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A STUDY ON THE POLICY IMPLICATION OF ROADSIDE LAND USE CONVERSION: THE CASE OF SAN JOSE CITY, PHILIPPINES

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Abstract

Land Use conversion have been proceeding in site specific areas in selected regions of the country which were identified as instrumental to the Philippine's phenomenal economic growth. San Jose City, the case study area, is no exception. This "linear development" outside a limited zoning coverage area was largely due to the city governments' inability to promulgate an effective land use conversion policy that can address this concern and its consequences on food security and traffic congestion. The final output of the study is a model that describes the determinant of land use conversion among individual land owners and several policy intervening measures to counteract these factors.

INTRODUCTION

Background

Unparalleled economic progress and the steady growth in the population of the country have triggered an increase in the demand for non-agricultural lands. As a consequence, the percentage of land use conversion has been increasing on specific locations which were identified as instrumental to the country's progress. These location-specific conversions can be found along peripheral areas of highly urbanized cities and municipalities, industrial sites, and economic zones. The improved financial capability of the land owners, together with their increasing direct or indirect need for land for purposes other than agriculture in areas which are not necessarily highly urbanized likewise resulted in the increase rate of land use conversion. This in the end not only imposed heavy strain on agricultural activities but also on land use planning and land use allocation efforts which are manifested by problems on food security and sustainability and traffic congestion, respectively.

Recent data gathered from the Department of Agrarian Reform (DAR) indicated that an increased rate of land use conversion have been proceeding at site specific locations around the country. At the regional level, there is a disparity among regions in terms of land use conversion rates. Regions III, IV, VI, X and XI have been identified as industrial sites in the country. This is an answer to one of the major aims of the Medium-Term Philippine Development Plan which states that the country should achieve newly-industrialized status by the turn of the century. It is in these regions however, where the rate of land use conversion (in hectarage) noticeably increased. In particular, regions III and IV registered very significant increases in the past few years. Ironically, it is in these regions also where large areas of productive agricultural lands can be found.

At the local level on the other hand, cities and municipalities have their own share of problems of land use conversion. The case study area is no exception. Linear development pervades most of the road networks in San Jose City. A review of the latest zoning ordinance of the city indicates that a majority of roadside areas are classified as either residential or commercial and immediately after these portions, agricultural lands are located. This land allocation structure is a potential cause of traffic problems in the city. There is an absence of a rational land use plan which can serve as basis for the formulation of clear-cut policies on land use conversion. As a result, substantial amount of agricultural lands have been converted without formal approval or registration at the city government.

Local governments are vested with powers to direct and guide land use conversion. This may be achieved through the promulgation of a rational land use policy which should be strengthened by zoning ordinances. These measures, however, are only regulatory in nature. The land use decision still rest on the hands of the land owners. However, individual decisions being relative and subjective in nature cannot be predicted easily. Even though several factors have already been identified to influence the land owner's land use decision in general, whether these factors influence land owners and the degree of their influences vary from individual to individual and from one locality to another.

The concern of the study was premised within the context that it is through an effective land use policy intervention that the national and the local government can influence the land use decision of land owners with the main goal of eventually regulating or directing future conversions. But the question of what constitutes an effective land use policy intervention that can achieve the above purpose seemed to remain fully unanswered. Identifying factors that influence land owners intention in the Philippine case, in general, and in San Jose City as a case study area, in particular and

incorporating their relevance in the future land use conversion policies may proved to be a valid starting point.

Objectives

The main objective of this research is two-fold: 1) to identify the factors that influence land owner's land use conversion intention and measure the degree of influence of these factors, and 2) to formulate some intervening policy measures envisioned to assist the local government of San Jose City to realize a rational land use plan based mainly on the results of this study. Specifically it aims to:

1. Compare and analyze the household characteristics, personal attributes and the characteristics of the land and the four groups of respondents under study. These group of land owners exhibit varying land use conversion intentions – those who have already converted, those with no land use conversion intention hence for retention, those who are undecided on their intention, and those with strong land use conversion intention.
2. Assess the current land use pattern of San Jose City based on the barangay location of converted lands now used for non-agricultural purposes and lands whose use have been retained for agricultural purposes.
3. Analyze the land owner's perception of the determinants or group of determinants selected in this study and the influence of these perception on the land use conversion intention of the land owners.
4. Develop a model that describes the land owner's land use conversion intention using their perception responses to the degree of influence of the different determinants or group of determinants to their intention.

