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A **Comparative Study** of the **Perceptions** of **Urban** and **Rural** Farmer Field School Participants in Peru

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CGIAR System-wide Initiative on Urban and Peri-urban Agriculture

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Abstract

The importance of subjective research methods in development and research programs is vital in order to have a more holistic understanding of certain realities. This study uses Q-methodology as a tool to investigate subjectivity and to study the perceptions of rural and urban producers. The aim is to determine whether the perceptions of Farmer Field School (FFS) participants from urban areas differ from their rural counterparts, particular in reference to time management. The study confirms that the social, economic and geographical environments where these two groups are found indeed influence their daily lives as well as their different perceptions. In addition, the study found that there are some overlapping perceptions and values among urban and rural FFS participants in regard to their social and human capital, which may in turn influence their attitude towards FFS. The perceptions these producers share reflect their objective reality, which is evident in many research studies. However, in this study anomalies were found in which some urban participants shared 'rural' perceptions and some rural participants having 'urban' perceptions. A clear dichotomy of urban and rural producers does not exist, however there are 'urban' style perceptions defined by the majority of urban participants, as well as 'rural' style perceptions, shared by most of the rural participants.

1. Introduction

Farmer Field Schools (FFS)[1] are a specific technique that has been commonly applied in development programs, in the developing world, to attain sustainable agriculture by non-formal education to rural producers[2]. Recently, a research and development program, Urban Harvest, has introduced FFS to an urban setting[3]. This provides an opportunity to study possible differences between rural and urban agricultural[4] systems. Research has shown that there are objective differences between rural and urban agriculture, for example its agricultural systems, social settings, and markets. This study aims to find whether subjective differences exist between rural and urban agriculture. S. Fall and H. de Zeeuw described urban agriculture as, "*more heterogeneous in its social, economic and cultural background*" making it more dynamic than rural agriculture (Fall and de Zeeuw, 2001). Urban producers, in comparison to their rural counter parts, are involved, in most cases, in several economic activities, are members of different social groups and lack the identification of social groups (Fall and de Zeeuw). Furthermore, urban producers are faced with different circumstances than rural producers in their traditional technical knowledge, land use competition, insecure land tenure, environmental health concerns such as water and soil contamination and have stronger market opportunities. These aspects have an influence in how agriculture is conducted in urban settings, while impacting how FFS are conducted.

There is a common belief that producers from urban areas are very dependent on market dynamics and constraints for their livelihood. Their need to generate income implies that they must maximize their time and resources. Consequently, they become involved in several economic activities, which consumes their time. David Satterwiate stated that "*urban households typically need higher cash incomes to avoid poverty than most rural households*", which is the reason why some urban producers are involved in more than one economic or income generating activity (2005). This plays a major factor in the demands and participation of urban producers in FFS. Thus, time becomes a major issue for urban

1 Definition of Farmer Field School can be found in appendix 11.1.1.
2 Terminology- Producer will be referred to people, urban or rural, that are involved in agricultural and livestock activities. In most cases agriculturalists also raise livestock, hence they are not purely agriculturalists.
3 Definition of urban Farmer Field School can be found in appendix 11.1.2.
4 Definition of urban and rural agriculture can be found in appendix 11.1.3 and 11.1.4.

producers, while an excellent factor to explain the different dynamics between FFS participants in rural and urban areas.

It appears from the arguments presented above that an objective dichotomy between urban and rural agricultural systems is present. This study aims to investigate whether in the subjective realm there also exists this dichotomy, thus comparing objective reality with subjectivity. The research project focuses on subjectivity and aims to investigate whether there are differences in the *perception* between urban and rural FFS participants, therefore not dividing the two groups based on their geographical and agricultural systems. The study does not aim to prove that there are objective differences in urban and rural agriculture, but to discover whether different perceptions exist between the FFS participants. It is important to recognize how these producers view themselves and their reality rather than focusing on objectivity. The perception of time among the research participants has been selected as one of the main indicators, based on observations and previous work with urban producers, to determine whether a difference of perception exist between the FFS participants.

The questions that come to mind are: Are FFS adaptable to an urban setting? Does the social and physical environment create distinctions between urban and rural agriculture? Would these distinctions have different implications for FFS in urban areas? Would the perception of time or other factors, such as agricultural or socio-economical values be an issue for FFS participation in urban settings?
The study aims to investigate whether producers that attend FFS in urban and peri-urban areas are more inclined to perceive that they are constrained by time and the need to manage their time efficiently due to the social and economical structures that surround their daily lives than their rural counter parts. If this is the case then there exists a particular difference in the perception between urban and rural producers that have and continue to participate in FFS.

The study, also, includes other factors such as agricultural system and social behavior and values as indicators to investigate the different perceptions that may exist from the FFS participants. This information can be very useful to NGOs facilitators and to producers that

may be interested in starting their own field school. In general, understanding the value of time of producers will help to comprehend the urban dynamic urban producers face.

The paper begins with a concise description on the study areas in Peru. Followed by explaining the two methodologies used - Q-methodology and R-methodology- and why they were both incorporated in the study. The results from the Q-methodology factor analysis are given followed by the results derived from the use of R-factor analysis. Then some conclusions and some recommendations for further studies are provided. Short explanations to the limits of the study are presented followed by some feedback on the study from research participants (The appendix includes further information concerning the definitions of FFS, agriculture and urban agriculture. The appendix includes a gender analysis. This was not included in the main body analysis as it was not part of the original study, however, it is still a valuable aspect to consider for future research.)

2. The Study Areas

The research project concentrated on producers that live in peri-urban and rural areas in Peru that have been involved with Farmer Field Schools. Peru, like many countries, face many economic, cultural, social, and political problems that historically can be traced back to the authoritarian Inca empire, the oppressive Spanish colonialism that lasted for more than 400 years, and the young Peruvian republic engulfed with social inequalities and injustice. In the 1990's a new constitution under Alberto Fujimori's presidency recognized and passed into law that Peru is a pluri-cultural and multi-lingual country. This was a mechanism to abate racial and social inequalities. The multi-cultural and multi-lingual Peruvian society is a product of its three distinct geographical areas – coast, mountains, and jungle. The areas of this research project concentrate on the costal and mountainous areas. This study focused on urban FFS participants that live in the coast in the city of Cañete that lies about 144 km south of Lima and Carapongo and Huachipa, two sub-districts about 13km east of downtown Lima. The research carried out in the rural areas includes three mountainous communities, Mishca, Santa Rosa, and Cortadera, in the province of Cajamarca. Cajamarca lies in the north of Peru, approximately 850 km north of Lima. (No research was conducted on producers in intra-urban areas because no Farmers Field Schools are present within the inner city limits of Lima or other large cities in Peru.)

2.1 **Urban Areas**

2.1.1 Eastern Lima (Carapongo and Huachipa)

Carapongo and Huachipa lie in the municipal district of Lurigancho-Chosica, east of Metropolitan Lima, situated on the lower basin of the Rimac River watershed. Metropolitan Lima lies on a costal dessert with an annually rainfall average of 19.7 cm and where humidity can reach as high as 98% (World Climate, 2006). Prior to the 1970's the area was divided into large estates or *haciendas*. In the 1969 the leftist military government of Velasco implemented the Land Reform that divided all haciendas among the workers, whom, received plots of land, roughly one hectare, according to their time of service.

Carapongo is the smaller subdistrict of the two with a total area of 395 ha, 63 % of it is agricultural land compared to 18.3% of built up residential areas. Huachipa as a total 1,232

ha of which 42 % of its land is consumed by agriculture and 40% to urbanization. (Raymundo, Bussink and Prain, 2007) Huachipa is already undergoing more land change than Carapongo, but still remains an agricultural district.

Today, the majority of production systems in the Lurigancho-Chosica district include the growing of vegetables and raising small livestock. There are approximately one thousand urban agricultural producers in the lower (northern margin) Rimac River basin. (preliminary studies, Urban Harvest, 2005) Three social functional groups have been identified according to production systems: producers that have crop-livestock production, crop production and livestock production systems. (Arce, Prain and Maldonado, 2004) For these peri-urban producers, agriculture represents a livelihood strategy in the peri-urban context of Metropolitan Lima.

The division of responsibilities between men and women depend on the agricultural production system they belong to, cultural background, households, farming styles, etc., however, even though all tasks are shared, agricultural activities are mainly carried out by men while livestock activities tend to be more women's tasks. (Arce, Prain and Maldonado, 2004) Arce, Prain and Maldonado, also found that women tend to be more involved in post-harvest and marketing activities, while men purchase inputs and acquire farmland more so than women.

2.1.2 Southern Lima (Cañete)

The district of Cañete is 200 km south of Lima, a 24,000 ha valley on the western costal dessert of Peru with approximately 186,000 inhabitants and elevation varying from 0 to 700 meters. The climate in Cañete is similar to that in Lima, temperate and dessert-like with an average of maximum and minimum temperatures of 24.5 and 16.4ºC respectively. The average annual cumulative rainfall is 11.4 mm.

The expansion of urbanization in Cañete has been changing what was previously rural agricultural land. Today some areas are considered to be peri-urban agricultural systems. The number of small producers has grown in Cañete, from 1,850 in 1972 to 4,800 in 2002. This implies that land scarcity is presently becoming an issue.

The average typical Cañete farm is 5 hectares. The common production system in these farms is mainly the rotation of maize and sweet potato, mainly throughout the year. There

are two parcels were maize is cultivated and the other with sweet potato. During the harvest, one of the crops is planted so that both crops are available during the year. According to Cabrera 900 kg of sweet potato and 600 kg of maize is stored for consumption (either for themselves or to feed their chickens that are also for self-consumption and for market) and the rest is sold in the market. (Cabrera, Hildebrand, and Jones, 2005)

The average annual income in Cañete is US$1,420 per household (approximately seven individuals per household), or in other words, an average income per day per person of US$ 0.55 much lower than the poverty line established by World Bank of US$1 per day.

Research participants in Cañete are some of the few producers that were fortunate to join the Valle Grande Institute, a research, extension and agricultural promotion center that works in the Central Peruvian Coast and the Sierra of Yauyos, upstream of Cañete Valley. There are around 1000 producers reached by the Institute within their different programs. Valle Grande has enabled producers to group themselves into an association to export cash crops. They produce crops for exportation such as green peas, sweet potato, and organic cotton, which gives the opportunity to producers to improve their income (IRVG, 2003).

2.2 Rural areas

2.2.1 Cajamarca

The rural study area lies in the district of San Miguel in the northern province of Cajamarca in the Peruvian Andes between 2500m and 3800m above sea level. These communities are influenced by rainfall patterns from November to April, with an average rainfall of 700-800 mm (Deza et al., 1988). Temperatures range from 3 to 22ºC year round, however temperatures drop in relation to altitude (0.67ºC per 100m of altitude) (Condesan, 2003). In these months producers cultivate potatoes, cereals (wheat, barley, oat), peas, faba beans and grass. Besides crop production, most producers are involved in livestock raising, especially milk production. The dominant crop for food consumption is potato and it is the most lucrative market crop (the mean potato production is 8.8 t/ha). The main cash generating activity is milk production (Godtland, 2001).

Producers in this region hold their wealth in the forms of land and cattle. The average household owns 10.3 hectares of land in total and 8.7 hectares of arable land. Median land

ownership is much lower, 4.3 hectares of total land and 3.8 hectares of arable land (Ortiz et al, 2001).

