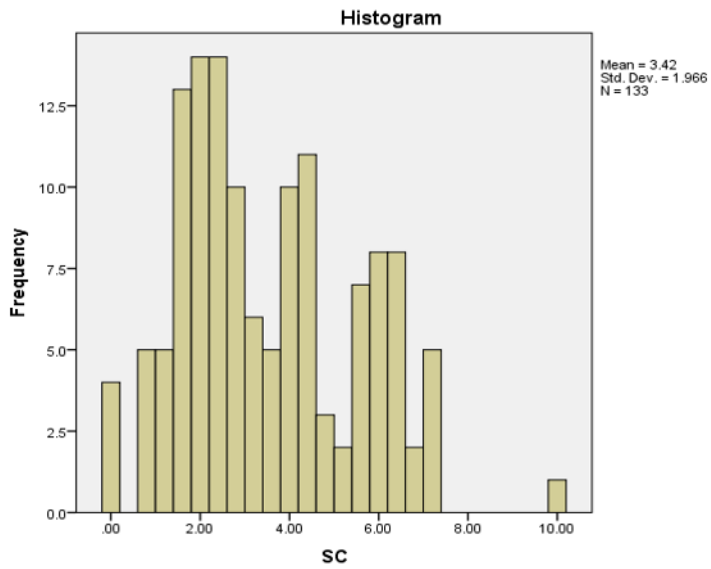


Figure 5

Test for "Societal"

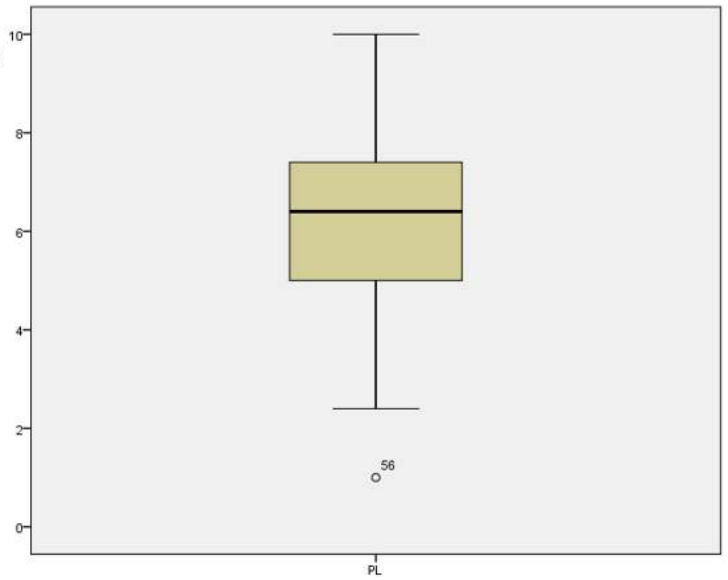
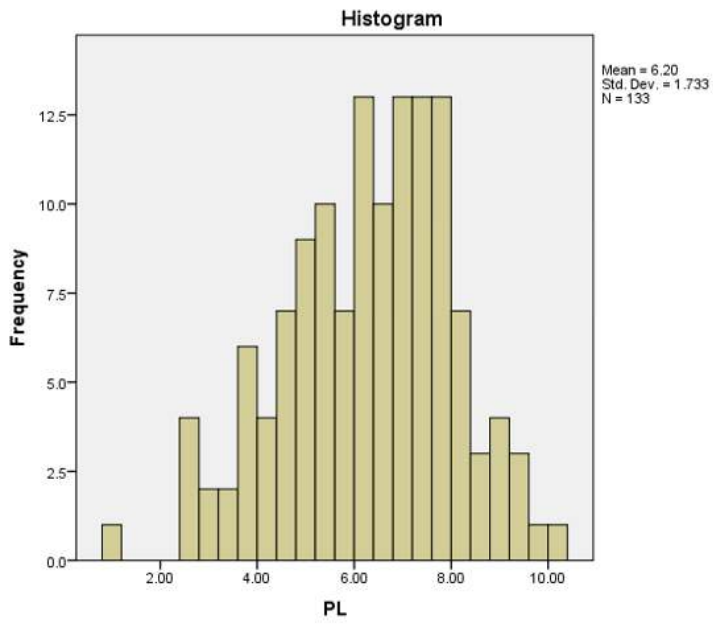


