

Asset-based Determinants of Poverty Intensity: A Meso-level Application in the Philippines

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Abstract: - This study aimed to determine relationship between poverty intensity and livelihood assets classified as natural capital, human capital, physical capital, financial capital and social capital in Barangay Lumbia, Cagayan de Oro City, Philippines. A total of 629 households were surveyed using the Community-based Monitoring System (CBMS) instrument. The poverty intensity was based on the official poverty line measurement in the country. This served as the basis for estimation of the poverty intensity. The assets were indicated by selected factors from the household survey. Scoring was developed for each component of assets. The generated scores were illustrated into the asset pentagon to show the overall situation for each type of asset in a given community. The study then proceeded to determine the relationship between poverty intensity and livelihood assets by applying the multivariate analysis. The multivariate results showed that the higher the human, financial and social capital, the lower the poverty intensity.

Key-Words: Livelihood assets, poverty intensity, poverty line

1 INTRODUCTION

1.1 Background of the Study

Studies aimed at analyzing poverty intensity have progressed significantly over recent decades. The focus has shifted to a multi-dimensional understanding of poverty, including emphasis on the role of assets and capabilities in improving economic well-being. Studies on livelihood assets have become increasingly widespread, especially in rural communities.

In the Philippines, several studies of on poverty have been conducted but there is a rarity of studies that examines comprehensively the relationship between poverty intensity and livelihood capitals or assets. The purpose of this research is to initiate a study in a local community in Cagayan de Oro City by adopting the existing framework of the livelihoods assets approach and its link to poverty intensity. The area chosen is Barangay Lumbia in Cagayan de Oro City, one of the few areas in the City which has become the permanent place of residence of families displaced during the flood brought about by “Typhoon Sendong” that struck Cagayan de Oro City in December, 2011. The entry

of 500 families of the typhoon survivors poses a precarious situation on Barangay Lumbia. Both residents and survivors compete in such resources as: land, water, food, agriculture and the provision of the local government for basic services in health, education, livelihood and social services. With the situation at hand, it is imperative to establish the baseline information on household assets in Barangay Lumbia and its link to poverty intensity to better address community development challenges.

1.2 Objectives of the Study

This study aimed to determine asset-based explanatory variables for poverty intensity. These assets are: natural capital, human capital, physical capital, financial capital and social capital. From the relations extracted, appropriate asset-based determinants for poverty intensity can hopefully be established.

1.3 Review of Literature

Much of the literature on poverty measurement has been a growing since the 1960’s. The field has evolved from a macroeconomic orientation, to a needs-based approach, and is slowly moving to an

asset-based orientation. This incorporation of non-monetary aspects was particularly a result of Robert Chambers' work in 1980's on powerlessness and isolation. It led to new work on coping strategies. This pointed to the importance of assets as buffers and a broadening of the concept of poverty to a wider construct, livelihood. This was adopted from the Brundtland Commission on Sustainability and the Environment, which popularized the term sustainable livelihood [1].

A livelihood comprises the capabilities, assets and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term [2].

Increasing access to these assets is considered closely related to support of livelihoods and poverty elimination. The sustainable livelihood approach recognizes the multiple dimensions of poverty identified in participatory poverty assessments. The assets approach is also an alternative approach to community development that takes into account the resources present in a community, such as the capacities and assets of local individuals, associations, and institutions, rather than with what is deficient in a community [3] [4].

Locating and connecting local assets in a community will allow the residents in a community to effectively build and develop their community. Though the identification and mobilization of local community assets, a community can be empowered to work together in order to strengthen community capacity to bring about improved economic well-being. This can be achieved through an asset-mapping strategy to bring about the changes. Asset mapping allows communities to see what is present in their community and sets them on the path to utilizing and connecting those assets in order to bring about change [5].

Several authors applied the concept of capitals to determine community capacity measured in terms of ecological/natural, economic/built, human, and social. Many variables could be categorized under these various forms of capitals. These capitals are described accordingly [6] [7] [8] [9].