There are also different roles according to gender that are important to considered in San Miguel, as well as in the majority of the Andean farming communities. The men are responsible for most agricultural activities where hard labor is required, while women take on the role of caring for household activities. Nevertheless, women are in charge of some agricultural activities such as potato planting and harvesting, taking care of livestock and milking, what makes women, in some cases, the ones who make decisions about those issues (Vasquez-Caicedo et al 2000).

3. **Q Methodology**

The manner in which people perceive and define reality and their lives has been a long epistemological debate in philosophy and in the social sciences. This study does not aim to continue the debate, however attempts to understand and situate the perceptions of research participants in an objective environment. In order to study whether differences exist between the perceptions of urban and rural FFS participants two methodologies were selected. Q-methodology was selected as the main methodology for several reasons- mainly to reveal the typologies of perceptions and opinions that prevail among the research participants. Conventional or R methodology was chosen to give a more general analysis to uncover the prevailing variables among the participants. (Martin and Steelman, 2004) The differences between Q and R methodologies lie in that Q reveals patterns in people's perceptions and R reveals the similarities and differences across variables, not people.

What is Q- Methodology?

Q-methodology is concerned with analyzing subjectivity as opposed to conventional research methodology that focuses on objective reality or rather record interpretations of what research participants think. The main focus of Q-methodology it so find the different perceptions people have about a certain subject or theme and determine whether others also possess similar views. According to Stephan Brown, "*Every person perceives the world differently, and Q-methodology uses these subjective viewpoints to construct typologies of different perspectives*." (Brown 1980) Q- methodology enables the systematic study of subjectivity, investigating the opinions, beliefs, attitudes and viewpoints of participants. Q-methodology inverts the rows and columns from the typical R methodology of the factor analysis, analyzing interrelationships of people based on the patterns of their individual characteristics and discover groups with similar or dissimilar views, rather than identifying similarities of the variables as R- methodology does**.** Q-methodology was developed by William Stephenson, a British physicist-psychologist, in the 1930s, who was interested in using factor analysis to correlate the different views people had in relation to a certain situation or topic.

The initial concern of the study focuses on the perceptions of 'time' by urban and rural FFS participants, thus investigating what opinions/perceptions exist amongst urban and rural participants. As the study progressed, the focus of the study broadened toward understanding other differences of perceptions amongst urban and rural FF participants. The researchers are not concerned in the percentage of research participants that perceive time as an important factor in their lives, but are more concerned in finding that there are differences in their perceptions and what those differences may be. Both methodologies

complement each other by revealing how urban and rural participants perceive their situation and whether these perceptions are associated to their lifestyle and farming styles.

Besides the above reasoning, Q-methodology was preferred because of the low amount of participants required to carry out the study. Conventional research methods usually require a high number of 'interviewees' to validate the findings, while Q-methodology requires a minimum of 40-50 research participants. Stephen Brown, an authority in Q-methodology, states that, "*Q does not need large numbers of subjects as does R, for it can reveal a characteristic independently of the distribution of that characteristic relative to other characteristics*" (Brown 2000) Moreover, the low number of urban FFS participants from the sub-districts of Lima required the participation of other producers from Cañete to complement the study. Therefore, the total number of producers that participated in the research project was 74- 34 from peri-urban areas (Carapongo, Cañete, Huachipa) and 40 from rural areas.

An additional benefit of Q methodology was time efficiency. The investigation was motivated because of a concern about producer's perceptions of time, thus the research project did not want to take up too much time from the producers. It would seem a bit ironic to carry out research about the importance of time and actually take up a lot of time from the participants for the study. Fortunately, the data-collecting component of Q-methodology or the Q-sort, is very time efficient, with a duration of about two hours including a small pause. A final benefit of Q-methodology is that it allows the collection of individual data in a group setting rather than through door-to-door interviews, which takes time and incurs high costs. Thus, the study could be conducted time efficiently and at low costs since all participants could be organized into one time and place and likewise obtain qualitative data.

3.1 Factor Analysis

3.1.1 Statistical Analysis – Component Analysis

The data-collecting component was conducted under Q Methodological criteria, or otherwise called the Q-sort. The analysis of the data incorporated both R and Q factor analysis methods. In general, factor analysis is a statistical method used to study relationships among many dependent variables, with the intent of discovering the nature of the independent variables that affect them, even if the independent variables are not measured. The answers obtained are more hypothetical, tentative, and mostly heuristic. The question factor analysis helps to answer is how many different factors are needed to explain the pattern of relationships among the variables. Thus, factor analysis uncovers and verifies the relationships among variables by summarizing the interrelationships among variables to help in the conceptualization of the data and reveal empirical relationships. (Martin and Steelman, 2004)

Q factor analysis discovers different subsets of individuals within the entire group that hold similar and dissimilar views, while revealing '*an in-depth portrait of the typologies of perspectives that prevail in a given situation.*' (Steelman and Maguire, 1999) R factor analysis reveals the dominant underlying dimensions that prevail among a group of individuals, meaning that the findings can be a more generalized means of analysis that uncovers the most prevalent variables among a group of respondents. Q Factor analysis computes correlations between persons, rather than tests, traits or variables that are disjoined from the individuals to whom they belong. R factor analysis clusters together variables, included in the study, revealing similarities across variables and uncovering the dominant set of values. The main difference between these two analyses it that Q factor analysis aims to reveal varying patterns in people's perspectives while R aims to disclose patterns among variables.

3.2 **Q-methodology**

3.2.1 The Concourse:

Probably the most important element of Q-methodology is the concourse. Brown refers to it as '*the flow of communicability surrounding any topic*' taken from '*the ordinary conversation, commentary, and discourse of everyday life*' (Brown, 1993). Job van Exel and Gjalt de Graaf state that the concourse may consist of self-referent statements, verbal discourses, which '*the gathered material represents existing opinions and arguments, things lay people, politicians, representative organizations, professionals, scientists have to say about the topic; this is the raw material for a Q*'(van Exel & de Graaf, 2005). The concourse, or list of statements, was drawn from interviews with urban producers, discussion with FFS facilitators, a report prepared for Urban Harvest by Juan Francisco Gomez Ramirez on the opinions of urban FFS participants about FFS, literature on FFS and other participatory adult learning techniques, as well as personal knowledge of the researchers. Each statement represents a variable that represents a certain factor to determine if differences in perceptions exist among the research participants. These factors include: time, social behaviors, agricultural styles, and perceptions of FFS. The factor 'time' was the main concern in this study to validate the proposed hypothesis that urban FFS participants perceive to be more time constrained than rural FFS participants. However, other factors were included to investigate whether there are subjective differences among urban and rural FFS participants.

A test of the concourse was carried out in order to validate or change some statements or as Jonathan Donner stated, "*you may want to pre-test the items with a couple participants, for clarity and general comparability*" (Donner, 2001). The next step was the Q-sorting, which is the arrangement of statements, by the research participants, ranging from strongly disagree (-2) to indifferent (0) to strongly agree (+2). Therefore, each statement can receive one of 5 answers. (To read the process of the Q-sort see appendix 2). After the Q-sorting, group discussions were carried out by asking the participants key questions about the methodology and the research topic. This allowed the researchers to recognize if the participants understood the methodology, if there was room for improvement, and if there were any suggestions for interpretations and for future studies. Furthermore, the discussions allowed the researchers to have personal explanations about certain themes and statements.

It was another manner to acquire additional information from the participants and compare it with the results that aided in the analysis and to explain certain perceptions resulting from the Q-sorting.

Image 4. **Q sorting in Carapongo**

3.2.2 Q Factor Analysis

As stated above, factor analysis was used to interpret the results from the Q-sort, which requires that factors or components have to be loaded based on the participants instead of based on statements, as it is required in R-methodology. The factors in Q-methodology indicate which persons go together as a function of their similar experiences. Thus, reversing the position of the variables from R Factor analysis standards.

The selection of appropriate number of components was made through the Scree test method (suggested by Raymond B. Cattell in 1966), the method that plots the successive eigenvalues. By examining a 'scree plot' of the eigenvalues against the number of components, the appropriate number of components is given if there is a break in slope. (See Figure 1)

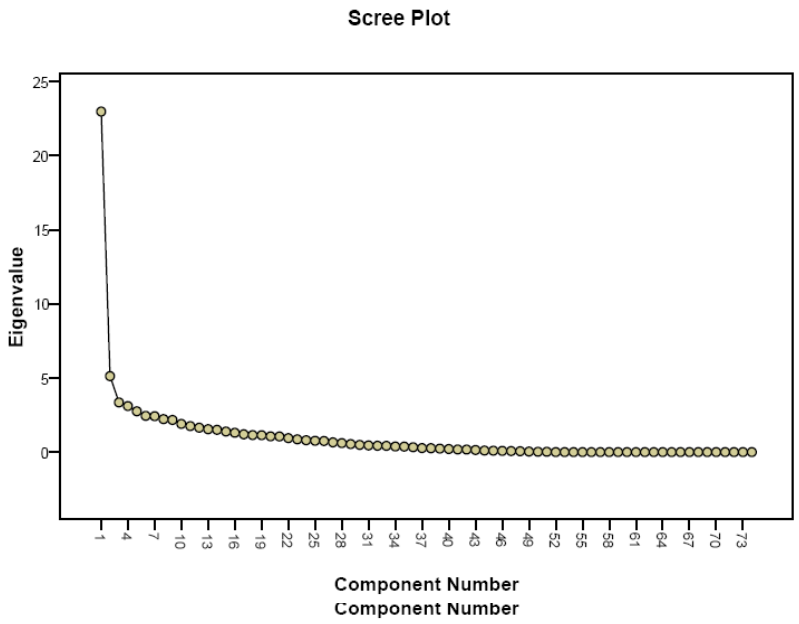

Figure 1. *Scree plot of the Eigenvalues for all components loaded based on the concourse of rural and urban producers to perform Q-methodology, Peru, 2006. Component 1 and 2 correspond to those points at the beginning of the left side of the line.*

The results show that two components were identified from the Scree plot method. Table 1 shows that the first component represents 31% of total variance explained. The second component is loaded with 7% of total variance explained. The remaining 62% of the total variance cannot be explained by the two Components, implying that most participants have individual perceptions that cannot be grouped into a single component. The components represent groups of participants who have ranked the statements, the concourse, similarly as an indication of a commonly held perception. The Component scores (expressed as normalized z-scores) will indicate the pattern of statements that is common to those persons comprising the Component. The most positive values are those statements that the group strongly agreed with and the most negative values are those statements that the group strongly disagreed.

Table 1. **Components and Variance Explained***

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	22.967	31.036	31.036
2	5.128	6.931	37.698
3	3.354	4.533	42.5
4	3.108	4.2	46.701
5	2.751	3.718	50.418

* The first five components sorted by the proportion of total variance explained of the data coming from the concourse of rural and urban producers to perform Q-methodology Peru, 2006

The t-test for equality of means was used to validate the hypothesis that both components are different from each other, and to determine what participants relate to each Component. The results showed that urban producers composed one of the components and rural producers composed the other one. (see Figure 2 on page 25)

Image 5. **Q-sort in Cañete**

4. Results from Q analysis

The analysis introduced 2 relevant components, derived from the scree test, and arranged the z scores to indicate which statements are most relevant. Table 3 shows the normalized scores (z-scores) placed in order for each of the statements and the two components. Statements 51, 55, and 53 from the concourse received the three highest scores and statements 42, 17, 45 received the lowest scores in Component 1. The perceptions of participants with the highest component loadings on Component 1 (and who define Component 1) have tended to agree most with statements 51, 55 and 53 and to disagree most with statements 42, 17, 45. (Table 4 presents the statements that correspond to Component 1.) Likewise, Component 2 (table 3) shows that statements 45, 60 and 59 are perceived favourably and statements 47, 30, and 1 are viewed negatively. (See Table 5 to read statements that correspond to Component 2).