Figure 6

Test for "Pleasantness"

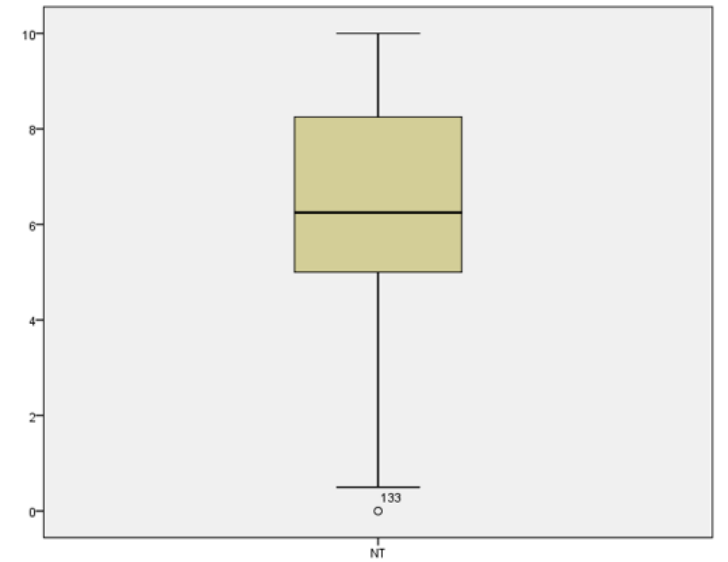
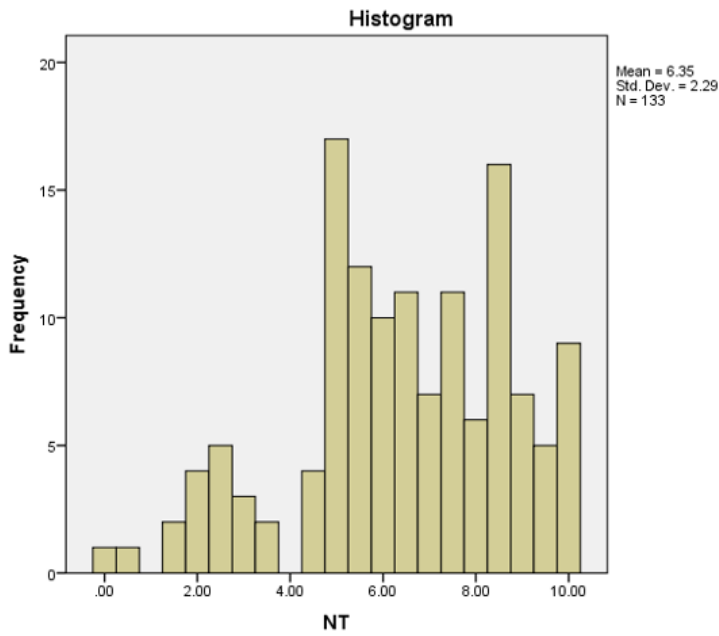


Figure 7

Test for "Naturalness"