Research Hypotheses

To determine the degree of influence of the different socio-economic characteristics, personal attributes, and the characteristics of the land of each land owners and their perception responses on the different factors affecting their land use conversion intention, the following hypotheses where tested in this study: (see figure 1: conceptual framework)

1. The land use conversion intention of the land owner is influenced by his/her perception of various socio-economic determinants such as the trends in population, demand for non-agricultural land, his/her financial capability to undertake land use conversion and the economic benefits arising from the conversion.
2. Land owners' perception of various physical and biological characteristics of the land which are its suitability for either agricultural or non-agricultural purposes, presence of continuous water supply and adequate natural drainage affects his/her intention to convert or retain the current use (agricultural) of his/her land.
3. The land use conversion intention of the land owner is influenced by his/her perception of certain location factors such as the improvement of road condition in the area, the distance of the land from the market areas, the local government performance in the area, the compatibility of land to the land use of adjacent lands and the presence of an effective transport system in the area.
4. Land owners' perception of different institutional determinants such as his/her family; the local government, specifically its land use conversion policy, zoning ordinances and real property tax collection; the national government, specifically its agricultural support policy; the church, specifically its teachings and doctrines and; his/her customs and traditions as it affects his/her land use conversion intention.
5. The land owners' revealed socio-economic characteristics, personal attributes and his/her land's characteristics particularly his/her sex, age, civil status, number of children, occupation,

educational attainment, religion, the barangay location of the land, number of household members, number of working adults, the combine household monthly income, the number of married children, places of residence in the last eight years and, the annual business income will have an association with his/her land use conversion intention.

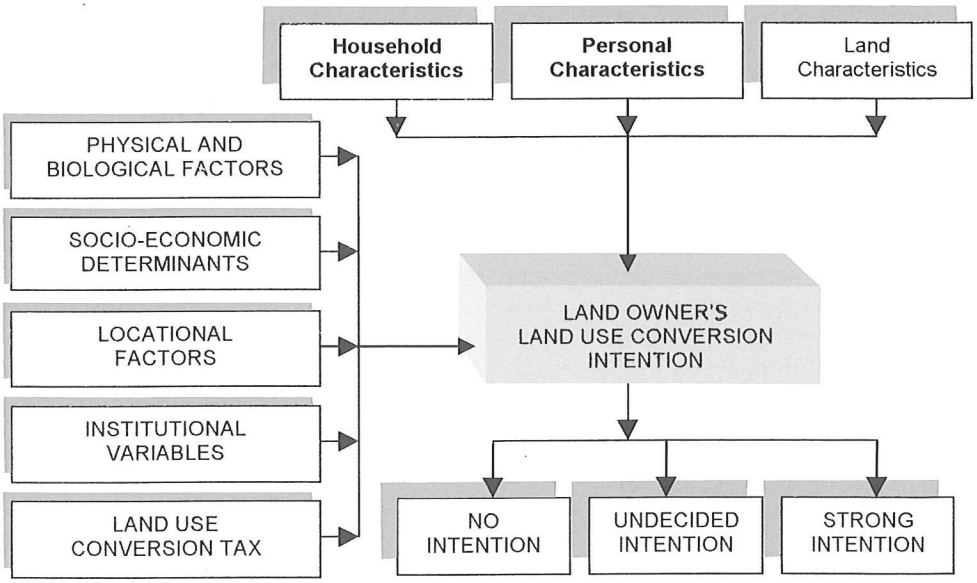
METHODOLOGY

Survey Methodology

The goal of the primary data collection undertaken in this study was to collect information on the socio-economic, personal, and land characteristics of the respondents as well as their perception of selected determinants hypothesized to influence their land use conversion intention . Personal interview as data gathering approach was deemed appropriate since majority of the respondents were simple farmers whose education are expectedly limited and are not usually subjected to technical questioning. It was also believed that the same interview approach was necessary to ensure that the questions in the perception portion are extensively discussed with the respondents during the interview session in order to elicit the needed responses in this study.

