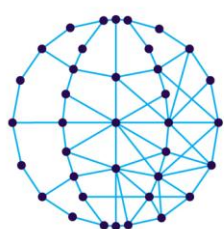


Cooperatives : The Power to Act

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IMPACT OF MARKETING COOPERATIVE SOCIETIES IN ENHANCING RURAL LIVELIHOOD IN INDIA

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Abstract

This study was conducted in the National Capital Region of Delhi to assess the impact of agricultural marketing cooperative societies in enhancing rural livelihood. One promising approach explored in this paper is the use of livelihood assets, especially natural, physical, human, social, financial and political, the building blocks of sustainable livelihoods. These assets promote habitat, social, income and food security. There were low poverty incidences in the study area because of an overall favorable livelihood asset base, particularly pronounced for physical and financial capitals. There was an indication of declining poverty and increasing income as a result of the marketing society. The overall favorable livelihood asset base among the farmers in particular leads to mitigating the challenge of livelihood insecurity. The findings of the study indicate that a significant change was found in habitat, social, income and food security among the respondents as a result of the marketing society. A shift to a higher level livelihood category was found with a majority of respondents as a result of the cooperative marketing society.

Keywords: Livelihood security, livelihood endowment, sustainable livelihood, cooperative marketing society

Résumé

Cette étude a été réalisée dans la région de la capitale nationale de Delhi afin d'évaluer les effets des sociétés coopératives de commercialisation agricole sur l'amélioration des conditions de vie en milieu rural. Une approche prometteuse explorée dans cette étude intègre les moyens de subsistance comme actifs, en particulier naturels, physiques, humains, sociaux, financiers et politiques, les piliers en matière de conditions de vie pérennes. Ces actifs favorisent la sécurité de l'habitat, du tissu social, du revenu et alimentaire. La région étudiée affiche une faible incidence de pauvreté en raison d'une base de moyens de subsistance favorable, en particulier en ce qui concerne le capital physique et financier. On note l'indication d'un déclin de la pauvreté et d'une hausse du revenu sous l'effet de la société de commercialisation. La base généralement favorable d'actifs de subsistance chez les agriculteurs en particulier soulève des défis d'insécurité mitigés en ce qui a trait aux conditions de vie. Les résultats de cette étude indiquent un changement significatif chez les répondants en matière de sécurité de l'habitat, du tissu social, du revenu et alimentaire sous l'effet de la société de commercialisation. Il ressort que la plupart des répondants ont gravi un échelon dans l'échelle des catégories de subsistance grâce à la présence de la société coopérative de commercialisation.

Resumen

Este estudio se realizó en el Territorio Capital Nacional de Delhi; su objetivo fue evaluar el impacto de las sociedades cooperativas de comercialización agrícola en la mejora de la subsistencia rural. Un enfoque promisorio que se analiza en este documento es la utilización de los activos de subsistencia, especialmente, los naturales, físicos, humanos, sociales, financieros y políticos, que son los pilares fundamentales en materia de subsistencia sostenible. Estos activos promueven la seguridad habitacional, social, alimentaria y del ingreso. En la región donde se desarrolló el estudio se encontró una baja incidencia de pobreza debido a una base general favorable de activos de subsistencia, especialmente pronunciada en términos de activos físicos y financieros. Se encontró una indicación de disminución en la pobreza y de aumento en los ingresos gracias a la sociedad de comercialización. La base general favorable de activos de subsistencia entre los campesinos,

ayuda especialmente a mitigar el desafío de la inseguridad en lo que hace a la subsistencia. Las conclusiones del estudio indican que, entre los encuestados, se encontró un cambio considerable en cuanto a la seguridad habitacional, social, alimentaria y del ingreso, como consecuencia de la sociedad de comercialización. Se observó que la mayoría de los encuestados habían pasado a un mejor nivel de subsistencia gracias a la sociedad cooperativa de comercialización.