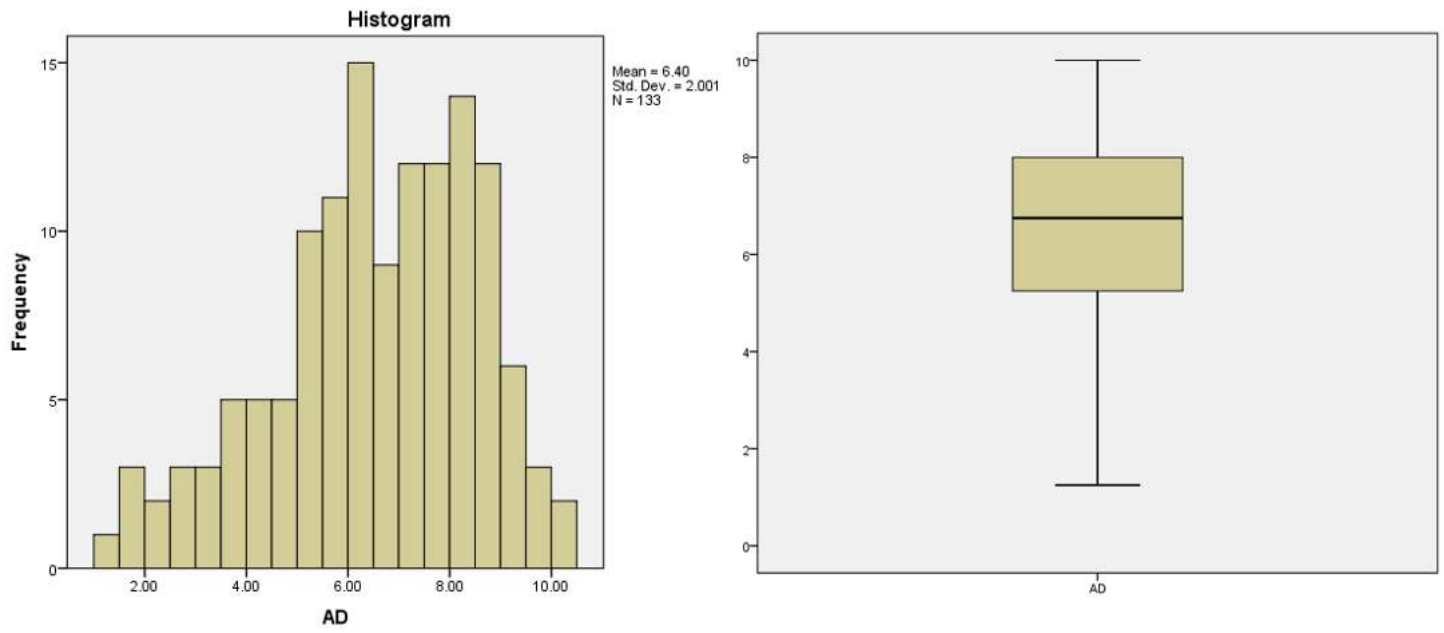
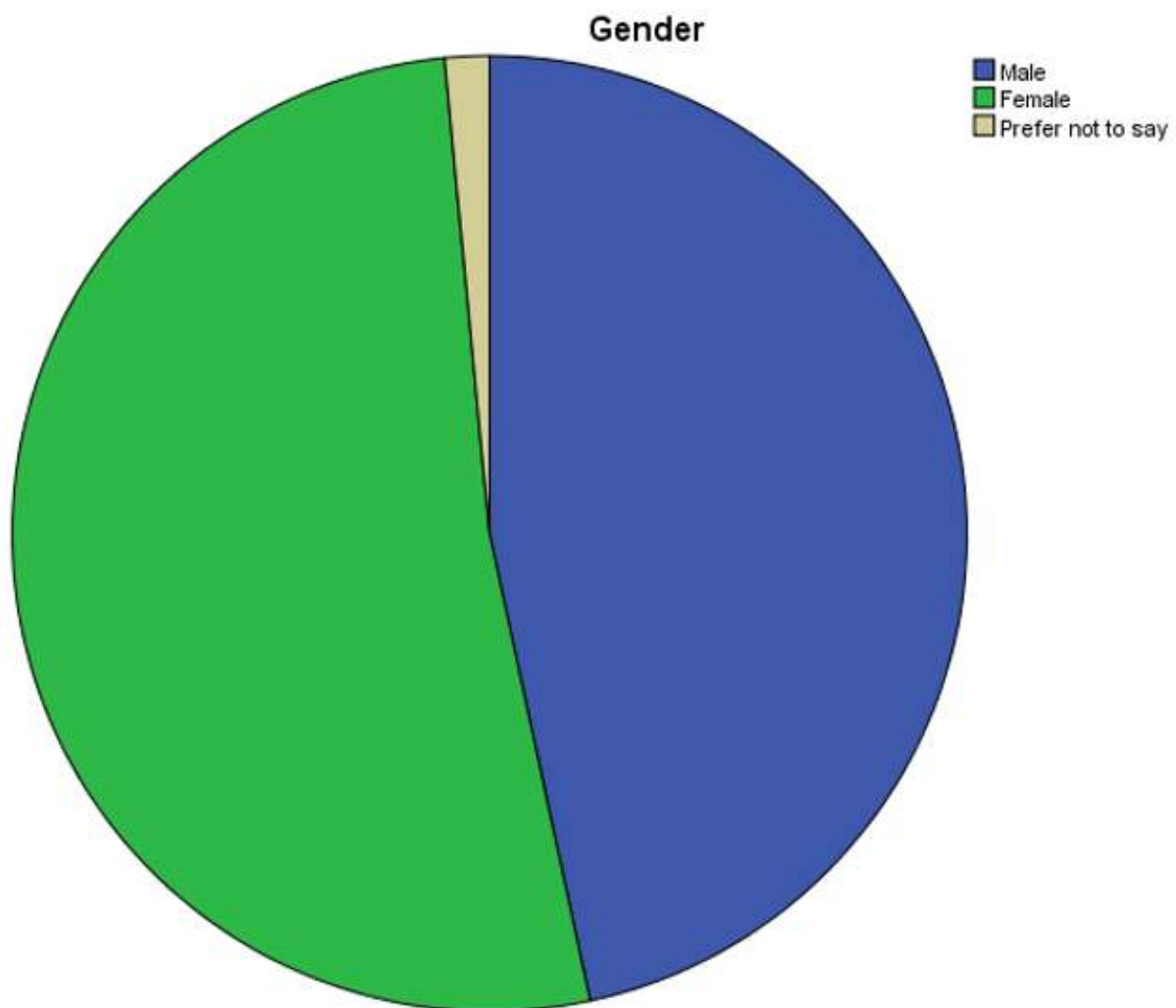