Moreover, a pre-test of the interview schedule was administered among city hall employees who are qualified land owners. A pre-test was also tried among rice mill operators and subdivision owners. The result of the pre-test together with the suggestions and comments of the hired enumerators and the employees to which the interview schedule was administered were used as bases in the modifications incorporated in the final data gathering instrument. A survey with land owners from the six major road network areas of the of San Jose City as respondents was then conducted.

Figure 1 – Conceptual Framework of the Study



The survey was conducted during the first two weeks of November 1996. It was expected that it was difficult to schedule a meeting with the respondents, who are mostly farmers, even though they were already informed in advance about the survey due to the fact that November is a harvest season. Nonetheless, interviews usually started early in the morning so that respondents can still be found in their respective households. The afternoon of the survey period were devoted in reviewing and editing the accomplished interview schedules.

Sampling Procedures

There are six (6) major road network passing through the city's central business district. The City Assessor's Office provided the list of the owners of 2,400 parcels of lands whose location are distributed according to the six major road networks of the city. The location of the lands provided the strata from which the respondents were chosen. In the absence of a reliable data base to identify the actual use of these parcels of land however, 304 samples were chosen using simple random sampling technique and their actual land use were validated in a field survey. The number of respondents per stratum or road network was proportional to the actual observation of land use conversion in the areas under consideration, such that the higher the number of observed conversion, the more are the chosen respondents. The distribution of the respondents according to the road networks are presented in table 1.

Table 1 - Distribution of Respondents by Road Network

Road Network	Barangays	Number of Respondents
1	Abar 2nd, Caanawan, Sto Tomas	60
2	Sto Nino 2nd, Sto Nino 3rd	52
3	Malasin, Kita-Kita, Manicla , Tayabo	39
4	Sibut, Palestina, Pinili, San Juan, Porais, Villa Joson	58
5	Tulat , Tabulac, Parang Mangga	50
6	Camanacsacan, Sinipit Bubon, Tondod	38

It was during the survey that only 256 out of 304 respondents were actually interviewed. This was due to the fact that it was harvest time when the interview was conducted and some of the chosen respondents were not available since they were busy harvesting their crops. Local community official's expertise was utilized during the field validation of the list of respondents. Their knowledge of almost all the people in the community greatly helped in this field survey as well as in the survey proper.

Method of Analysis

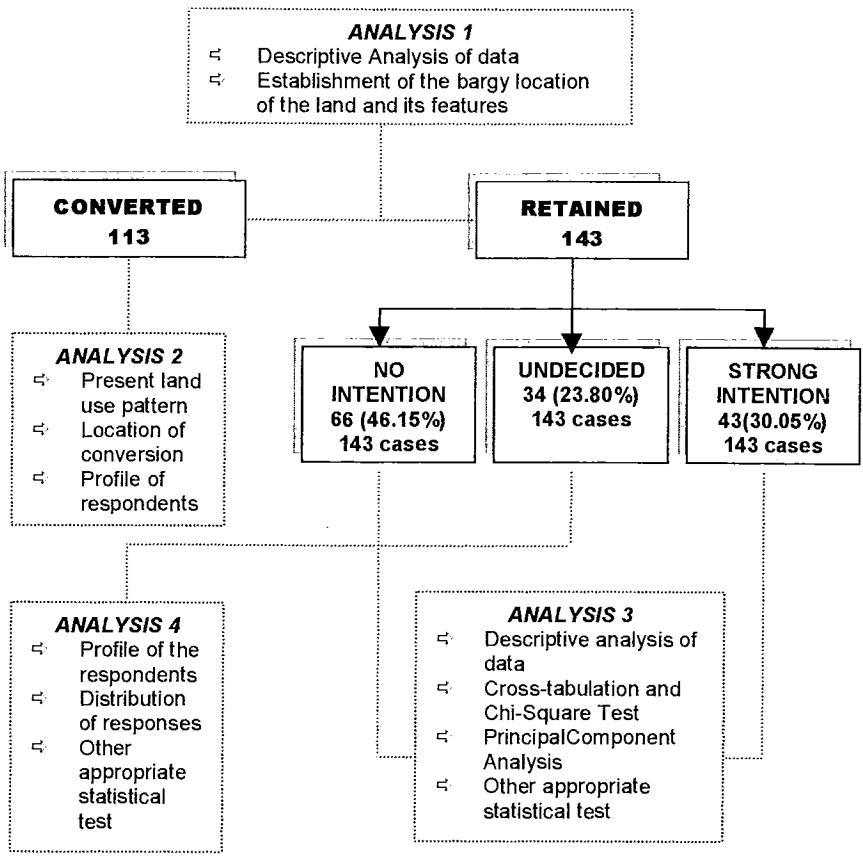
The primary data collected were analyzed using an SPSS/PC+ ver.4.0 and SPSS/PC+ for Windows was used for the Principal Component Analysis. Figure 2 shows the general structure of the data analysis.