Ecological capital which is also referred as natural capital refers to the natural endowments and resources of a region [10] [11], including the stock of natural resources (i.e., forests, clean air, water, arable land, soil, genetic resources) and environmental services (nutrient cycling, carbon sequestration). The financial resources of a community, along with the built infrastructure of a community, comprise the economic/built capital of an area [12] [13], which includes financial capital, or liquid assets such as municipal budgets, individual and household savings, and operating funds. Economic/built capital also accounts for infrastructure, or fixed assets, which include utilities (i.e., transportation, water, institutional buildings), business property (i.e., stores, factories, productive machinery, trucks, equipment), and technology. Human capital concerns the skills, education, experiences, and general abilities of individuals [14] [15], encompassing formal and informal education, traditional and naturalized knowledge, job experience, health, entrepreneurship, and leadership.

Finally, social/cultural capital refers to relational, as opposed to individual, aspects of society. It can be both a capital stock and a mobilizing force, and can be viewed as a close relation of cultural capital [12] [7]. There are three types of social capital as put forth by bonding social capital, or relations among family, close friends, and neighbours; bridging social capital, which are the relations between loosely connected, but demographically similar individuals; and, linking social capital, alliances with sympathetic individuals in positions of power beyond the community. Interrelated elements of this capital also include informal social networks and the associational life of a community, which influence the ability and willingness of residents to work together for community goals, and the norms and networks that facilitate collective action [16].

Throughout the years, all indicators have attained a clear conceptual basis and measure not only the symptoms of social phenomena, but also their underlying causes [17]. Moreover, additional indicators were recommended to assess structural conditions and institutional arrangements (e.g., concentration of power, land ownership), while not confusing income or wealth with well-being. The indicators should consider the importance of individual and community capabilities and functioning (i.e., capacity). When a set of indicators is applied to a community, socio-demographic and subjective data should also be utilized, such that the basic community conditions can be described and

these conditions explained according to local social relationships and processes [18].

Critiques of the assets-based approach have identified several limitations. One of these is inability to adequately address the role of external agencies and institutions in the community development process and how their role can avoid encouraging dependency among community members. Still, it has room for improvement. The strategy seems to be overall more beneficial for communities due to its bottom-up orientation. It can mobilize an entire community in order to bring about change in a positive manner. Based on the literature review, the information generated from an asset-based approach assessment is vital for poverty alleviation strategies and initiatives.

1.4 Methodology

Barangay Lumbia is located at the southernmost part of Cagayan de Oro City. Its total land area is 332.78 hectares. Lumbia is more or less 11 kilometers away from the city, bounded on the north by Barangay Carmen and Pagatpat, and Canitoan. On the eastern part are Barangays Balulang and the Cagayan River; Barangay Bayanga on the southern part and on the west are Barangays Pagalungan and Tagpangi.

Barangay Lumbia has a total of 4085 households. The barangay also has 31 blocked groups called "sitios", of which eight of them are classified as subdivisions. For this research project, a sample size of 623 households is computed using the formula for finite population set at an alpha = 0.05. The households were chosen through the systematic random sampling. In general, the unit of analysis of this research project is the household. The study utilized Community-Based Monitoring System (CBMS) questionnaire. It is one of the tools developed by the Philippine government for local governance and complements the national poverty monitoring system. It has been adopted by the National Anti-Poverty Commission (NAPC) and the Department of Interior and Local Government (DILG) as the local poverty monitoring system and as a tool for localizing the Millennium Development Goals (MDGs) in the country.

1.4.1 Setting the Poverty Line

Ideally, the poverty line should be based on a basket of goods and services including food and nutrition,

as well as clothing, housing and health care and education that can be considered basic needs [19]. The cost of food consumption corresponding to the recommended daily allowance (RDA) of calories is commonly used [20]. In the Philippines, the National Statistical Coordination Board (NSCB) is in charge of releasing the official poverty statistics. It adopts three basic steps to a poverty measurement system: (a) choosing a welfare indicator, (b) establishing a poverty line, i.e., a minimum acceptable standard of the welfare indicator that separates the poor from the non-poor, and (c) aggregating poverty data [21] [22].