Introduction

Development is influenced by a multitude of factors such as natural, human, financial and technological resources, policies, programs, institutions, and organizations. Of late, the role of institutions and organizations as instruments of development has been dually recognized throughout the world. They affect rural development in many different ways through production inputs and services, enhanced bargaining power of rural producers with the purchasers of their produce and goods and services suppliers, and influencing investments and savings.

There seems to be a positive correlation between the multiplicity of organizations existing in a country and the level of development. In general, it is true that all developed countries are highly organized and all developing countries are either unorganized or poorly organized. Lack of appropriate organizations is one of the most serious constraints on the pace and level of rural development with the natural, human, material and financial resources currently available in India. Therefore, there is a need to design and launch appropriate organizations and professionally manage them.

The cooperative movement in India recently celebrated its first century. Indian cooperatives are unique as they were initiated and supported by the government. Elsewhere, it was always organized by volunteer members with minimum or no government intervention. In India it was introduced in 1904, as the country planners firmly believed that it could serve national development and protect the vulnerable section of populations, especially the farmers from certain social backgrounds including backwardness, poverty and rural indebtedness.

Though they were initially organized only as credit institutions, Indian cooperatives today serve endless areas of credit and non-credit services, delivering credit for agriculture as well as non-agriculture purposes and operating in numerous non-credit phases. They work for milk producers, agricultural producers, weavers, consumers, fishermen, coir makers, employees, and for many others (Suryawanshi and Gaikward, 1996). According to the National Cooperative Union of India (NCUI, 2001), cooperatives occupy an important place in India's rural economy in terms of population coverage and share of the total supply of agricultural inputs, including credit. India can rightly claim to have the largest network of cooperatives in the world. In 2000, there were 528 thousand cooperatives of all types with a total membership of some 229 million and total working capital of ₹ 2,856 billion. Cooperatives now cover nearly 100% of India's villages, 67% of total rural population and account for nearly 49% of the total agricultural credit supplied in rural areas, 60% of total sugar production, and 35% of the total quantity of fertilizer distributed in the country.

NCUI (2001) reported that the two giant cooperative fertilizer plants manufacture about 21% of the total quantity of fertilizer produced in the country. In addition, cooperatives handle about 60% of the total cotton procured, 29% of the total wheat procured, and 50% of a total branded oil marketed in India. Of all types of cooperatives, the Anand Pattern dairy cooperatives are considered to be the most successful in serving their members and society at large.

According to Ellis (1998), rural livelihood is defined as “the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living”. “It is important to realize that livelihood security has to be understood from the farmers' perspective. [...] Food security is a subjective concept defined as an individual farmer's own perception as to whether s/he has been able to support the family's food and fodder requirements adequately round the year using all resources under his control” “The livelihoods approach puts households of the poor as its central focus. [...] It takes holistic consideration of things that the poor might be vulnerable to assets and resources that help them thrive and survive policies and institutions that impact their livelihoods, how the poor respond to threats and opportunities and what sort of outcomes the poor aspire to.” (Hiremath et al., 2004).

Erenstein et al. (2007) reported that people's natural, physical, human, financial, social and political assets are the major complementary building blocks of their livelihoods. “Poverty is an outcome of people's livelihoods.” (Erenstein et al., 2007) Livelihood assets thereby provide both a proxy for absolute poverty and a broader poverty measure. Hence, an attempt was made in this study to understand the farmers' livelihood strategy in order to help learn from their varied marketing activity to sustain their livelihoods and identify the most promising opportunities.

Study Background

Theoretical frame work

Cooperation is a mode of human behavior. It exists in both formal and informal in all societies and communities all over the world. As an ethical norm, it has been stressed in all the major religious and moral systems. It is manifest in countless economic, social, and cultural activities performed by human beings for the purpose of achieving a common goal (Schultz, 1995; Abadi, 2010). From a philosophical perspective, “cooperation and its opposite, competition, are two basic tendencies of human behavior. Both are rooted in the two fundamental propensities of human beings, and for the matter of all forms of life on this planet earth, namely (a) an urge to “survive”; and (b) an urge to ‘grow and prosper’” (Gibb, 1951; Hare, 1952; Abadi 2010).