Analysis 1 compares the general profile of the respondents whose lands were converted and those who opted for retention. It also identifies the barangay location of the lands and the respondents with strong land use conversion intention and those without. The respondents' land use conversion intention was analyzed in relation to the physical description of these areas including their location. *Analysis 2* establishes the present land use pattern of the city arising from the conversion. It specifically identified the barangay location of the conversion and investigated the characteristics of the area in relation to the respondents' land use conversion decision.

Analysis 3 compares the profile of the respondents with no land use conversion intention and those with strong land use conversion intention (general type of respondents who opted to retain the current land use). A crosstabulation of the respondents' socio-economic attributes, personal characteristics, and the features of the land against their land use conversion intention was undertaken to establish their degree of association. The respondents perception on their degree of agreement on how four groups of factors influenced their land use conversion intention was also accomplished. A factor model was developed using the concept of Principal Component Analysis (PCA). This data reduction method of analysis determines the difference in the land use conversion intention using extracted factors as its indicator. However, a perceived bias in the number of respondents against the number of respondents against the number of determinants was identified and further reduction of variables from 19 to 10 was made.

Analysis 4 describes the general profile of the respondents who opted to retain the agricultural use of the land and has undecided land use conversion intention. Specifically, an analysis of their degree of agreement with a hypothetical variable, that is the introduction of a conversion tax, was made to ascertain if their land use conversion intention will change.

Figure 2 - General Structure of the Data Analysis



DATA RESULTS

Data Profile

One of the objectives of the research is to identify the factors and gauge its influence in the decision of the land owners to convert the use of the land from agricultural to non-agricultural use. In the design of the interview schedule, the land use conversion intention of the respondents with agricultural lands were elicited and this becomes the basis of the groupings of the respondents. A total of 256 samples were collected representing all the major road networks of the city (table 2). Of the total number of cases, forty four percent (44%) represents the group who already converted the use of the land from agricultural to non-agricultural use (group 1), twenty six percent (26%) have opted to retain the agricultural use of the land and has no land use conversion intention (group 2), seventeen percent (17%) have opted to retain the agricultural use of the land and has strong land use conversion intention (group 3), and thirteen percent (13%) have retained the agricultural use of the land and has undecided land use conversion intention (group 4). The distribution of the four group of respondents along the six major road networks of the city are as follows:

Table 2 - Distribution of Samples by Group and Road Network

	Road Network 1	Road Network 2	Road Network 3	Road Network 4	Road Network 5	Road Network 6
Group 1	17	11	14	28	7	33
Group 2	10	4	2	29	8	13
Group 3	10	3	4	9	10	7
Group 4	2	2	0	11	9	8