Table 2. **List of statements included in component 1 and 2**

Component 1	Component 2
51. Thanks to the FFS, now we can group.	45. I go to the FFS to get a diploma.
55. If I have something important to do, I try to make time available.	60. I want to return to my village to continue farming.
53.I gained in the FFS because I know more people now.	59. The only thing I know what to do is farm.
42. The good thing about agriculture, I don't invest much and I earn a lot.	17. I have to wait for he rain in order to work.
17. I have to wait for the rain in order to work.	1. Only doing agriculture will I be poor.
45. I go to the FFS to get a diploma.	30. I also work into the evenings.
	47. I don't trust groups, someone always robs.

4.1 Component 1 perceptions

The perceptions of Component 1 express: the value in social cohesion with in FFS (statements 51, 53, 45), time management (statement 55), that agriculture is not an income generating activity (negative response to statement 42), that rain is not a component that limits work (negative response to statement 17), and obtaining a diploma is not the motivation to attend FFS (negative response to statement 45). (See Table 3 to read statements that correspond to Component 1).

Table 3. **Component 1 and Component 2 scores***

	Component 1		Component 2	
Order	Case Label	Component score 1	Case Label	Component score 2
1	Statement 51	1.75	Statement 45	1.7
2	Statement 55	1.6	Statement 60	1.49
3	Statement 53	1.56	Statement 59	1.36
4	Statement 32	1.55	Statement 17	1.33
5	Statement 07	1.54	Statement 03	1.21
48	Statement 59	-1.16	Statement 46	-1.53
49	Statement 09	-1.29	Statement 20	-1.64
50	Statement 42	-1.3	Statement 01	-1.83
51	Statement 17	-1.75	Statement 30	-1.9
52	Statement 45	-1.83	Statement 47	-2.3

*The five most and the five least significant factor score (using normalized Z score) of the statements loaded for the two most representative factors for the participants from rural and urban settings in Peru, 2005.

Two main perceptions dominate Component 1, first that FFS is valued for its contribution to social cohesion. This is a possible indicator that there is a lack of social capital in their social environment and that FFS is the mechanism to socially unite. Implying that participating in FFS is not primarily valued for its educational services, but its social ones. Second, certain participants perceive that they have to manage their time efficiently or 'make time available' and not 'wait for the rain', which can be an indicator that these particular people feel a time constraint or actually have a busy schedule. A third perception shows that certain people acknowledge that being involved in agricultural activities means investing more than receiving, implying that they do not see agricultural activities well and may seek other strategies to earn a living.

Table 4. **The most significant statements that correspond to Component 1**

Agree:
51. Thanks to the FFS, now we can group.
55. If I have something important to do, I try to make time available.
53.I gained in the FFS because I know more people now.
Disagree:
42. The good thing about agriculture, I don't invest much and I earn a lot.
17. I have to wait for the rain in order to work.
45. I go to the FFS to get a diploma.

4.2 Component 2 perceptions

Component 2 presents a more heterogeneous perception among participants than in Component 1. The perceptions that comprise Component 2 relate to: positively valuing and identifying with agriculture (statement 60, 59 and 1), that FFS is related to obtaining a diploma (statement 45), working depends on the rain (statement 17), a preference not to work in the evenings (negative response to statement 30), and a trust and faith in groups (negative response to statement 47). A fourth statement was included because it z-score was very close to the third statement (See Table 4).

A dominant perception from Component 2 relates to how certain people value and identifies themselves with agriculture. This perception may explain how these people actually are producers (mainly agriculturalists) and their only economic activity is agriculture. Secondly, certain participants have the perception that they have time available especially to wait for the rain and moreover, do not feel pressured to work in the evenings. Third, the perception of obtaining a diploma from the FFS may indicate that these people have not ever received a diploma and it is probable that have not finished a formal education, hence suggesting low human capital. A final perception derived from Component 2 indicates that some participants actually value groups and have faith in people and value and trust groups.

Table 5. **The most significant statements that correspond to Component 2**

Agree:
45. I go to the FFS to get a diploma.
60. I want to return to my village to continue farming.
59. The only thing I know what to do is farm.
17. I have to wait for he rain in order to work.
Disagree:
1. Only doing agriculture will I be poor.
30. I also work into the evenings.
47. I don't trust groups, someone always robs.

4.3 Summary of Component 1 and 2 results

These two statement patterns reflect two different sets of perceptions present among the 74 participants, indicating a clustering of two "perception groups". The first group or Component 1 represents 31% of the total perceptions of FFS participants and Component 2 represents 8% respectively.

The ANOVA T test found that there is a clear distinction in how urban and rural participants relate to the two Components. A higher average of perceptions from urban participants (average Z score of 0.654) correspond to Component 1 compared to rural participants (average Z score of 0.281). (See table 6 below) Component 2 has a higher average of perceptions from rural participants (average Z score of 0.524) than urban participants (average Z score of 0.249). The figures plotted on the Z-score bar graph (see figure 2) clearly marks how the perceptions urban and rural participants have tend to group together respectively, hence indicating that each group has similar perceptions. In general, Component 1 can be labeled 'urban perception' and Component 2 as 'rural perception'. It is important to note that there exist rural participants with 'urban perceptions' or that are included in Component 1, likewise for urban participants with 'rural perceptions' or included in Component 2. In the analysis section these anomalies shall be discussed.

Table 6. **Results from ANOVA T Test for Component 1 and Component 2**

Urban/ Rural	N	Mean	Std. deviation	Std. Error mean
Component 1 Rural Urban	 40 34	 .281839 .654096	 .1886496 .2360639	 .0298281
Component 2 Rural Urban	 40 34	 .524302 .249522	 .2007714 .2039232	 .0317447 .0349725

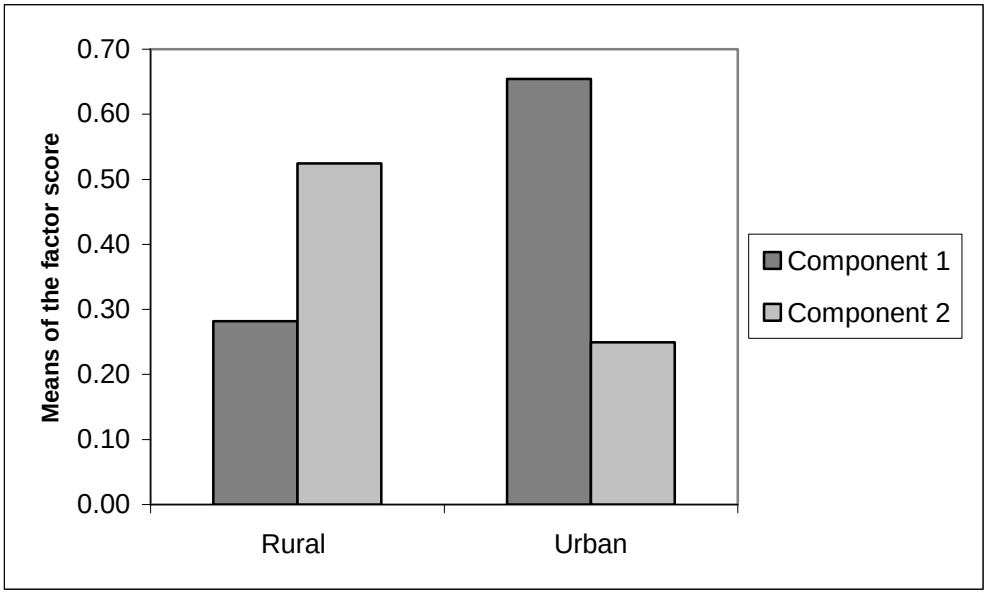

Figure 2. **Composition of the Components by urban and rural agriculturist in Peru, 2005**

4.4 Analysis

The findings derived from Q Factor analysis shows that there are two sets of perceptions from the research participants- Component 1 and Component 2. As described above, within each Component there exist certain perceptions from the research participants. The results show that a majority of perceptions in Component 1 comes from urban participants and a majority of perceptions in Component 2 belong to rural participants. This section analyzes the results by generally accepting the urban–rural dichotomy, which reflects that the perceptions comprising Component 1 coincide with common perceptions of urban areas, while perceptions in Component 2 coincide with the rural socio-cultural context.

4.4.1. Component 1 and urban perceptions

The hypothesis claims that urban FFS participants perceive to be more time constrained than their rural counterparts. The findings from Component 1 did not explicitly reveal that perception, however, the fact that statement 55 (*If I had something important to do, I try to make time available*) is present in Component 1 implies that the perception of time and willing to manage time does exists among these participants. The factor of time management is not present in Component 2 and therefore not among rural FFS, implying

that urban FFS participants do acknowledge time as a factor in their lives and that they have to know how to manage their time.

Statement 17 (*I have to wait for the rain in order to work* – responded in disagreement) clearly indicates that these participants do not wait for the rain in order to work, which is mainly a consequence of climate, as opposed to time. Agriculture in Lima and in Cañete is irrigation based, which is primarily a result that it does not rain on the coast of Peru. The annually rainfall average in Lima is 19.7 cm (World Climate, 2006). This perception confirms two assumptions, first, that the perception derived from Component 1 originates from urban areas as a result of climate reasons, and second, that rain is not a factor in their lives. Perhaps a low percentage of urban responses to this statement result from their indifference to the statement rather than strongly disagreeing.

The principal perception derived from Component 1 is not time but a social attribute. Component 1 comprises mainly of perceptions from participants who have essentially expressed that they value FFS primarily for social reasons not its educational one, which reflects their positive responses to statement 51, 53 and negative response to 45. (To see the entire list of statement in the concourse see appendix 9.6). Two interpretations may exist from these perceptions. First, these perceptions express that certain individuals value knowing more people and value grouping together. Social theorist such as Robert Putman, James Coleman and Pierre Bourdieu have in some way or other reiterated the importance people have to socially belong or seek social cohesion. This perception represents an acknowledgement and perhaps a need by participants to seek social cohesion or improve their social capital. Thus, the search to improve social networks or social cohesion may imply a lack of social capital amongst these participants, therefore they are grateful for having been situated in an environment that allows them to met others and group together. This perception correlates to objective studies that show, in general, urban dwellers in Latin America tend to have less social capital, where '*[*social capital*] is clearly lower in metropolitan areas compared to rural areas'*. (Roser-Bixby, Collado and Seligon 2005). Second, this perception suggests that FFS are not seen as educational tools, but social mechanisms to improve their social networks. This may also express how certain participants who have obtained, in some form or other, formal education do not perceive receiving a diploma by participating in FFS as a primary objective. The majority of urban

participants, compared to rural participants (in which 20 females participated in the study and express how women often do not have or feel the lack of having a diploma), in this study, have finished primary education and those perceptions of participants in Component 1 may not feel the initial need to participant in FFS solely to obtain a diploma.

The statements participants disagreed with in Component 1 confirm certain characteristics particular to the urban social and geographical environment. Negative responses to statement 42 (*The good thing about agriculture, I don't invest much and I earn a lot.*) reveals that first, investing in agriculture does not provide with adequate returns, and second, that agricultural earnings are low. Studies in urban areas confirm that urban producers are involved with more than one income generating activity in order to improve their household income. (Fall and de Zeeuw). Field surveys conducted by Urban Harvest confirm that about 48% of producers in Carapongo actually are involved in more than one income generating activity, which include off-farm employment (Arce, Prain, and Maldonado, 2004).