Official poverty measurement in the country as set by the NSCB involves the generation of poverty lines for urban/rural areas of each province based on estimating per capita minimal food and non-food requirements. The Food and Nutrition Research Institute (FNRI) constructs representative food menus for urban and rural areas of each region; these menus consider local consumption patterns and satisfying a minimum nutritional requirement of 2000 calories of energy and 50 grams of protein per person per day, as well as 80 percent sufficiency in daily intake of other nutrients and vitamins. Provincial urban/rural prices are then used to cost the menus, resulting in the food poverty thresholds at urban/rural areas of each province. These food poverty thresholds may be thought of as the minimum level of income needed to meet only food requirements. Since a person also has nonfood requirements in addition to food requirements, the expenditure patterns of households within a plus or minus 10 percentile band of the food poverty thresholds are used to estimate indirectly nonfood per capita requirements, which, are added to the food thresholds to yield the poverty thresholds.

Using the official poverty threshold for the region in 2012, households are classified as poor if their per capita income is less than the poverty threshold. The reference used in the study is the NSCB 2012 Family Income and Expenditure Survey (FIES) annual per capita poverty threshold for the province of Misamis Oriental urban barangay which is pegged at P19,499.00.

The total household income includes primary income and receipts from other sources received by all family members during the reference period as participants in any economic activity or as recipients of transfers, pensions & grants, among others. Primary income includes salaries and wages,

commissions, tips, bonuses, family and clothing allowance, transportation and representation allowances, honoraria, and other forms of compensation and net receipts/profits derived from the operation of family-operated enterprises/activities and the practice of profession or trade. Receipts from other sources include imputed rental values of owner-occupied dwelling units, interest, rentals, including landowners share of agricultural products, pensions, subsidies from the government, remittances, support and the value of food and non-food items received as gifts by the family as well as the imputed value of services rendered free of charge to the family. Also included as part of the family income are receipts from family sustenance activities which are not considered as family-operated enterprise such as net share of crops, fruits and vegetables produced or livestock and poultry raised by the households during the reference period.

To ensure greater consistency in the analysis, scaling was developed to determine poverty intensity. Poverty intensity estimates the depth of poverty by considering how far, on the average, the household income is from that poverty line, where 1 denoted income which is 51% to 75 % below the poverty line, 2 is income which is 26 % to 50 % below the poverty line, 3 when income is 1 % to 25 % below the poverty line and 4 when income is above the poverty line. The details are outlined in Table 1.

Table 1: Poverty Intensity Classification

Income	Poverty Intensity	Poverty Intensity Scale
P4876.7– P9,749.50	51 % - 75 %	1
P9749.50 – P14, 622.30	26 % - 50 %	2
P14,624.25 – P19,497.05	1 % - 25 %	3
Above P19,497.05	Non-poor	4

1.4.2 Livelihood Assets

This study utilized the sustainable livelihoods framework [9]. It contends that socio-economic situation of individual or household can be understood as the aggregated results of its accessibility to five livelihood assets, the natural, human, physical, financial and social capitals.

A scale was developed for each group of assets/capitals to characterize the status of the

households in Barangay Lumbia. Assessment was conducted in two levels. First, this involved assessment thru selected indicators from the CBMS survey and second, the community-based assessment.

For this particular study, three major indicators were identified for natural capital. First, the availability of resources which includes water assessed in terms of its supply for the past 3 years, agricultural livelihood activities such as raising livestock and planting of crops. Second sets of indicators included the status of agricultural land ownership of the households and the size of agricultural land.

Human capital indicators included health status, potential productivity in terms of age, educational attainment and nature of employment. Scoring for health indicator considered maternal and children health status and incidence of illnesses in the household. Physical capital is measured in terms of availability of utilities and their sources (water and electricity) and available equipment for communication and information. Whereas, financial capital indicators included savings, insurance, access to credit and foreign remittances. Lastly, social capital in this study is indicated by involvement in formal and informal organizations, voting participation, and duration of residence in the barangay.