Significant findings from the Data Profile

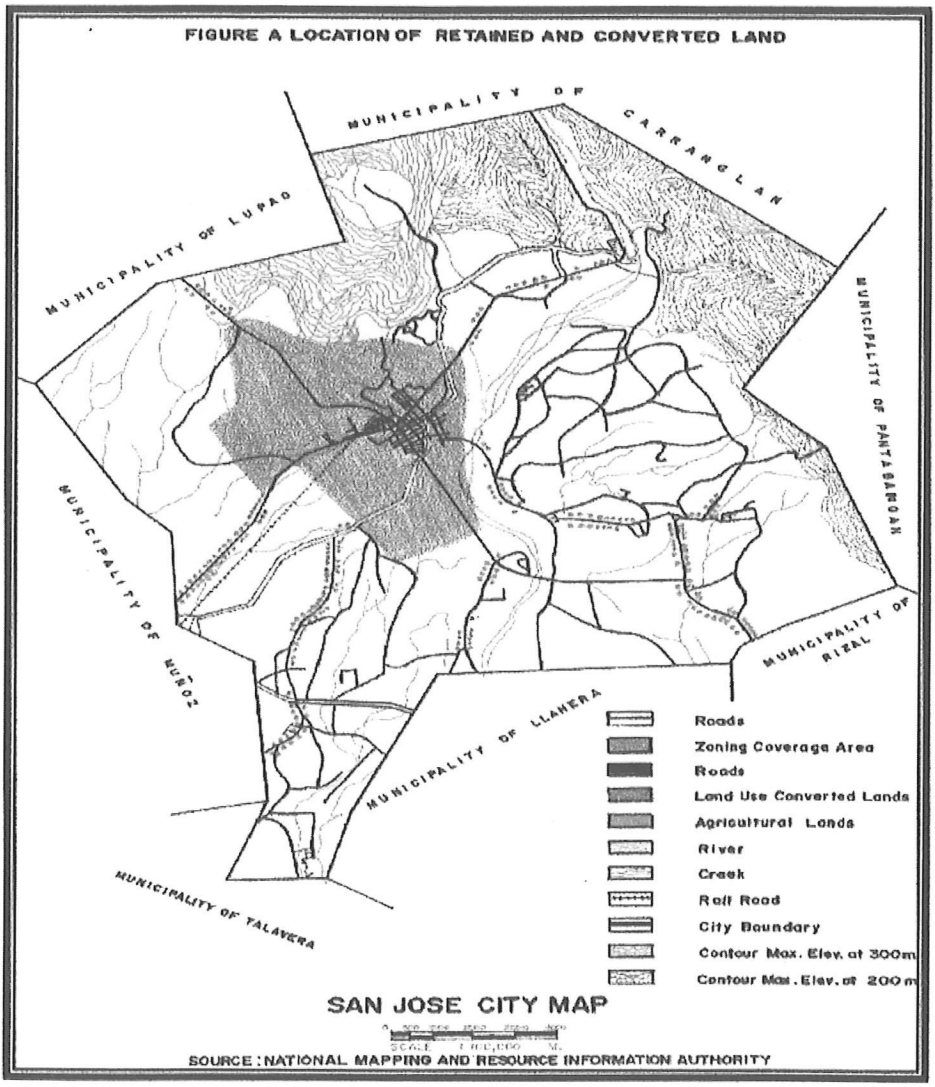
Based on the analysis of the data profile covering all four (4) groups of respondents, the following findings can be briefly stated as follows:

1. The location of the land in question of all the groups of respondents were plotted on a map (see Figure 3) to establish where the converted lands and those lands whose agricultural use was retained are located. Of the 113 cases of converted lands located along the city's six (6) major road networks, almost 100% were converted from agricultural to residential use. This results indicate the need for residential housing on the part of the land owner. The location of the land (i.e. along the road) clearly indicate that the advantage in terms of location is a prime consideration in the conversion decision.

2. One of the objectives of the research is to determine the current spatial development of the city. The theory of "spill-over development" was earlier presumed to be the current path to which the development of the city is proceeding. To find out if this postulation is true, the question of the places of residence in the last eight (8) years of the respondents was asked. Majority of the group 1 respondents (88%) have been living in the same barangay in the last eight years thereby indicating that the development along the road networks was due to the "natural growth" of the barangay. In support of this analysis, a review of the current zoning area coverage of the city (urban area) was undertaken and results show that there are still agricultural areas within the urban zone suggesting that there are still room for development within the identified urban area.

3. Another point for analysis was the question of the land use conversion intention of the land owner whao opted to retain the agricultural land use of the land (46.15% - no intention, 30.05% - strong intention, and 23.80% - undecided). Even though the rate of land use conversion withinthe city cannot be accurately measured (slow or fast), this finding made it clear that if undecided respondents choose to convert their agricultural land use, 53.83% of all lands (assuming that samples are representative of a larger population) along the six major road networks which are currently agricultural will then be converted in the near future.