The study's original interest was to find whether time is a dividing factor that distinguishes urban and rural producers, however this analysis suggests that social values and economic circumstances unite these participants more so than the perception of time. The perceptions included in Component 1 correspond mainly to urban participants, although a small percentage of rural participant are also included. This implies that certain rural participants have perceptions similar to a majority of urban participants, which can be a result of several factors, whether economical, cultural, social. This on its own leaves room for further studies.

4.4.2 Component 2 and rural Peru

The results show that a majority of the participants with similar perceptions in Component 2 are rural participants. The statements that comprise Component 2 show that the perceptions are mainly orientated around agriculture and how they identify themselves as producers. The positive perceptions towards statements 60, 59, and 1 are indicators that rural participants value agriculture. (see table 6). These participants expressed that they are willing to return to their place of origin to continue farming and that the only skill they possess is farming. This

indicates that these participants identify themselves as agriculturalists and will continue to be so, whether out of choice or circumstance is another study in itself. Statements 45 and 17 also relate to agricultural activities, reinforcing how much of their lives revolve around agricultural, whether it is participating in FFS or waiting for the rain in order to work on the farm. Studies by Kristjanson et.al. show that in rural provinces of Cajamarca 95% of communities are dedicated to agricultural activities (Kristjanson, et.al., 2005). Moreover, the negative response to statement 1 (*Only doing agriculture will I be poor*.) strongly validates how these participants value agriculture. This confirms that the perception these participants have reflect their objective reality and that they identify themselves as agriculturalist. Moreover, participants expressed that they are unwilling to work in the evening (statement 30). This clearly reveals their dependency on sunlight in order to work; reflecting how agricultural activities are cannot be carried out without light.

The perception in Component 2 in regards to obtaining a diploma (statement 45) reflects how rural people, because a lack of formal education, seek more formal education and to receive a diploma. Studies show that "*that rural students have lower education outcomes than do urban students*" (Cueto, 2005). Thus, there may be a slight tendency by rural participants to seek a diploma more so than to receive new knowledge. Future studies can be carried out to confirm whether rural participants primarily join FFS to obtain a diploma than to learn new farming knowledge. (This Component may reflect certain gender differences in regards to education. The majority of female participants in the study are from the rural areas, however, only further analysis and studies can be conducted to confirm the assumption that women seek diplomas more so than men.)

A second perception results from the negative response to statement 47 *(I don't trust groups, someone always robs.*), which indicates that a perception exists that participants do trust in groups. There are many speculations that can be derived from this statement. There are no other statements to support or clarify, in depth, this perception in Component 2. It is uncertain whether these participants perceive to lack or obtain social capital.

To reiterate, Component 2 demonstrate that participants perceive and identify themselves and their social activities with agriculture. The perceptions that comprise Component 2 relate to rural realities that confirm that this component reflects the perceptions of rural

participants. Moreover, the factor of time was not relevant among these participants as it found in Component 1. Component 2 includes a small minority of perceptions from urban participants, which implies that certain urban participants have 'rural' perceptions.

4.5 Summary of perceptions

In summary, two components are deprived from the Q analysis, which mainly relate to an urban – rural dichotomy. The hypothesis was not completely confirmed from the Q analysis, however the perception of time was at least present in component 1, implying that the concept or concern for time exists in urban areas more so than in rural areas. The study did show that there are other differences between the perceptions of urban and rural producers. Component 1, or 'urban' perception, mainly is concerned with improving social capital through FFS participation. Component 2, mainly comprised of rural perceptions, primarily deals with the importance and identity of agriculture. Therefore there are distinct subjective differences between the two groups.

On the other hand, this distinction between perceptions is not completely explicit; there is substantial percentage of rural participants in Component 1 as urban participants in Component 2. This implies that the perceptions in Component 1 and 2 prevail among both urban and rural participants. Therefore, certain urban participants have similar perceptions to their rural counter parts and vice versa. For examples, it has been observed that many urban participants are migrants from rural areas. This study reveals or suggests that certain urban participants have not been able to adopt urban perceptions to their urban livelihoods and circumstances. Therefore, certain perceptions from Component 2, for example, urban participants identify themselves as only producers and value agriculture, indicate that certain urban participants still view themselves as purely producers and see their peri-urban environment as rural and not urban. This may reflect in their socio-economic behavior and more so in their expectations and participation in FFS.

Another example of common perceptions from participants in either group may be reflected in their disagreement to Statement 42 in Component 1. Rural participants, as much as urban participants, can also have the opinion that agriculture is not lucrative. Certain rural studies show that rural households, as well as urban households, in Peru allocate about 35 % of their labour to off-farm economic activities, which implies they seek other economic activities

because of poor agricultural returns (Escobal, 2001). This reflects a socio-economic reality that both groups face- ie. marginalized producers faced with poor market prices for their products. Thus, representing a similarity of the socio-economic environment that both groups confront.

In conclusion, it appears that urban participants tend to have more homogenous perceptions than rural participants because the total variance explained from Component 1 is more relevant than in Component 2. Speculations have been made as to why urban participants have 'rural' perceptions and why rural participants have 'urban' perceptions, however further studies can be carried out to investigate and clarify these findings.

Image 6. **Q-sorting in Cajamarca- Mishca**

5. R Methodology

To find variables with relevant relationships principal component analysis was used. Principal component analysis (PCA) reduces a large number of variables by a smaller set which best summarizes the larger set for representation of rural and urban characteristics[*]. The reduction of variables was determined by checking, in the correlation matrix, whether four factors can represent the set of variables (statements). (See appendix 8.3 to read on the practical methodology of selecting and including variables in the statistical analysis).

The main applications of PCA techniques are:

(1) To reduce the number of variables and

(2) To classify variables.

The steps for reducing the number of variables (statements) and classifying variables are: (1) the screening of variables, (2) follow the procedure of the statistical program (in our case: SPSS), (3) take a look at the considerations to validate results, (4) select the number of components, and (5) check for outliers.

5.1 Data Screening

The first thing to do when conducting factor analysis is to check for inter-correlations between variables, the solution is unlikely to have real meaning if the analyzed variables are not correlated. If variables appear that do not correlate they must be excluded from the analysis. Also, if in the correlation matrix there are variables that are 100% redundant, and then the inverse of the matrix cannot be computed. In practice this happens when attempting to analyze a set of highly inter-correlated variables. So we opted to withdraw statements that caused the redundancy and redo the analysis.

[*] Note the difference that in Q- analysis variables are not extracted as in R-factor analysis.

6. Results From R analysis

6.1 Urban and Rural Participants Perceptions

The responses that both urban and rural participants expressed in the Q-sort present certain difference and similarities, as noted from the Q analysis, in their perception towards agriculture (including FFS), socioeconomic values, and time. The following analysis was conducted based on the results from the Q analysis, thus dividing the participants already in the urban and rural dichotomy and analyzing the results whether differences or similarities exist among the participants. (Originally an analysis was conducted by incorporating all participants, however no valid factors could be determined based on the PCA assumptions that the Determinant must be over .00001 and KMO at least over .5, therefore the analysis was conducted on each group.) The following section presents the findings derived from the use of R factor analysis and its criteria, - first from rural areas followed by that of urban areas.

6.2 Results

The results from the analysis of rural participants comprise of three components or variable groupings that represent 63% of the total variables in relation to the factors that were studied. The KMO was measured at .555. Table 7 presents the three components for rural participant results and what statements correspond to them. The first component explains 26 % of rural participants' perception from the total variables, labeled as 'time for agriculture' (see Table 7 p.34). The following component, consisting of 2 variables, with a variance explained of 17%, labeled as 'agriculture as a livelihood'. The final component explains 15% of variance explained, which has been labeled 'social capital'.

Three components were also determined from the analysis of urban participants' results with a total variance of 67% and a KMO measured at .462. Table 8 (see page 30) presents the three components and what statements comprise each component. The first component explains 29% of total variance explained, which is labeled, 'social cohesion and rural life'. The next component has a total variance explained of 21% that is labeled 'time and social cohesion'. The final component with a total variance explained of 17% is labeled 'child values and education'.

6.2.1 Perceptions of rural participants

In general the findings show that rural participants tend to perceive agricultural activities to be important and that they value social cohesion.

Table 7. **Three components derived from PCA of rural participants**

Statements	Response	Variable Variance
Component 1: Time for agricultural activities Variance explained: 25.84%		
55. If I have something important to do I try to adjust my time.	Agree 25%, SA* 35%	.747
60. I want to return to my village to continue farming.	Agree 15%, SA 60%	.736
31. I participate in the FFS because I have time.	Agree 43%, SA 38%	.607
Component 2: agriculture as a livelihood Variance explained: 16.97%		
59. The only thing i know what to do is to farm.	Agree 28%, SA 35%	.844
49. Work is not secure I have to make may farm produce.	Agree 45%, SA 35%	.785
Component 3: social capital Variance explained: 14.78%		
21. If we form groups, we can improve.	Agree 25%, SA 70%	.723
1. Solely being involved in agriculture will I be poor.	Disagree 33%, SD** 40%	.712
47. I don't trust groups, someone always robs.	Disagree 50%, SD 30%	.623
Total variance explained 62.63% KMO: .555		

The first component explains how rural participants perceive their availability of time, especially for agricultural related activities. The first variable in this component reflects how flexible they are with their time (statement 55), and the third variable reveals that they perceive to have time to participate in FFS (statement 31). It appears that they do value agriculture by expressing the desire to return to their village of origin to continue farming (statement 60), which further is enforced by the following component. Therefore, rural participants have expressed that they do have time available and more so if it relates to agriculture.

* SA = strongly agree
** SD = strongly disagree

The second component explains how rural participants, where 12 were women, perceive that the only thing they know how to do well is to farm (statement 59) and that out of economic circumstance they have to continue farming (statement 49). This result reconfirms that in the rural provinces of Cajamarca 95% of communities are engaged in crop agriculture (Kristjanson, et.al., 2005). In relation to the previous component 'time for agriculture', rural participants attend FFS because it strongly relates to agriculture. This perception confirms that rural Cajamarca is predominately agriculturally orientated.

The final component consists of three variables that represent a desire for social cohesion in relation to agriculture. A majority of rural participants expressed their desire to form or organize themselves into groups in order to improve their situation in general - (statement 21). They, also, have a lot of faith in groups (statement 47) and trust that by organizing themselves things can improve. This reflects Francis Fukuyama's views how trust and social capital to be fundamental to enhance economic development (Fukuyama, 1994). The act alone that rural participants feel the need to socially organize may imply a lack of social capital. Kristjanson, et.al found that, " *there is not much communally managed land in Cajamarca, and household access to different production zones is limited*" (Kristjanson, et.al 2006). Kristjanson explains that minimal amounts of communal managed lands exist, which can be interpreted as low levels of social organization or capital. Furthermore, the inclusion of statement 1[*] in this component implies that rural participants relate social cohesion to the welfare of their agricultural activities. The reoccurring theme of agriculture here, as in the other components, reflects how rural participants relate their 'social' capital as a mechanism to improve and strengthen their agricultural outputs, hence their economic and nutritional welfare.