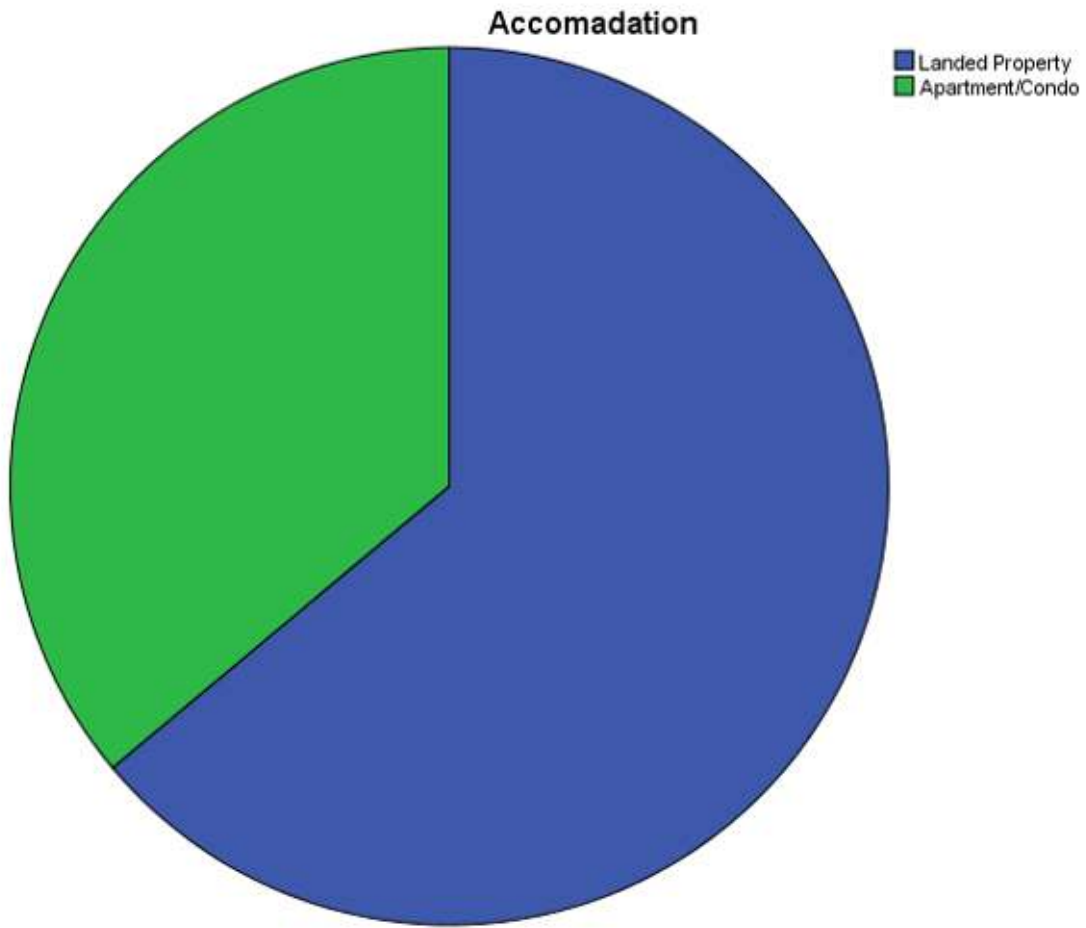
Figure 8

Test for "Adoption"