Figure 3 – Location of Retained and Converted Land



4. For those respondents who do not have any intention of converting the land, an analysis of the location of the lands in the different barangay traversed by the major road network shows that soil suitability for agriculture, high yield for specific crops, the area is an agro-industrial zone, presence of irrigation facilities, and the distance from the city center are the prime reasons for the intention. This is especially true for four barangays (San Juan, Tulat, Tondod, and Villa Joson) where majority of repondents ar located.

5. On the other hand, an analysis of the location of the barangays where majority of the respondents with strong land use conversion intention were located indicate that location factors are the major consideration. The top three barangays on the list are Sto. Tomas, Palestina, and Tulat. Barangay Sto. Tomas is located on the boundary of Central Luzon State University, a major state university while Barangay Palestina is a place ideal for resorts because of the presence of natural springs. A portion of barangay Tulat which is outside the agro-industrial zone of the city was being considered by land owners as potential residential sites for workers of the zone.

Relationship of the Land Owner's Socio-Economic Variables and their Land Use Conversion Itention

There is a need to measure the relationship between the land use conversion intention of the respondents and several of their socio-economic variables to satisfy the objective of this research. This task was accomplished using a multi-variate analysis of crosstabulation, a method used to investigate a bivariate question involving the associations of variables. Based on the outcome of the analysis, only four socio-economic variables showed some association with the respondent's land use conversion intention. The findings of the test can be briefly stated as follows:

1. Of all the chosen socio-economic variables hypothesized to influence the land use conversion intention of the respondents, only the following showed significant effects:

    - Sex of the respondents
    - Civil Status of the Respondents
    - Number of Household Members
    - Number of Working Adults in the Household

2. Some of the more important and perceived socio-economic variables did not affect the land use conversion intention of the respondents. Among the variables are:

    - Combined Household Monthly Income
    - Annual Business Income
    - Number of Married Children Living with the Respondents
    - Location of the Land

MODELING THE RESPONDENT'S LAND USE CONVERSION INTENTION

Model Specification

A simple factor model was specified in the model estimation. This mathematical model is a product of a factor analysis, a statistical tool used to identify relatively small number of factors that can be used to represent relationships among sets of interrelated variables. This data reduction method of analysis generates factors which can describe several interrelated variables. Due to the perceived

error or bias brought about by the small number of respondents with strong land use conversion intention as against nineteen determinants, these determinants were narrowed down to ten and three factors was generated by the Principal Component Analysis (PCA). In the end the PCA generated a mathematical model similar to that of a simple linear model describing the land use conversion intention of the respondents. Another output of the PCA is a principal component factor score plotted on a quadrant (x-y plane) that aids in determining the presence of distinct differences among the perception responses of the two groups of respondents (no intention and strong intention groups).

Estimating the Appropriateness of a Factor Model

Several criteria have to be satisfied before PCA can be used to investigate a set of data. First, a correlation matrix of the variables used have to be generated of which the variables should have a coefficient of at least 0.3 to satisfy this criterion. The variables and variable labels are presented in the table below:

Table 3 - The Variables and their Labels

Variable	Variable Labels
DEMNA2	Demand for Non-Agricultural Lands
FINCAP2	Financial Capacity to Convert Land Use
BENFIT2	Benefits Arising from Conversion
SUIT2	Suitability of Land for Agricultural Use
DRAIN2	Presence of Adequate Natural Drainage
ROAD2	Improved Road Condition
GOVPER2	Local Government Performance in the Area
ADJA2	Compatibility of Adjacent Land Use
CONPOL2	Government Land Use Conversion Policy
FAMILY2	Family's Influence in the Conversion Decision.

The correlation matrix of the different determinants of land use conversion intention was generated by the system. Results show that several, if not majority of the variables exhibited an absolute value of less than 0.3 hence satisfying the first criterion. The second test undertaken by the PCA is the value for Bartlett's Test for Sphericity which should be large and its accompanying significance level which should be approaching zero. The data satisfied these criterion with generated values of 394.59447 for the Bartlett's Test for Sphericity and a significance level of 0.000. Third, to determine if the samples are adequate to represent the data, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was also generated by the SPSS system. The value of this measure should be close to 1.0 to indicate sampling adequacy. Computations of the value for KMO yielded a 0.75795 indicating that there is sampling adequacy. Finally, an anti-image correlation matrix was generated as an indicator of association among variables. Results show however that majority of the correlation coefficients are low indicating that the data did not satisfy this criterion.