6.2.2 Summary of rural perceptions

The perceptions rural participants shared in this study reflect how they view FFS. It appears that attending FFS has two particular benefits. First, rural participants expressed the importance of agriculture as a livelihood, and due to their agricultural production system and their rural lifestyle, participants feel they have time available, especially if it implies

[*] See list of statements or the concourse in the Appendix 12.5, p.52.

investing time for agricultural activities, like FFS. Second, rural participants have also expressed their awareness concerning the importance of social capital as a mechanism to improve their economic situation, especially in relation to FFS. The perception these rural participants have towards their social capital contradicts the common generalization of rural peoples, in which they possess a '*strong senses of community, people in the region are self-reliant, and proud of their history and tradition*' (CAO, 2001). They attend FFS not only to gain new agricultural knowledge, but also to improve their social networks. The general view that rural peoples have high social capital, compared to urban dwellers, is not what these rural participants expressed, which can be described by either the quantity or the quality of their social relations (Winters, Corral and Gordillo, 2001). Therefore, rural participants maybe expressing the low quality of their social capital as opposed to the quantity of their social relations.

6.2.3 Urban perceptions

Urban agriculture in the eastern zone of Lima is categorized by mixed cropping of vegetables on small sized plots, mainly for commercial sale, while urban producers depend on other economic activities for income apart from agricultural revenues (Fall, and de Zeeuw). The encroachment of urban areas on previously traditional agricultural lands has brought, not only geographical changes, but also economic and social externalities, in which producers have to diversify their livelihood strategies in order to maintain or improve their livelihood. The hypothesis postulates that time management is an indicator of urban diversity urban participants face. Urban participants have also expressed the importance of social capital and the value of education for their children. These perceptions reflect the socio-economic reality urban producers face.

Table 8. **Three components derived from PCA analysis of urban participants**

Statements	Response	Variable Variance
Component 1: social cohesion and rural life Variance explained: 29.20%		
34. I don't know why I accepted to go to the FFS because I waste my time.	Disagree 42%, SD* 32%	.875
21. If we form groups, we can improve.	Agree 18%, SA** 76%	.857
64. Rural life is more relaxed than urban life.	Agree 12%, SA 65%	.677
Component 2: Time and social cohesion Variance explained: 21.08%		
2. I have a lot of free time and I don't know what to do with my time.	Disagree 38%, SD 29%	-.901
32. We have to organize ourselves in order to be valued.	Agree 21%, SA 76%	.722
14. I work everyday in agriculture.	Agree 32%, SA 38%	.706
Component 3: Children values and education Variance explained: 16.68%		
18. It is important that my children dedicate themselves to other things to get ahead.	Agree 18%, SA 53%	.767
37. It is important that my children learn to read and write.	Agree 12%, SA 85%	.766
25. I would be proud if my child has a career.	Agree 15%, SA 82%	.767
Total variance explained: 66.97% KMO: .462		

Urban settings are usually categorized as being fast paced and very heterogeneous in its economic and social environments. The first component expresses how urban participants perceive social capital to be important in such an urban setting. Urban participants expressed that they do not consider attending FFS to be a waste of time (statement 34). They also expressed that organizing themselves into groups is valuable (statement 21). (see Table 8) This reflects how urban studies recognize that a common resource that is lacking among urban dwellers, in particular producers, in comparison to rural areas, is social capital which is created through social cohesion and building social relationships (Making Cities Work, 2002). Thus, urban participants will seek certain strategies and resources in order to improve their economic situation.

* SA = strongly agree
** SD = strongly disagree

One of the strategies they value is what Emilie Durkhiem labels mechanical solidarity- to a form to improve social networks. In other words, "*the positive benefits of solidarity networks can also be seen in the opening up of economic and employment opportunities within ethnic groups, poverty reduction, and increased gender and racial equality*" (Narayan, 1999). Therefore, urban participants perceive FFS not to be a waste of time because they feel that FFS provide them with the social space to group together, which they find important in order to improve their economic situation. Moreover, urban participants have expressed that urban life is not as easy going as rural life (statement 64), especially in regards to social capital, which is usually correlated to rural areas. This further explains how urban participants recognize that urban life is fast paced and more dynamic than rural areas, which implies they do not have the adequate environment and time for social network building. In the group discussion following the Q-sort, one urban participant expressed, '*we are more busy and under pressure here than in rural areas*'[5]. A generalization cannot be concluded with this statement, however it reconfirms the perception the majority of the urban participants have towards urban life.

The following component reflects how urban participants perceive time. As noted above, urban participants expressed the difference between urban and rural life in relation, to a certain extent, with the concept of time. In this component they expressed that they do not have any free time (statement 2) and that they work everyday (statement 14) (see Table 8 p. 37). This verifies the common categorization that urban producers are more heterogeneous in their livelihood strategies (Fall and de Zeeuw, 2001). Furthermore, studies carried out by Urban Harvest confirm the perception of these urban producers by finding that in Carapongo 48% of urban producers combine farming with other economic activities (Arce, Prain and Maldonado, 2004). Apart from being active in other economic activities, their roles in agricultural activities in an urban environment, also, demands a large investment of time. For example, the crop cycle of most urban agricultural crops, like lettuce, beetroot and radishes, are very short compared to rural crop cycles, therefore shortly after the harvest, the next harvest begins (Urban Harvest preliminary studies, 2005). The last variable in this component urban participants viewed very favorably (71% strongly agree and 21% agreed to the statement). This shows how important they find it to organize themselves, and

5 View Appendix 12.7 for list of statements by producers

especially to be valued (statement 32). As a consequence of the lack of time and lack of social capital, urban participants seek social relationships to help them improve their harvest or other income generating activities. This would help minimize their workload and hence their busy schedule. It is clear that urban participants do feel pressured by time. One FFS participant stated, "*There just not enough time for me*" while another participant stated, "*we work even at nights*." (see appendix 127) These quotations do not prove, but strengthen the results of the study that urban FFS participants perceive their time to be limited and are quite busy. Thus, it appears urban participants are conscious of their time, but are willing to invest their time only on activities that they value highly, like social cohesion in order to build social capital.

The last component represents the value that urban participants have towards their children and education. Apparently, they find it important that their children learn to read and write (statement 37), have a career (statement 25) and that their children dedicate themselves to other activities other than agriculture (statement 18) (see Table 8). These are clear indications that they would like their children to be educated and, in retrospect, seek employment in the non-agricultural sector. In general, it is known that a formal education, a source of human capital, provides more opportunities to people, especially marginalized peoples, than peoples with minimal formal education. Studies confirm that education does have an impact on income of marginal people and the perception urban participants shared show their awareness of this reality (Maxwell et al.,2000). One urban agriculturalist from Carapongo said, that his parents never told him that he wanted him to have a career, although he would not like that his sons to be a producer either. This clearly expresses how certain values have changed from one generation to the next in regard to child education and even agriculture.

6.2.4 Summary of urban perceptions

The components derived from the analysis present a variety of values and perceptions that urban participants have towards, time, social capital, and education or human capital. It appears urban participants perceive gaining and strengthening social relations to be very important for their well-being and are willing to invest their time, which they also value highly, in order to improve their social capital. Thus, urban participants have expressed what

Robert Putnam would define social capital as "*features of social organization, such as trust, norms, and networks, that can improve efficiency of society by facilitating coordinated actions*" (Putnam, 1993). Urban producers highly value social networking and social grouping, which reflects the perception they have in regards to social capital. Therefore, urban participants, though they feel they do not have free time, are willing to invest their time in order to seek some kind of mechanism to socially organize themselves.

The social and economical realm urban participants find themselves in, manifest in their perception that they are limited by time and their need to develop their social capital, as a means to improve their economic situation. Studies show that in urban agriculture, "*production and marketing tend to be more closely interrelated in terms of time and space than for rural agriculture, thanks to greater geographic proximity and quicker resource flow*" (RUAF). As a consequence of their socio-economic difficulties involved in urban agriculture, urban participants want their children to be educated, thus, have more opportunities in life. In conclusion, urban participants acknowledge in order to progress in their lives they must improve their and their children's social and human capital regardless of the temporal and economic constraints they find in the urban environment.

6.2.5 Summary of urban and rural participants

Both groups of participants have expressed very similar perceptions in regards to social capital. They both find it essential to invest their time to build social relationships as mechanisms to improve their particular socio-economic situation. It appears that both urban and rural participants perceive to have low social capital. Studies found that marginalized people are '*largely characterized by a rich set of bonding relationships, but little by way of bridging and, especially, linking ties*' (Woolcock and Sweetser, 2001)[1]. These participants perceive a lack of and a desire to improve their social networks. Furthermore, "*social networks are considered to be an important asset in Andean societies which influence the economic opportunities of the poor and may or may not determine the economic condition of individual members*" (Altemirano, Copestake, Figueroa, and Wright). The perceptions both groups of participants have clearly reflect their awareness of the lack and the need to improve quality social capital.

1 Bridging social capital refers to the social networks between socially heterogeneous groups, while bonding refers to social networks assigned to homogenous groups, like family. (Catherine Breathnach, 2006)

The differences between both groups lie in the perception of time. Rural participants expressed that they have time available, and will especially invest time in any activity that relates to agriculture. Urban counterparts feel constrained by time, although are willing to invest their time to build and improve their social and human capital. A point of difference in relation to time, is the cropping cycle of rural and urban agriculture. Rural cropping cycle is usually eight to ten months, while the latter is three to four months. The importance of rain for both producers, also, reflects the availability of time. In rural Cajamarca agriculture is rainfeed, thus are dependent on the weather in order to work or not freeing up their time. In urban areas water can be problematic as a consequence of their dependence on the water commission to inform them when they can irrigate, which can be at anytime. Thus, they must be able to manage their time well. One urban participant stated, "*agriculture in Carapongo is difficult because of water*." The concept of time for both groups largely reflects the agricultural system and watering system, albeit in urban areas having another job further constraints urban participants in their time.

A final point where both groups differ, according to the results derived from R factor analysis, is the value urban participants have towards the education or human capital of their children. Moreover, a gender analysis of the data found that both genders perceived child education to be important. (See appendix 9.3) Further gender-focused studies can be carried out to investigate whether there exists differences in the rationale behind men and women's view of education. The focus of the study did not incorporate a gender approach; therefore conclusions cannot be made based on this gender analysis.

7. Conclusion

As noted above the investigation of peoples' perception is not a simple task, especially quantifying it in a statistical language. The perceptions of the research participants are not whimsical or ambiguous, but that these perceptions actually reflect an objective reality that many other researchers have a found in their own studies.

Q and R results concentrated on the perceptions that exits among urban and rural participants and found in general, that urban and rural participants hold different perceptions. The results from R complement and validate the results from Q, by finding similar results in regards to the perceptions each group has. The difference in the methodologies is R separates the groups before analysis and Q does not. Q does not eliminate statements form the concourse in its factor analysis like R does; all statements or perceptions are relevant before analysis. R eliminates statements from the concourse that are not relevant, thus perceptions and statements that prevail after both methodologies imply strong validity of the findings.

Both methodologies applied in this study show differences and similarities in their results. The study did not completely confirm or disprove the hypothesis, but has shown that there is a slight difference in the perception of time between urban and rural FFS participants. The study revealed that other indicators, besides time, differentiate the perceptions and attributes of urban and rural FFS participants. On the other hand, the study also found that some similarities exist between the two groups. The information collected and analyzed can be further be complemented by conducting more detailed studies – objective or subjective- on time, gender perceptions, human and social capital, and socio-economic activities and identity.

Both results identify social capital and time management to be important factors, more so for urban than rural participants, and that FFS are an instrument to improve social capital. The analysis from both methods found that rural perceptions and participants value agricultural activities, identify themselves as producers, and that agriculture is their only livelihood.