Scoring of assets was developed for each component. Various scoring and scaling methods were adopted to make the indicators comparable and to allow meaningful interpretation. Scoring for the indicators was determined using different weights of “0” if the indicator is absent, “0.33” if poor, “0.66” if average and “1” is interpreted good [23]. After the weight calculation, the total scores for each asset were calculated using the formula:

$$(1) \quad C = \sum_{n=0}^n \frac{I_n}{T_n}$$

where:

C – the criteria score for each asset

- C_n : natural Capital
- C_h : Human Capital
- C_p : Physical Capital
- C_f : Financial Capital
- C_s : Social Capital

n – nth indicator of criteria (n=1,2,3,...n)

I – indicator;
 T – the total number of indicators

The assessment was also conducted at the community level based on local knowledge from select individuals and officials conducted through key informant interviews and FGD. Included were those individuals who—by nature of their profession, local involvement, or history of residence—are knowledgeable about the physical, human, financial and social capital of Barangay Lumbia. FGD participants included current and former community officials, sitio leaders and long-term residents with diverse backgrounds and experiences.

1.4.3 Multiple Linear Regression

To identify the determinants of poverty intensity in this study, a Tobit regression model was adopted. The model was developed by Tobin in 1958. The Tobit model has been extensively used by economists to measure the effect of changes in the explanatory variables on the probability of being poor and the depth or intensity of poverty [24]. Multiple linear regression (MLR) was applied between poverty intensity and livelihood assets. The dependent variable is the poverty intensity of households while the independent variables are composed of the household scores for the different indicators for each type of capital. The multiple linear regression equation is as follows:

$$(2) \hat{y} = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$$

where :

- \hat{y} : poverty intensity
- X_1 : Human Capital
- X_2 : Natural Capital
- X_3 : Physical Capital
- X_4 : Social Capital
- X_5 : Financial Capital

The regression diagnostics were also considered. Several combinations were run to determine the extent to which the variables explain the variation in poverty intensity.

2. RESULTS

2.1 Poverty Incidence and Intensity

Poverty level in this study is measured in terms of the shortfall of the household from the poverty line.

This measurement is used to reflect the intensity of poverty. The poverty line that is used for measuring this is indicated by the official standard set by the government through the NSCB. Table 2 shows the results for the various sitios in Barangay Lumbia.

Out of the 629 household respondents in Barangay Lumbia, 381 or 60.57 % are classified as non-poor or above the poverty line. In terms of poverty incidence, 39.43 % or 248 households were considered to be poor wherein, 121 of the households or 19.24 % are categorized as 75 % below poverty line, 72 households or 11.45 % are 50 % below poverty line and 55 households or 8.74 % are 25 % below poverty line.

Table 2
 Poverty Intensity In Barangay Lumbia

Poverty Intensity	Number of Households	Percentage
Non-Poor	381	60.57
25% Below Poverty Line	55	8.74
50% Below Poverty Line	72	11.45
75% Below Poverty Line	121	19.24
Total	629	100

The poverty incidence in Barangay Lumbia is quite high relative to the poverty incidence in the province and for Region X. It is quite higher than the 25% for Misamis Oriental and 35.6% for the entire Region X or Northern Mindanao as reported by NSCB for 2012.

2.2 Livelihood Assets

This section discusses assessment of status of livelihood assets of households in Barangay Lumbia. Presentation of the results of the weighted score was done by sitio, emphasizing the highest and lowest score per indicator.

2.2.1 Natural Capital

Natural capital is important to households where part of their livelihoods derived from it. For this particular study, two sets of indicators were identified for natural capital. First, the availability of resources which includes water as one of the most basic resources for food production [25] assessed in terms of its supply for the past 3 years, agricultural livelihood activities such as raising livestock and planting of crops. Second sets of indicators included the status of agricultural land ownership of the households and the size of agricultural land.

Crops (like coconut, cashew nuts, banana, cassava, potatoes, pechay, sitaw, alugbati, eggplant) are raised in selected sitios in their available agricultural lands for personal consumption and for livelihood purposes including livestock (such as pigs, cow and poultry). However, one of the major constraints in the area is the limited resources and access to fresh water. Rainwater is mostly depended in the growing of agricultural crops. Residents also report common constraints in crop production such as pests, limited knowledge, lack of capital, and limited access to land.