Factor Extraction and Identifying the Factors

The SPSS system generated three factors. These factors with variances greater than 1.0, are linear combination of the observed variables. The first factor or principal component accounts for the largest amount of variance with a value of 3.17354. The second principal component has a variance of 1.62674 while the last factor has a variance of 1.02405 . All three principal components are not correlated with each other. Results further indicate that there as many factors as there are variables but a criterion was established that only factors with eigenvalue greater than 1.0 should be chosen. This is partly attributable to the fact that the first three principal components extracted account for 63.3% of the total variance of the ten original variables, hence the first three factors are accepted.

A factor matrix and a rotated factor matrix was generated to group the variables into one common factor. Variables with coefficient close to 1.0 (in absolute value) are closely related to the factors. The following tables were reproduced from the original table generated by the system.

Table 4 - Factor Matrix

	Factor 1	Factor 2	Factor 3
DEMNA2	.85295*	-.10632	.02516
FINCAP2	.83295*	.02033	-.01570
BENFIT2	.89742*	-.01957	.11337
SUIT2	-.20246	.45970	.51596*
DRAIN2	.07039	.69002*	.43507
ROAD2	.45763*	.35001	.11549
GOVPER2	.15242	.53953*	-.66647*
ADJA2	.30165	.61079*	-.23283
CONPOL2	-.64757*	.37119	-.19988
FAMILY2	-.83539*	.06041	.05598

* significant variables

Table 5 – Rotated Factor Matrix

	Factor 1	Factor 2	Factor 3
DEMNA2	.854478*	.07318	-.06344
FINCAP2	.81246*	.18539	-.00217
BENFIT2	.89919*	.08041	.05997
SUIT2	-.18597	-.07981	.69107*
DRAIN2	.04016	.188840	.79578*
ROAD2	.41953	.25000	.32675
GOVPER2	-.01530	.86639*	-.08741
ADJA2	.18308	.64276*	.26759
CONPOL2	-.71231*	.27123	.12704
FAMILY2	-.81973*	-.15801	.08787

*** significant variables**

It can be seen that for factor 1, the variables DEMNA2, FINCAP2, BENFIT2, ROAD2, CONPOL2, and FAMILY 2 have high factor loadings and are therefore closely related to the first factor. Factor 1 is a combination of socio-economic and institutional variables. Since institutional variables are also part and related to the socio-economic determinants, factor 1 was generically named ***socio-economic factor.***

On the other hand, the variables GOVPER2, ADJA2, and DRAIN2 are closely related to factor 2 . The variables were narrowed down to GOVPER2 and ADJA2 which are both location determinants, therefore factor 2 can be generically named ***location factor.*** Lastly, factor 3 is closely related to GOVPER2 and SUIT2 (see table 5). Both variables describe the physical attributes of the land and can therefore generically named ***physical factor.***

The Goodness-of-Fit Measure

A criteria on how well the model fits the data was also generated by the SPSS system. A reproduced correlation matrix was made to indicate how many residuals are greater than 0.05 in absolute value. The magnitude of the residuals indicate how well the model fits the data. In this case, results show that, a little more than half (55%) are greater than 0.05 in absolute value indicating that the model fits the data.

Estimation Result of the Factor Model

A factor model for each case was generated using SPSS/PC+ for Windows. It can be recalled that the mathematical model generated by the PCA is a linear model which can be written as:

$$X_i = A_{i1}F_1 + A_{i2}F_2 + \ldots\ldots + A_{ik}F_k + U_i$$

Where: X_I = dependent variable of the model
F = common factors
U = unique factor
A = factor score coefficient

Substituting the results of the PCA's several criteria such as appropriateness of the factor model, the factor extraction, the factor's generic name, and the factor scores by each case in this mathematical model, the factor model for each case can thus be written as:

LUCI = A_1(Socio-economic Factor) + A_2(Location Factor) + A_3(Physical Factor)

Where: LUCI = Land Use Conversion Intention of the Respondents
A_1 = Principal Component Factor Score of each Case by factor 1
A_2 = Principal Component Factor Score of each Case by factor 2
A_3 = Principal Component Factor Score of each Case by factor 3

CONCLUSIONS

Recapitulations

In the past years, rapid urbanization has brought about the issues of land use conversion and its consequences on food security and traffic congestion. The increasing rate of land use conversion on specific locations, resulted in traffic congestion, a major concern which is not likely to fade in the near future. This case is no different with the case study area – San Jose City – wherein specific locations (along major road networks) were being converted in an increasing rate. The government has been on continuous search for various ways to address this problems in the hope of arriving at lasting solutions. But unless the appropriate policies are applied to the root cause of the problem, any solution would only result in short term relief.