In neither of the results did statement 7 (I participate in the FFS to learn more) become a component, implying rural participants nor urban participants join FFS for educational purposes, but participate because they either have time (derived from R results) or want a diploma (derived from Q results). This does provide some similarities between the perception of urban and rural participants in regards to FFS, implying a commonality between both groups. If this is the case some urban participants have similar perceptions to rural participants, implying that they continue to perceive the environment as rural and not urban and vice versa.
Moreover, 'anomalies' were found in the Q analysis that shows how certain rural participants share 'urban' perceptions, while some urban participants have 'rural' perceptions. This finding challenges the rural-urban dichotomy that scholars like de Zeeuw claim. The analysis shows that there exist two different perceptions, each one respectively corresponding to a particular group.

According to R results both urban and rural FFS participants expressed their desire and the importance of social cohesion, while Q results indicate that urban perceptions view social capital to be essential. Many objective studies have shown, mostly in urban areas, that producers do lack sufficient social networks or capital as mechanism to escape poverty. Studies carried out by the World Bank and other institutions state, "*increasing evidence shows that social cohesion - social capital - is critical for poverty alleviation and sustainable human and economic development*" (World Bank). Therefore, these FFS participants recognize that '*social capital contributes directly to raising income and improves access to services*' (Christiaan Grootaert and Thierry van Bastelaer2001).

It is thus interesting, that research participants are conscious that there is a relationship between their social relationships with the improvement of their economic and even educational situation. The lack of social capital by both groups indicates their appreciation of FFS at the social level. Therefore, FFS are not only vehicles of formal agricultural knowledge as commonly thought, but important social mechanism that allow producers to seek and improve their social networks. A recommendation to FFS facilitators in these areas would be that they consider the social component of FFS. Studies show that the *´lack of strong social organization makes it difficult for marginalized people to exploit potential*

opportunities within their communities and to develop links with external partners´ (IFAD, 2002). FFS could provide the space for social organization in order for people to develop better personal and professional relationships. This has resulted after FFS sessions have ended in Carapongo and Huachipa where participants have organized themselves and intend to form a cooperative or micro-company.

The results presented in this report suggest that urban participants are concerned with the education and future of their children, as long as it does not include a career in agriculture. This can complicate the sustainability of agriculture in these areas, which can influence the validity of FFS. One urban producers, Maximo Bellido said once about the youth in Carapongo, "*it is too bad that the young do not participate in the FFS*." Maximo perhaps does not represent the opinion of all producers, although this is a clear indication that not many young people join FFS. (A future research project could concentrate on the reasons as to why young producers, especially urban, do not participate in FFS). It is recommended that FFS facilitators and development projects, in this field, concentrate on incorporating young producers or children of producers in some FFS sessions or in other activities in order to improve the image of agriculture and to promote the importance of it. Therefore, creating a more social and educational environment for agriculturists and their children to value agriculture. This reflects the results where both urban and rural participants value education, especially for their children, while also recognizing the benefit of social relationships. FFS must then invest in understanding the demands and rhythms of urban lives as well as the strategies the poor use to survive and the rationales behind them in order to design effective programs (Garret, 2001).

The factor that separates urban and rural FFS participants is their perception of time. The hypothesis, to a certain extent, is correct in is discourse that urban FFS participants perceive to be more constrained by time than their rural counter parts. The difference in their perception of time largely relates to their distinct agricultural production systems and the social and geographical environment that they live in. However, the agricultural system in Cañete relates closer to that of rural area, although a majority of these participants, like those from Carapongo and Huachipa, did perceive to be limited with time. This insinuates that the urban or peri-urban environment does influence the livelihoods of urban FFS

participant in regard to time. Albeit a clear perception portrayed by urban participants that was not present among rural participants is the amount of time they spend working. Urban participants expressed that they work well into the evening and work every day of the week, while rural participants expressed they have time available and are very flexible with their time. In conclusion, the social, economical and geographical environment of urban and rural FFS does influence the perceptions they have towards their time, their social and agricultural values.

8. Recommendations

This study has shown several benefits to FFS and even for participatory development. Development programs and projects could include Q-methodology or other subjective research methods as an extra research component for base line data collection. Understanding the perceptions of people who will participate in a development program can be extremely useful in forming and planning development projects, not to mention strengthening the participatory element of programs. Moreover, for monitory and evaluation components in development programs, the perception of development participants can be indicators to ensure that certain goals and objects are met.

9. Limits to study

Several limits to the study have been identified as a means to place the reader in an overall context.

1. According to Q-methodology 40-50 participants is adequate, however it is recommended that over 100 research participants should be included for the PCA. Therefore, to validate the results statistically, within PCA, 50 urban and 50 rural participants should have been included in the study. Consequently, the low amount of urban FFS participants results from only two FFS sessions carried out in Metropolitan Lima. This was the reason to include the Valle Grande group from Cañete to complement the amount of research participants from urban areas.

2. Another limit to the study is the inclusion of the Valle Grande group as urban participants, since they have recently transformed from their traditional rural cultural and agricultural production systems to peri-urban areas. Producers in Cañete first, recognize that their environment is rural, although with an influence from the expanding city limits of Cañete. Second, it appears that there are certain differences among them from the urban producers in Lima mainly because they have been formally organized for more than 40 years with a secure export market and grow different crops than the producers in Lima.

3. There are many complexities in studying subjectivity. Investigating opinions and reality is difficult, especially when asking people to describe their actions and behaviors. They may answer the way they want to be perceived, not telling us the way they actually are or behave. Albeit, they also may respond by providing a socially acceptable answer. For example, participants answering negatively to statement 6, in order to portray that they do not drink much. From a psychological point of view, what they answer today depends on their emotional state, which implies they may not answer the same tomorrow. Brown is aware of this disparity in answers from one day to another. "*Indeed, a particular Seoul household on Monday is different in measurable ways from the same household on Tuesday, just as any particular inhabitant in that household differs from moment to moment*" (Brown, 2003). In sum, investigating the perceptions of peoples is not a simple task, but it is very useful to at least grasp their opinion, perception and point of view. To complement the study, anthropological or ethnographical research techniques could be applied, like observatory participation.

4. In many qualitative research projects there are always the difficulty of analyzing the results with quantitative methods like that of PCA. The interpretation of the results largely depends on the individual that conducts the analysis using PCA, which implies that two different individuals with the same data can have two different conclusions. This study attempted to analysis the data according to the guidelines and criteria of PCA in order that another researcher with the same data would come up with similar results.

5. The study was limited in regards to the appropriate contacts and available time in order to contact non-FFS participants, in order to attain a more balanced perception of urban and rural producers. Moreover, the study can be complemented with the participation of more women and younger producers in urban area.

6. The study only reflects the opinions and perceptions of the participants based solely on the statements provided in the concourse. It has been mentioned that the concourse was constructed from interviews of urban producers, an unpublished document on the opinions of urban FFS participants, and interviews with FFS facilitators and not that of rural. These discrepancies are a result of financial limits from the study to travel to rural areas in order to collect statements from rural FFS participants. Moreover, a validity test of the concourse was not conducted in rural areas, which could have brought more insight about rural FFS participants' perceptions.

10. Participant Feedback

One critical feedback we received from a rural participate was the use of the word 'urban' in some statements in the concourse. This participant explained that the notion of 'urban' for rural producers represents non-rural areas such as towns and villages, while we consider urban to be cities with a high concentration of peoples. Therefore, our definition of what urban is differs largely from that of rural producers, which explains the ambiguity of responses to certain statements that included the word urban in it. On the contrary, we found that urban FFS participants understood our definition of 'urban' perhaps because they live and experience Lima and Cañete as urban environments and can distinguish what is urban from rural from their continuous relations and experiences of rural areas. This could have been avoided with a validation test of the concourse in rural areas, although due to time and money constraints this was not carried out.

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12. Appendix

12.1 Definitions

12.1.1 Farmer Field Schools

Farmer Field Schools (FFS) began in rural Indonesia focusing on improving crop management and protection, mainly insect pest management on rice, and eventually spread throughout Asia, Africa and Latin America, although in respect to other crops, such as potato and sweetpotato and themes, like soil conservation. Therefore, FFS have been adapted to local circumstances, which reflect the different cultures and regions where they have been applied. FFS are what Robert Chambers would define as participatory rural appraisal or participatory learning methods, which is "*changes and reversal- of role, behavior, relationship and learning. Outsiders do not dominate and lecture; they facilitate, sit down, listen and learn. Outsiders do not transfer technology; they share methods, which local people can use for their own appraisal, analysis, planning, action, monitoring and evaluation.* (Chambers 1997 p.103) FFS seeks to attain sustainable agriculture by non-formal education to producers within a crop cycle. The focus is to increase individual and group critical analysis and decision-making, stimulating innovation, identifying practical solutions to local problems, and increasing awareness, which is carried out by different styles of practical learning, like experimentations. FFS are designed into seven processes: "*planning, the learning cycle-observation, analysis and action, developing agroecological knowledge, developing the capacity for collective action, motivating and sustaining and choosing and training possible facilitators of the FFS group.*" (Braun, Thiele, Fernandez, 2000)

12.1.2 Urban FFS

Recently, FFS have been applied to an urban setting through a pilot project carried out by Urban Harvest and other partners in Lima. This is one of the first documented practices of FFS in an urban setting, which was an ideal situation, not only to study the phenomenon, to find adequate methods that would adapt conventional rural FFS that facilitators are usually accustomed to. The socio-cultural, geographical and even economic differences between rural and urban areas imply that urban FFS have a distinct dynamic. Consequently, urban FFS cannot be defined as rural FFS due to certain key differences that distinguish rural and urban agriculture. A question that arises from this study is would there be a need to define urban FFS apart from conventional rural FFS?

12.1.3 Agriculture

Agriculture is defined as the cultivation of crops, be it vegetables, tubers, or herbs, fruits, raising of small and large livestock and even fisheries. It is common to associate agricultural activities to rural areas, although throughout the history of the human species agriculture has occurred in rural, peri-urban and even within urban areas. Michael Mann distinguishes two types of agricultural systems based on rain or irrigation. (Mann, 1986) The areas of this particular research clearly present Mann's distinction of agriculture, the three rural, areas where the study was carried out at, lie in the province of Cajamarca which is mainly rain

feed agriculture, while the three peri-urban agricultural areas lie on the coastal desert of Peru that depend on irrigation.

12.1.4 Urban Agriculture

Firstly, the concept of urban agriculture is not widely know in certain parts of the world or disciplines, therefore it is essential to differentiate between rural agriculture and urban agriculture. There is much debate as to the definition of urban agriculture among scholars, NGOs, development workers, and even producerss, due to the complexities surrounding the definition of agriculture itself, the social and economic systems that encircles it, and, in particular, the location of agricultural activities. In simple terms urban agriculture (UA) is the presence of agricultural activities within city limits, however among certain people involved in UA it also includes agricultural activities in the periphery of a city or town. Luc J. A. Mougeot argues "*Urban agriculture is an industry located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and nonfood products, (re)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area*". (Mougeot 2000) Mougeot argues that there is more to urban agriculture that just its location, which in turn distinguishes it from rural agriculture.