In terms of the availability of resources, sitios Malubog and Impaubo acquired the highest score out of the 31 Sitios in Barangay Lumbia while the sitios with lowest score are Zone 1, Cabula, Upper Dolawon, Upper Palalan, Xavier Ecoville and La Buena Vida. The results also showed that ownership and size of agricultural land were weak for most of the forty-three percent of Sitios. Sitio Malubog was the only sitio with the highest score of three (3) points.

Overall, Barangay Lumbia scored 3 in natural capital which is moderately high on the scale. Among the 30 Sitios in barangay Lumbia, only Malubong have the highest scale of 4 in natural capital. Almost fifty-three percent of sitios are moderately low at scale of 2.

2.2.2 Human Capital

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. In this study, human capital indicators used includes health status (maternal and child health status, and incidence of sickness in the family), potential productivity in terms of age, educational attainment and nature of employment. Productivity were indicated in terms of the working age population (15-65 years old) of the Sitios, the educational attainment of the 25-year old and above household members the nature of employment.

Most households have access to all levels of basic education such as day care, pre-school, elementary, and high school. Alternative learning system (ALS) is also present in Barangay Lumbia. The respondents also claim that they can access basic health services and medication thru the health center in Barangay Lumbia.

The results showed a high level of human capital. The health status is moderately high for most of the eighty percent of the sitios. In terms of potential productivity indicated by the working age population, 80 percent of the Sitios surveyed scored highest, whereby, the majority belongs to relatively young workers. The educational level score among Sitios surveyed indicated sixty six percent of the Sitios are considered high-school graduates and the remaining thirty percent are highly-skilled and attained college levels. Sitios having the highest scores are from Subdivisions La Buena Vida, La Mirande, Frontiera, Montana Vista, Vista Grande, Portico 1, Portico 2, and Lezzandra.

The results for the nature of employment showed that sixty percent of the Sitios surveyed have are engaged in temporary/contractual work while the other 40 percent are in permanent work.

Sixty one percent of the Sitios in Barangay Lumbia have human capital scale of 4. As a result, the barangay on the average have a high scale of human capital. The moderately high level of human capital in the barangay may be attributed to the presence of several organizations which provide health and educational services in the community. In particular, Baranagay Lumbia is an adopted community by Xavier University for its social and community outreach. However, higher education remains to be a challenge in the barangay as only a few are able to gain a degree. As a result, incidence of temporary work is relatively high.

2.2.3 Physical Capital

Physical or built capital accounts for infrastructure or fixed assets which include utilities. Most of the sitios have available water supply pumped from deep well sources. However, some households do not have access because of inadequate auxiliary lines from the source. Due to its limited access, some households buy water at two pesos per container or one peso per pail outside their sitio for drinking. Moreover, others depend on rainwater for domestic chores. All sitios also have available electricity from CEPALCO but others access it through illegal tapping. Communication for most households is in the form of mobile phones but signal is limited in some areas. Most of them also own electronic or battery operated radio. Televisions are common in Gran Europa subdivisions but rarely found at more remote parts in Barangay Lumbia.

As for the available source of water, it appears that 4 out of 30 sitios surveyed are not accessible to institutional water supply namely: Upper Dolawon, Malubog, Pahiron and Impaubo. All 30 sitios have available source of electricity however, five sitios have informal connection, namely: Upper Palalan, Malubog, Sta. Cruz, Pahiron and Impaubo. Access to communication is prevalent in all surveyed sitios in Barangay Lumbia wherein fifty-seven percent of sitios have access to mobile communication and internet.

From the results, the prevalence of high scores in physical assets are mostly located in Gran Europa subdivisions such as: La Buena Vida, Frontiera Subdivision, Montaña Vista, Lezzandra, Portico 1 & 2, Vista Grande and La Mirande. While most of the sitios that are moderately low in physical capital are in remote sitios such as Upper Dolawon, Malubog, Pahiron and Impaubo. Based on the overall average scale, Barangay Lumbia's physical capital is moderately high.