Considering that land use conversion is mainly based on the factors that influence land owner's decision, a rational land use policy therefore which can intervene and control these factors would prove to be the best solution in addressing the issues of land use conversion.

In view of these matters, the research endeavored to establish the factors influencing the land use conversion intention of the land owners and measure its degree of influence. This was undertaken using perception inquest on the degree of the land owner's agreement on how these factors (19) affect their land use conversion intention. On the other hand, the respondents' socio-economic attributes, personal characteristics and their land use data where fitted and tested to see if these attributes affect their land use conversion intention. Comparison among the profile of the four (4) groups of respondents were likewise analyzed and the location of the lands established to provide insights on the present land use pattern of the city. A factor model was developed out of the

perception responses of land owners regarding the influence of different determinants on their land use conversion intention using the Principal Component Analysis.

Based on the result of the model development, the land use conversion intention of the respondents can be described by the three principal component factors extracted from ten (10) original variables. The socio-economic factor was the foremost reason for the respondents land use conversion intention indicating that financial and economic benefits are significantly affecting the land owner's land use conversion intention. The consideration of the land's location is next in the hierarchy suggesting that lands located near the market areas were advantageous than land located farther. Last in the order is the physical factor accounting mainly for the soil suitability for a specified land use.

Policy Recommendation

To address the issues of unregulated land use conversion and its consequences, a rational land use conversion policy addressing the very source of the problem, the land owner and the factors influencing their land use conversion intention. Although, the government have already come up with several land use conversion policies, it appears that this measure is directed mainly on the country's food security issues. Policies regarding the issues of unregulated land use and its implications on land use planning and transportation planning have only been second in priority. It is noteworthy that aside from a bias in policy formulation, conflicts tend to arise since no single government agency handles the land use conversion issue. The seemingly lack of coordination among government agencies, complicated by the absence by the absence of a reliable data base on land use conversion have resulted in the poor monitoring of illegal land use conversion. In view of these facts, the following government land use policies are therefore recommended:

Improve the Current Infrastructure (Irrigation) and Financial Assistance for the City's Agricultural Sector. A strong support for the city's agricultural sector in the form of cooperative loans and infrastructure provisions will promote agricultural development such that, farmers will no longer contemplate or consider land use conversion for greater economic gains. Unless the agriculture sector be given due recognition and support, then premature sale and eventual conversion of agricultural lands will likely continue.

Evaluate and Restructure the Present Road Infrastructure Prioritization Program of the City. The current city government road improvement prioritization program is geared toward all farm to market roads in the city. While this policy tends to support the agricultural sector, it is likewise opening up the productive areas of the city for development. Road improvement should be focused on areas where the land is more suitable for urban use.

Give Real Property Tax Exemptions to Land Owners who will Retain the Agricultural Use of their Lands. Since one of the major concern of land owners with converted land is payment of higher real property tax, lands retained for agriculture should enjoy tax holidays

Adopt a Specific Land Use Conversion Policy for Roadside Lands. The primary consideration of this study is focused on roadside lands contending that these areas are the starting point of development. In consideration for future implications of unregulated land use conversion along these portions, limiting the development of these areas to one hundred meters beginning on the edge of the road would deemed appropriate. In addition to this policy, the intensity of usage would further be limited to low intensity use for residential and commercial purposes.

Develop a comprehensive and Rational Land Use Plan for the City using a Participatory Approach of Plan Formulation. Although it was widely believed that the city's urban area still has a lot of areas available for development, this advantage should not be over-emphasized. Results of the study indicate that land owners tend to disregard government policies in general and land use

conversion policies in particular. Their active participation in the policy formulation will greatly enhance their responsibility in the implementation of the said policy to which they will become key players.

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