This paper attempts to compare the differences between rural and urban agriculture, while including peri-urban agriculture (UPA). Peri-urban agriculture has been defined as agriculture that takes place in the outskirts or periphery of cities or towns. Peri-urban agriculture tends to incorporate the increase of land value, witness multiple land uses and usually has the characteristics of being very intensive and commercially oriented, while contributing less to food security than intra-urban agriculture. UPA is in closer contact with rural areas and tends to undergo, over a period of time, more dramatic agricultural changes than do agriculture within parts of the city. However, the importance of the market-oriented urban agriculture, both in volume and economic value, should not be underestimated (as will be shown later). Products are sold at the farm gate, by cart in the same or other neighbourhoods, in local shops, on local (producers) markets or to intermediaries and supermarkets. (RUAF)

12.2 Q-sort

Each participant had copies of the statements printed on small 4X10 cm cards and a half poster board to place the cards on. The poster board had on the front face three circles marked out which wrote 'yes', 'no' and 'indifferent' and on the back side four circles. On the left side we wrote 'disagree' with two circles underneath marked "-" representing disagree and "- -" representing strongly disagree and on the right side on the top "agree" also with two circles and marked "+" representing agree and "++" for strongly agree. Participants were to place each statement in the appropriate circle according to their opinion of the statement. (For more details as to how the 'research' workshop was conducted read Annex 12.3) The participants marked down their results on a sheet we prepared for them as a means for them to recheck their responses before handing them in.

12.3 Methodological steps in selecting variables and including them in Component analysis.

Research participants were divided into two simple categories; those pertaining to rural areas and those to urban areas. Participants form the rural communities of Cajamarca were considered rural producers, while those from Canete, Huachipa and Carapongo were consider as peri-urban producers. The concourse consisted of statements or elements based on the concept of time, social traits and values and agricultural practices and realities. These three Components were used as measurements to investigate the differences and similarities between the two groups. Statistical analysis was conducted on four Components – agriculture (include FFS), socio-cultural, time, and gender – while a general analysis was carried out incorporating all Components.

Before any analysis was conducted and after putting in the results of all participants, the responses of the participants were divided depending whether they were urban or rural producers. Then the percentage of both urban and rural participants' responses to each statement was measured. Thus, statements that received high percentages (above 60 % of participants that responded accumulatively agree and strongly agree or accumulatively disagree and strongly disagree) of responses were included for analysis. It was intriguing to find that all participants, urban and rural, did not clearly agreed on all statements according to the grouping we established and that each person within rural and urban areas had their distinct opinion on certain issues. For example, statement 49 received the following responded from urban and rural participant:

Concourse 5	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
Rural	10%	8%	8%	45%	30%
Urban	3%	3%	9%	32%	53%

For both groups this statement was included since for 75% of rural participants agreed with the statement while 85% of rural participants agreed with the statement.

12.3.1 Procedure of the SPSS:

It is necessary to select a number of procedures to conduct the Principal Component Analysis. SPSS permit us to do it by selecting the following options:

(1) Select Descriptive statistics to specify statistics to include in the output.
   a. Keep the Initial solution checkbox to get the statistics needed to determine the number of Components to extract.
   b. Mark the Coefficients checkbox to get a correlation matrix.
   c. Mark the KMO and Bartlett's test of sphericity checkbox.

(2) Extraction method refers to the mathematical method that SPSS uses to compute the Components or components. Select Extraction button
   a. Retain the default method Principal components.
   b. Analyze correlation matrix.
   c. Display unrotated Component solution and Scree plot.

d. Extract Eigenvalues over 1.

(3) The rotation method refers to the mathematical method that SPSS rotate the axes in geometric space. This makes it easier to determine which variables are loaded on which components. Select Rotation button.

a. Select Varimax rotation is called variance maximizing or Varimax because the criterion for the rotation is to maximize the variance (variability) of the "new" variable (Component), while minimizing the variance around the new variable.

12.3.2 Considerations to validate results:

There are certain conditions to validate the results from the PCA:

(1) Appropriateness of Component analysis

b. Presence of substantial correlation (greater than 0.50)

c. Sampling adequacy (KMO[6] greater than 0.5 and Bartlett test of sphericity[7] less than the level of significance)

d. The cumulative proportion of total variance should be 60% or more for the total variance for the component selected.

e. Communalities values for each variable (represent the proportion of the variance accounted for by the Component solution) should be 0.50 or higher.

12.3.3 Number of components:

When all the prior conditions are held, then the selection of appropriate number of components is made through two possible criteria:

(1) Henry Kaiser suggested a rule for selecting Components with eigenvalues higher than 1. The eigenvalues are always the same as the number of variables (if the Correlation Matrix is analyzed). When the correlation matrix is used each of the variables is standardized to have a mean of 0 and a variance of 1.0. This means that any component or Component, whose eigenvalues less than one, retains less variance than one of the original variables. Consequently such components may be thought to convey less "information" than the original variables and should therefore be ignored.

(2) Scree test method (suggested by Raymond B. Cattell in 1966) is the method where you plot the successive eigenvalues, and look for a spot in the plot where the plot abruptly levels out. By examining a 'scree plot' of the eigenvalues against the number of Components, the appropriate number of Components is given if there is a break in slope.

We chose the Scree test because is more accurate to describe the groups that explain better the variance.

The Component scores that are calculated have a mean of 0. This means that a negative score indicates a case with a below average score, while a positive Component score

6 Kraiser-Meyer-Olkin (KMO) test is useful to determine whether the data are adequate for factor analysis. When the number is closer to 1, data is more adequate, and data below 0.4 means that are poor for factor analysis.

7 Bartlett test indicate a null hypothesis of variables not correlated, therefore a significant level lower than 0.05 indicate that Ho can be rejected and it has sense to apply factor analysis.

indicates a case with an above average score. Obviously a case with a 0 score is average, however the sign is only relevant to our interpretation of the Component.

12.3.4 Check for outliers

After computing the Component score, it is strongly suggested to identify outliers that have a value greater than ± 3.0, after testing outliers remove them and redo analysis.

12.4 Gender Analysis

This section was not part of the original research project, although with the participation of women in this study the researchers found it an ideal opportunity to analyze whether gender differentiations exists among the research participants. Results from the Q-analysis do not confirm if there are any differences in perception among men and women, therefore a R style factor analysis was carried out. The statistical analysis was carried out in the same manner as the original study, although divided by gender and not along the urban –rural dichotomy. There were an in sufficient number of urban or rural women participants to analyze whether differences existed in the perception of rural women and urban women. Thus this section of the study only concentrates on the perceptions of men and women participants, respectively.

It is difficult to generalize, on a whole; the different roles and activities men and women care out and are responsible for in agricultural communities and in agricultural production systems. In most cases around the world women are more concerned with household management, food security and raising children, while men are more focused on income generating activities outside of the household. Women also have the tendency to have a lower educational status than men, which implies that they have more difficulty in finding formal employment. (Wilbers, 2004) Studies carried out in urban areas show the division of tasks between men and women vary greatly according to the cultural context, production systems, the socio-economic status of the household, the size and type of livestock and the location of the household in city. (Mougeot, 1999 and Arce, Maldonado and Prain, 2004) This study shows that women and men tend to value agriculture to be very important, value FFS to be a source of formal knowledge and social cohesion, and highly value the future of their children.

12.4.1 Female Perceptions

Table 3. **Three components derived form PCA analysis of female participants**

Statements	Response	Variable Variance
Group 1: Value of FFS and agriculture Variance explained: 33.44%		
45. I go the FFS because I want a diploma.	Agree	.929
58. It would be a good idea to remind us a day before to go to the FFS because we are so busy we forget.	Agree	.840
5. Agriculture is a waste of time.	Disagree	.795
Group 2: Variance explained: 23.36%		

42. The good thing about agriculture is that I do not invest much, but I earn a lot.	Disagree	-.839
53. I gained in the FFS because I know more people now.	Agree	.827
18. It is important that my children dedicate themselves to other things in order to get ahead.	Strongly agree (67%)	.631
Group 3: Unity for children's future Variance explained: 19.51%		
32. We have to organize ourselves in order to be valued.	Agree	.944
25. I would be proud if my child has a career.	Strongly agree (67%)	.868
Total variance: 76% KMO: .401 Determinant: .010		

The results to the first variable in this component, expresses how women perceive obtaining a diploma to be favorable (statement 45), probably due to the fact that most women have less formal education than men do. (FAO, 2006) Therefore, the FFS have some benefits to women; first because they receive a diploma which has much self worth and provides social recognition to women, and second, FFS provide agricultural knowledge. The second variable reflects how women perceive that they are very busy, probably because they are engaged in household affairs, their children and certain agriculture activities at one time, hence they need to be reminded about FFS session (statement 58). Finally, female participants perceive that agriculture is not a waste of time (statement 5), since it provides food security for the family, which women are usually more concerned with than men. These results imply that women value FFS: first, because they obtain a diploma; second, feel that they are important enough that they would like to be reminded when session are so they can attend; third, since they value agriculture, due to the its importance in family nutrition, FFS are beneficial to improve their agriculture outputs. This confirms a World Bank study that found that female education plays a major role in improving the status of women and that it significantly improves household health and nutrition. (FAO, 2006).

The second component expresses how women participants acknowledge that agricultural activities are not economically viable (statement 42), value social FFS because it provides them the space to develop social relations (statement 53), and find it very important (67% strongly agree with statement 18) that their children dedicate themselves to other activities to get ahead in life. The grouping of these results shows that women find social networking, through FFS, to be vital for them and their family's livelihood, especially at times when agricultural earnings are low. Studies found that "*social capital has been the key instrument in undertaking their social and productive projects, improving their living conditions and fighting social exclusion*". (Flores and Rello, 2003) Therefore, as mothers and knowing that agriculture does not have much of a favorable economic future, they acknowledge that improving their social relations will be productive to them and their families. Moreover, the negative perception of agricultural income disposed women to have a predilection that their children do not become producers.

This last component reflects the perception that women require both human and social capital. It is not surprising to find that females value social organization (statement 32) and would like their children to have a career (statement 25). Females are usually concerned with more socially orientated affairs; therefore organizing themselves with other women can

be seen very advantageous. A perfect example of female social organizations is FEPOMUVES, (Popular Federation for Women in Villa el Salvador) in Villa el Salvador, another marginal district of Lima, that fight for the human rights of women. Therefore, by organizing themselves their needs and expectations can be shared and expressed, perhaps to the community or their husbands, and hopefully then be valued. Therefore, if they are valued by grouping together, their concern for the future of their children can be voiced and hopefully be valued. A clear example of women organizing themselves for the better of their children is the ‘ clubs de madres’ (mothers’ club) that buy food in bulk and prepare meals as a group for their families, however this does not occur in the research areas. (Garret, 2001) Thus, if all women agree that their children need to find careers or need to improve their agriculture productivity, then as a united female voice, perhaps in establishing a community organization, these needs can be valued, respected and action can be taken.

Summary

The above results show how female participants express their interest in FFS, the importance of agriculture, the worth of social cohesion and organization, and the concern for their children’s future. FFS not only bestow self worth to women, but provide them with formal knowledge or a source of human capital, in which studies show that educated mothers have a “ *better understanding of nutrition leads to a better choice of foods and healthier methods of preparation. Educating women is the key to breaking the poverty cycle*”.(Brown, 2006). In addition, FFS also complement the value females have towards agriculture. Consequently, social organization among females and mothers are important dimensions of social capital that ‘*augment non-monetary aspects of household welfare such as status of health and schooling’*. (Eklund, Felloni, and Imai, 2003) The relationship between social capital and child education may not be that clear, however the former does complement the latter, especially since female participants expressed that they would not like their children to become producers.