Though physical capital is moderately high for the entire barangay, in some of the sitios, access to regular flow of water is still a major challenge. Water systems are not yet fully developed in all the sitios, especially the ones far away from the barangay center. Most often, water for domestic use are source from communal sources such as springs and streams.

2.2.4 Financial Capital

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. The respondents claim that most households do not have personal savings. Common reason cited were: education expenses for children attending college, expenses for food and cost of living for relatively large household size. In terms of credit and financing, majority of sitios access them from informal systems such as "5-6", "dayong", "huluga", all of which charge at least 20% interest rates while formal systems are found in cooperatives.

In terms of the mean savings, majority of the sitios scored moderately low. For the insurance aspect, 80 percent of the households of the entire barangay Lumbia do not have insurance. For foreign remittances, only 7 percent of the households are receiving the said remittances. From the results, households having the highest mean score are those coming from the high-end subdivisions of Lumbia

which are Frontiera, La Mirande and Montana Vista Subdivisions. All the rest of the Sitios scored low.

Financial capital is most problematic aspect, especially in the remote barangays. This might be an outcome of the flow of income and stock of resources available to the households. Because of the relatively high incidence of temporary work, steady flow of income is difficult to establish resulting to poor household savings. Access to credit is also largely dominated by informal means, again because of the difficulty to access them in formal institutions.

2.2.5 Social Capital

Social/cultural capital is a complex concept that refers to relational, as opposed to individual, aspects of society. Social capital indicators used in this paper includes households with formal or informal membership in various organizations or associations in the community, voting participation in terms of participation in the voting process in the most recent election and number of years living in the sitio/barangay.

According to the respondents, there are various various organizations within the barangay and at the sitio level such as religious/civic organizations for youth, women, senior citizens and farmers. Some households are also registered members in cooperatives. Participation during local election is also prevalent as many of the residents are registered voters. The result shows that 93 percent of households in all the sitios do not have membership in formal organizations. On the average, Barangay Lumbia scored 2 indicating Moderately Low Social Capital.

The moderately low social capital in the barangay is suggestive of weak networking and linkages and poor trust relations. Social capital is important because mutual trust and reciprocity lower the costs of working together. By forming groups, the community can better demand for improved infrastructure, thus developing physical capital [15]. This is especially most applicable to the relatively remote barangays and the Xavier Ecoville, where physical infrastructures are a major challenge.

2.2.6 Livelihood Asset Maps (Asset Pentagon)

The community capacity map or the asset pentagon offers a practical way of showing the overall situation for each type of capital in a given

community. The map enables to show the skewness of the distribution of capital within a given community. The sitios are categorized according to moderately low and moderately high capacity. Below are the asset maps for each sitio and the entire Barangay Lumbia.

Sitios with Low Scale

Eight Sitios were classified having low scales. These are Sitios: Malubog, Upper and Lower Dolawon, Upper Kiam-is, Sta Cruz, Pahiron, Lower Palalan, and Xavier Ecoville. Except for Xavier Ecoville, all the other Sitios are located far away from the Barangay Center. Xavier Ecoville’s moderately low score may be attributed to the fact that the households are composed of survivors from Typhoon Sendong. All of the residents may be considered in a transition period.

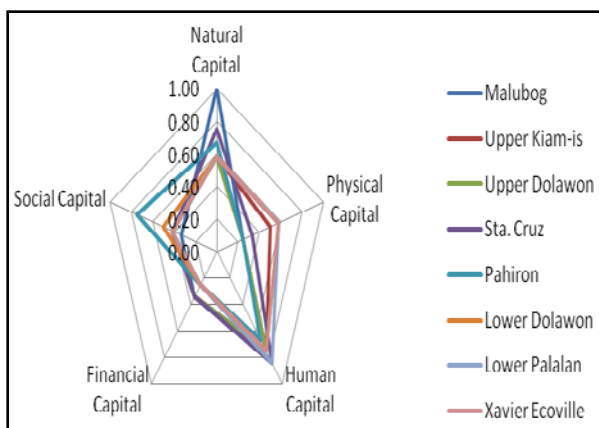


Fig. 1 Asset Map of Sitios with Low Scale Sitios with the Moderately Low Scale

The sitios in this group are reflective of the barangay mean scale. This group is composed of ten sitios. These are Sitios: Lower Kiam-is, Upper Palalan, Cabula, Mabuhay, Impaumbo, Airport, Crossing and three subdivisions namely, La Mirande, Portico 2 and Vista Grande. Noticeably, these sitios have scales that are combinations of both extremely high and extremely low in one or two assets.