**Figure 9**

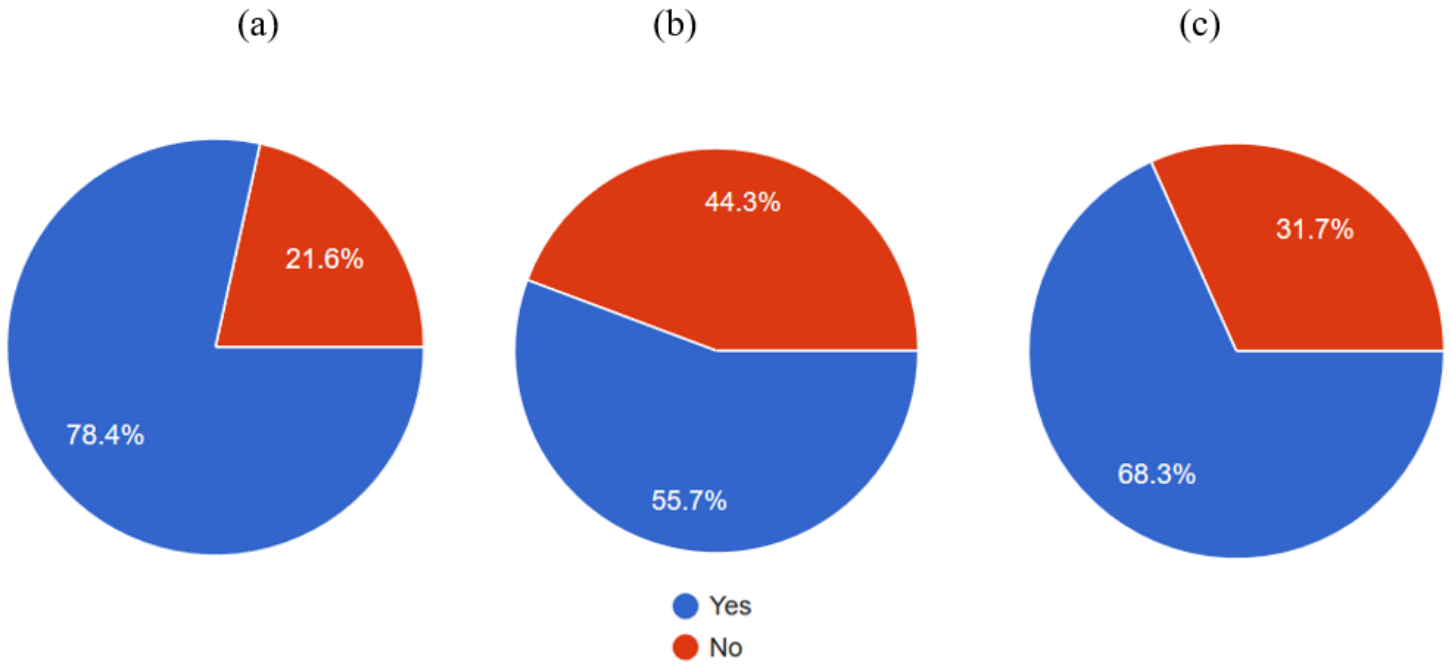
Gender



**Figure 10**

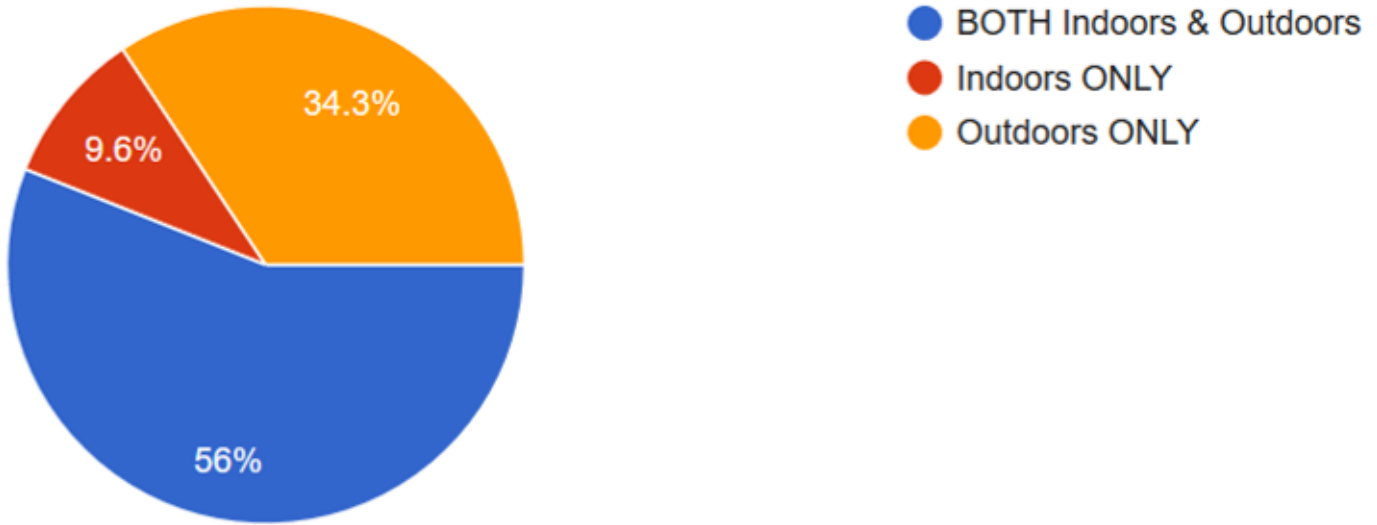
Accomadation





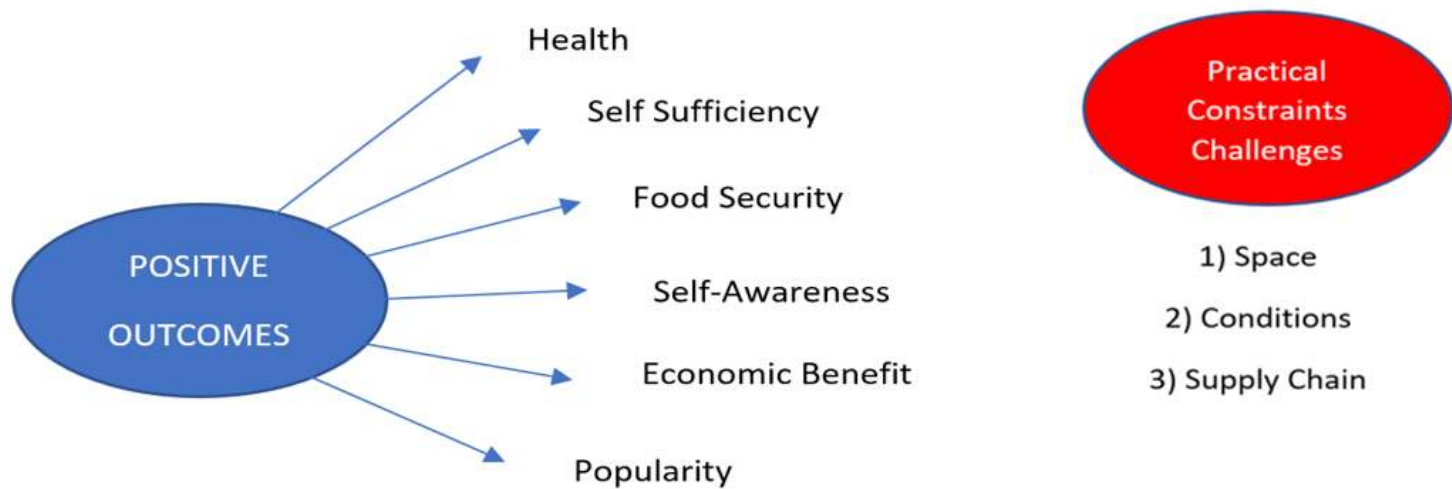
**Figure 11**

(a) Urban farming; (b) Aquaponics; (c) Hydroponics



**Figure 12**

Indoor and Outdoor activity



**Figure 13**

Qualitative Findings

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Picture28.24.png](#)
- [Picture58.34.png](#)
- [Picture98.44.png](#)
- [Picture.png](#)