	Total variance	KMO	Determinant
Female	76%	.401	.010
Male	64.78%	.559	.213

12.4.2 Male perceptions

Table 4. **The three components derived from PCA analysis on male participants**

Statements gender – male	Response	Variable Variance
Group 1: FFS as social and educational tools Variance explained: 20.8%		
32. We have to organize ourselves in order to be valued.	Strongly agree	..809
2. I have a lot of free time, I do not know what to do with my time.	Disagree	-.787
7. I participate in the FFS to learn more.	Strongly agree	.613
Group 2: Variance explained: 15.82%		

25. I would be proud if my child has a career.	Strongly agree	.816
18. It is important that my children dedicate themselves to other things to get ahead.	Agree	.703
47. I don´t trust in groups, someone always robs.	Disagree	.604
Group 3: Importance of agriculture Variance explained: 14.95%		
49. Work is not secure i have to make my farm produce.	Agree	.807
11. I have to take my harvest to the market.	Agree	.822
Group 4: FFS time Importance of child future Variance explained: 13.20%		
39. I can irrigate, fertilize o fumigate anther day, because today I have to go to the FFS	Agree	.748
20. Nobody helps me on the farm, I work alone.	Disagree	.721
Total variance: 64.78% KMO: .559 Determinant: .213		

This section in the gender analysis provides the perceptions of males participants in regards to the three Components included in the concourse.

In this component Factor analysis grouped how male participants strongly agree with statement 32 (64% strongly agree and 25 % agree) and statement 7 (69% strongly agree and 24% agree) while expressing that they do not have much free time (39 % strong disagree and 24 % disagree with statement 2). This component reflects how male participants, although feel that do not have free time, are willing to invest their time to attend FFS to learn more about agricultural production systems and how FFS are a source to organize themselves. This component reflects how male participants perceive to have low social and human capital in regards to knowledge. Thus, male participants recognize that FFS are mechanisms of '*human capital accumulation as a fundamental social activity, involving groups of people*.' (Robert Lucas referenced by Putnam 1993)) Furthermore, many studies reveal how an improvement in household income highly correlates with human and social capital. (Schultz, 2001) Therefore, male participants do recognize the social aspect of accumulating information while understanding in order to improve their livelihood they require more knowledge and social relationships.

The following component reflects a reoccurring perception and value that participants expressed in regards to the future of their children and benefits of socially grouping. Male participants expressed that they strongly agree (75% of participants) that they would be proud if their children follow a career and dedicate themselves to other activities besides agriculture. It is interesting how the factor analysis grouped statement 47 with the other two statements, expressing their positive view of social groups It appears that male participants are concerned with the well being of their children's future and the importance of belonging to a group. Thus, this perception correlates to studies by D.Parthasarathy and V.K.Chopde who found building social capital plays a crucial role in bringing about positive economic changes. (2003)

The third component reflects the perception that male participants have of their economical situation that forces them to resort to agriculture to sustain their livelihood (statement 49),

hence perceiving that agriculture is not a waste of time but essential, at the most, for some economic and perhaps nutritional benefit. The fact that they solely take their harvest to the market is questionable, although they do feel that they have to ensure some economic revenue from their harvest by directly taking their products to the market. Furthermore, this component associates the common view of the working tasks of a male agriculturalist that takes the harvest to the market, implying the control of finances in the household and when there is no work outside of the farm will engage in agricultural activities.

Summary

The results show that men tend to value or perceive being part of a social group to be important not only for themselves but for their children, they value gaining new practical knowledge, like they learn in FFS, they want their children be educated and have a career, and, they perceive agricultural activities as a kind of safety net for times when they do not have an off-farm job.

12.4.3 Gender Analysis Summary

This study shows that even though there are clear biological and cultural differences between men and women, their perceptions on certain issues as reflected in the study, are not profoundly different. Certain similarities arising from the study emphasize that men and women both value FFS, social organization, to a certain extent, agriculture and their children's future, although the rationale behind their perceptions may differ. For example, women have expressed that one reason they value FFS is because of the diploma they receive while men value FFS because they want to learn more. On the other hand, both have expressed the importance of FFS in providing a space in which to get to know more people and organize themselves, while expanding and strengthening their social relations. However, their desire to organize socially and to be part of a group may also derive from different reasoning and interests, which can be further investigated through gender approach research. Both expressed that they would like for their children be educated and have a career apart from agricultural activities, however this was incorporated with a social cohesion variable. Thus, men and women associate their child's future, not only with education, but also with social relationships. Both gender results reflect the roles being parents and agriculture play in the lives of these rural and urban producers.

12.5 Concourse

1. If I only do agriculture, I will be poor.
2. I have a lot of free time and I don't know what to do with my time
3. It is important that my children help me on the farm
4. Nobody helps me on the farm, I work alone
5. Agriculture is a waste of time
6. I always have time to drink with my friends
7. I participate in the FFS to learn more
8. My wife only cooks and takes care of the children.
9. In the community, we all rely on each other
10. I can pay a laborer when I need to leave the farm
11. I have to take my harvest to the market
12. I can visit my family who live far from my town quite frequently

13. I work in agriculture every day
14. *Not included in analysis*
15. I want my children to be agriculturalists like me
16. *Not included in analysis*
17. I have to wait for the rain so I can work
18. It its important for my children to dedicate themselves to things other than agriculture to get ahead
19. FFS sessions are very long
20. No one helps me in the field, I work alone
21. If we are members of groups, we can improve our lot
22. I prefer to do it alone, it is not important to be part of an organization
23. Not included in analysis
24. Agriculture is so bad I have to leave the farm to find other work
25. I am proud that my son has a profession
26. My farm is solely for self-consumption
27. If I have a bad harvest, my family and friends are going to help me
28. I spend more time on my livestock than on my fields
29. I take my harvest to the market and they pay well, I return happy
30. I also work into the night
31. I participate in the FFS because I have time
32. We have to organize ourselves to be valued
33. Not included in analysis
34. I don't know why I accepted to go to the FFS, it is a waste of time
35. Pests aren't important, what we need is a market for selling our goods
36. I participated in the FFS because I though they would talk about guinea pigs
37. It's important for my children to learn how to read and write
38. I can't go to the FFS sessions because just now my people abandoned me and I worked until late
39. I can irrigate, fertilize, and fumigate on some other day, because today I have to go to the FFS
40. Not included in analysis
41. There are always emergencies and I can't always keep my promises
42. The good thing about agriculture, I don't invest much and I earn a lot
43. Not included in analysis
44. Not included in analysis
45. I go to the FFS to get a diploma
46. Agriculture is very bad, I barely make a living
47. I don't trust groups, someone always steals
48. The FFS topics are useless
49. Work is not secure, I have to make my farm produce
50. Not included in analysis
51. Thanks to the FFS, now we be part of a group
52. My working day starts Monday and ends Sunday
53. I gained something from the FFS because I know more people now
54. Not included in analysis
55. If I have something important to do, I try to make time for it
56. Not included in analysis

57. I don’t have the luxury of going on a whim
58. It would be good to remind us one day before the FFS because we are so busy we forget
59. The only thing I know how to do is sow
60. I want to return to my village to continue farming
61. Not included in analysis
62. I first separate what I need from the harvest and/or the rest I sell in the market
63. Urban life demands more of my time than rural life
64. Rural life is more easygoing than urban life

12.6 Concourse in Spanish

1. Haciendo solo agricultura voy a ser pobre
2. Tengo mucho tiempo libre y no sé que hacer con mi tiempo
3. Es importante que mis hijos me ayuden en la chacra
4. La ECA esta distante para mí.
5. La agricultura es una perdida de tiempo.
6. Siempre tengo tiempo de tomar algo (chicha, agua ardiente) con los amigos
7. Participo en las ECA’s para aprender más.
8. Mi esposa sólo cocina y cuida a los hijos
9. En la zona, todos nos apoyamos.
10. Puedo pagar peones cuando necesito salir de la chacra
11. Yo tengo que llevar mis cosechas al mercado
12. Puedo visitar frecuentemente mi familia que vive lejos de mi pueblo
13. La vida es tan cara aquí, que tengo que salir a trabajar aparte de ser agricultor
14. Trabajo todos los días en la agricultura
15. Quiero que mis hijos sean agricultores como yo
16. Amo la agricultura y me da tranquilidad
17. Tengo que esperar la lluvia para poder trabajar
18. Es importante que mis hijos se dedican a otras cosas para seguir adelante
19. Las sesiones de las ECA’s son muy largas
20. Nadie me ayuda en la chacra, trabajo solo
21. Si formamos grupos, podemos mejorar
22. Prefiero hacerlo solo, No es importante ser parte de una organización
23. Los cachuelos nos ayudan mucho
24. La agricultura esta tan mal, que necesito salir de la chacra para buscar otro trabajo
25. Estaré orgulloso que mi hijo tenga una profesión
26. Mi chacra es solo para autoconsumo
27. Si tuviera una mala cosecha, mi familia y amigos me van a ayudar.
28. Gasto más tiempo en mi ganado que en mi chacra
29. Llevo la cosecha al mercado y pagan muy bien, regreso feliz.
30. Yo también trabajo en las noches
31. Participo en las ECA’s porque tengo tiempo
32. Nosotros tenemos que organizarnos para hacernos valorar.
33. Mis suelos ya no rinden como antes y tengo que invertir más en la chacra.
34. No sé porque acepte ir a la ECA porque pierdo mi tiempo.
35. Las plagas no son importantes, lo que necesitamos es un mercado donde vender.

36. Participé en las ECA's porque pensé que iban a hablar sobre cuyes
37. Es importante que mis hijos aprendan a leer y escribir
38. No pude ir a la sesión porque justo me fallaron mi gente y termine tarde de cargar
39. Puedo regar, fertilizar o fumigar otro día, porque hoy tengo que ir a la ECA.
40. Tomamos transporte para visitar a mis vecinos
41. Siempre hay urgencias y no podemos cumplir siempre con los compromisos
42. Lo bueno de la agricultura es que no invierto mucho, pero gano bastante
43. El cuy frito es mi plato favorito
44. "camarón que se duerme, se lo lleva la corriente"
45. Voy a la ECA porque quiero un diploma
46. La agricultura esta muy mal, con las justas vivo
47. Yo no confío en los grupos, siempre alguien roba
48. Los temas de las ECA's no sirven
49. El trabajo no es segura necesito hacer producir mi chacra
50. Don Guillermo dice que siempre llega tarde a la ECA porque esta lejos.
51. Gracias a las ECA's ahora nos podemos agrupar
52. Mi día de trabajo empieza lunes y termina domingo
53. He ganado en la ECA porque conozco mucha gente ahora
54. Me gusta aprender mas
55. Si tengo algo importante que hacer, trato de disponer mi tiempo
56. Estoy muy limitado económicamente porque tengo poca plata
57. No puedo darme el lujo de salir a pasear.
58. Seria bueno que nos hagan recordar un día antes para ir a la ECA porque estamos tan ocupados que se nos olvida
59. Lo único que sea hacer bien es sembrar
60. Quiero regresar a mi pueblo a seguir sembrando
61. Voy a dejar la agricultura porque ya no hay terrenos
62. Primero separo de la cosecha lo que necesito y o que sobra vendo al mercado.
63. La vida urbana exige más de mi tiempo que la vida rural.
64. La vida rural es más tranquila que la vida urbana.

12.7 Statements by producers after Q-sort

1. We are more busy and under pressure here than in rural areas *(estamos mas agitado aqui que en el rural).* Leoncio Rivera
2. There just not enough time for me. (*no hay suficente tiempo para mi*) Máximo Bellido
3. We work even at nights. (trabajamos en las noches). Julius Raymundo

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