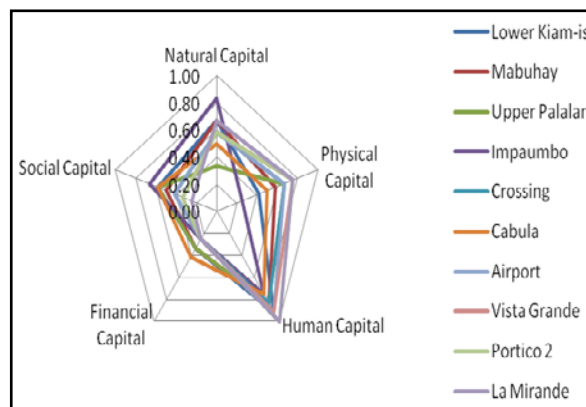


Fig. 2 Asset Map of Sitios with Moderately Low Scale

Seven sitios were classified to have moderately high scales and can be categorized into two groups. The first group is composed of the sitios located near the center of the barangay: Baluarte, Narulang, San Isidro and Patpat. The second group is composed of sitios which are all classified as mid-sized subdivisions. These are: La Buena Vida, Montaña Vista and Frontiera. These subdivision, have high scores in physical, human and financial capitals but moderately low in natural and social capitals.

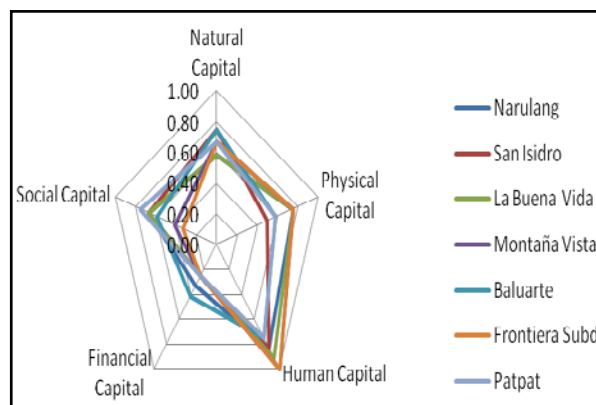


Fig. 3 Asset Map of Sitios with Moderately High Scale

Only five sitios were classified to have the highest scales which can also be categorized into two groups. The first group are the sitios located near the center of the barangay: Zones 1, 2 and 3. The second group has two sitios which are all classified as mid-sized subdivisions. These are: Lessandra and Portico 1. These subdivision, have the highest scores in physical, human and financial capitals but moderately low in natural and social capitals.

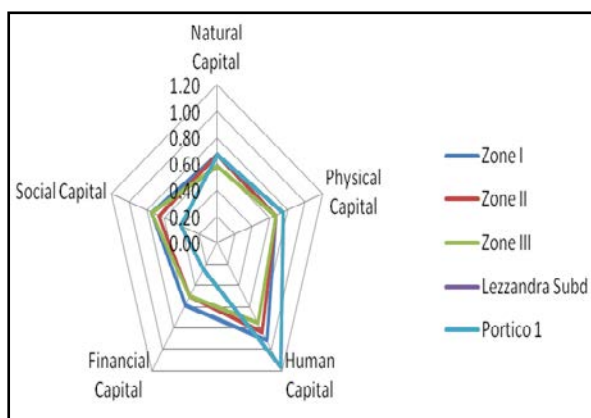


Fig. 4 Asset Map of Sitios with the Highest Scale

On the average, the sitios in Barangay Lumbia are high in terms of human capital, moderately high on both physical capital and natural capital while moderately low on social capital and lowest in financial capital.

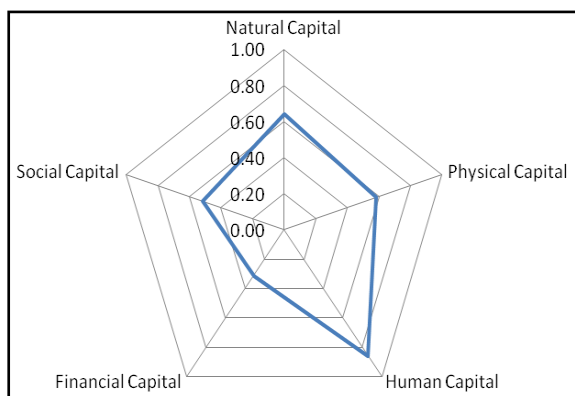


Fig. 5 Asset Map of Barangay Lumbia

2.3 Multiple Linear Regression Analysis

Multiple linear regression (MLR) was applied between poverty intensity and the five assets. Several combinations were run to determine the extent to which the livelihood assets explain the variation in poverty intensity. In the final model, human capital, physical and financial assets emerged as the statistically significant determinants at $p < .01$. The adjusted R^2 at .205 implies that the model can explain 20.5 % of the variations in poverty intensity. The results are shown in the table below.

Table 7
Multiple Linear Regression Analysis Between Poverty Intensity And The Livelihood Assets (N=508)

Dependent Variable: Poverty Intensity		
Independent Variables	Regression Coefficients	T Value

X_1 : Human Capital	0.17	4.03**
X_2 : Natural Capital	0.01	0.27ns
X_3 : Physical Capital	0.26	6.01**
X_4 : Social Capital	-0.03	-0.64
X_5 : Financial Capital	0.21	4.94**
Constant: 0.449		
Final MLRA		
Adjusted R^2 : 0.205		
F value: 27.15**		
FINAL MODEL:		
$\hat{y} = 0.449 + 0.17x_1 + 0.26x_3 + 0.21x_5$		

Legend

- ns: not significant
- *: significant, where $0.01 < p \leq 0.05$
- ** : highly significant where $p \leq 0.01$

The final model produced statistically significant indicators which the researchers can use to draw important conclusions about how changes in the predictor values are associated with changes in the response value. Regardless of the R-squared value, the significant coefficients represent the mean change in the response for one unit of change in the predictor while holding other predictors in the model constant. Obviously, this type of information can be extremely valuable.

In particular human capital indicators as well as the physical and financial capital were all significant predictors. These results establishes the widely accepted role of the aforementioned factors in poverty alleviation and expanding community resources which enable people to support each other in performing all the functions of life and in developing themselves to their maximum potential [26].

Any discourse on human capital would emphasize its important role in increasing community well-being by promoting productivity. By fostering productivity, skills create competitive advantages and surplus value, used to diversify economic activities facilitating economic development in a locality [27].

On the other hand, financial capital is important in uplifting the socio-economic conditions in the community as it affects the capacity of households to mobilize assets and endure periods of uncertainties.

Lastly, many participatory poverty assessments have found that a lack of particular types of physical infrastructure is considered to be a core dimension

of poverty. Without adequate access to services such as water and electricity, human health deteriorates and long periods are spent in non-productive activities such as the collection of water and fuel wood. The opportunity costs associated with poor infrastructure can preclude education, access to health services and income generation. They also constrain people's productive capacity and therefore the human capital at their disposal [9].

3. CONCLUSION

The sitios with relatively better assets are those found in the subdivisions and are approximately closer to the barangay center. Communities with higher assets offer more opportunities to all residents and provide all individuals with an increased likelihood of enjoying a higher level of income. Conversely, Sitios with lower levels of assets tend to experience reduced economic activities. Also, Sitios with lower assets result to lowered ability to take advantage of opportunities. Thus, these sitios may be the most difficult in which to improve incomes and more susceptible to higher poverty intensity. Among the determinants that relate significantly to poverty intensity are human, physical and financial assets. The results of this paper highlight that increasing availability and access to these assets might lead to reduction in the depth of poverty hence improvement in the quality of life.

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