It is primarily to fulfill these two urges that human beings undertake all kinds of activities, including cooperation. It is also true that when individuals can fulfill both urges independently, they tend to act individually and competitively, and when they cannot, they tend to cooperate with others to fulfill them. It is a common observation that cooperative action, a manifestation of group behavior, takes place under highly diverse situations. Abstracting from such a wide range of situations, scholars have propounded many theories and hypotheses to explain why and when people do and do not cooperate.

Role of agricultural marketing cooperative societies in rural livelihood

According to Abadi (2010), there were three strategy shifts in developmental thinking that led to the adoption of a livelihood approach. (1) “A shift from concern for regional and national food security to a concern for the food security and nutritional status of households and individuals. (2) A shift from food first perspective to a livelihood perspective, which focuses not only on the production of food but also on the ability of households and individuals to procure the additional food they require for an adequate diet. (3) A shift from a material perspective on food production to a social perspective which focuses on the enhancement of peoples capacities to secure their livelihoods.” (Abadi, 2010)

Maxwell (1996) notes that this work carried out in the late 1980's and early 1990's indicated that it was misleading to treat food security as 'fundamental need of rural households.' In short, the sustainable livelihood approach to rural development advocates a shift from seeking improvement in agriculture production to looking at the full diversity of strategies whereby people in rural areas sustain a livelihood and seek ways to strengthen their options.

The idea of household security (Chambers and Conway, 1992; Ashley and Carney, 1999; Hogger, 2004; DFID, 2007) embodies three fundamental attributes: (1) the possession of human capabilities (e.g. education, skills, health and psychological orientation); (2) access to other tangible and intangible assets (social, natural, and economic capital); (3) the existence of economic activities. The interaction among these attributes defines what livelihood strategy a household pursues. In its simplest form, "livelihood security is the ability of a household to meet its basic needs like food, health, shelter, and minimal level of income, basic education and community participation" (Beevi, 2013). Sen (1987) provides a wider definitional scope for the livelihood concepts and further sees "capability" as what people can do or be with their "entitlement," a concept encompassing the material concerns of food intake or income (Sen, 1999). Chambers (1997) argues that a well-being approach to poverty and livelihood analysis may result in a range of sustainable livelihood outcome criteria, including diverse factors such as self-esteem, including "happiness, stress, vulnerability, power, exclusion as well as more conventionally measured material concerns."

In his study, Abadi (2010) found that:

Physical capital, also known as produced or man-made capital, comprises the stock of plant, equipment, infrastructure and other productive resources owned by individuals, the business sector or the country itself. Financial capital is the financial resources available to people (savings, credit supplies). Human capital includes investments in education, health, and individual nutrition. Labour is a critical asset linked to investments in human capital, while health status determines people's capacity to work, and skills and education determine the returns from their labour. Social capital, an intangible asset, is defined as the rules, norms, obligations, reciprocity, and trust embedded in social relations, social structures, and societies' institutional arrangements, which enable its members to achieve their individual and community objectives. Social capital is embedded in social institutions at the micro-institutional level—communities and households—as well as referring to the rules and regulations governing formalised institutions in the market- place, the political system, and civil society. Natural capital includes the stocks of environmentally provided assets such as soil, atmosphere, forests, minerals, water and wetlands. In rural communities, land is a critical productive asset for the poor; while in urban areas land for shelter is also a critical productive asset. (Abadi, 2010)

This author also reported that income only maintains consumption, but assets change the way people think and interact with the world. With assets, people begin to think in the long term and pursue long-term goals. In other words, while incomes feed people's stomachs, assets change their head welfare and policy has gone off track in becoming almost exclusively preoccupied with the income protection of the poor. Policy should seek to empower as well as to protect. Especially, policy should take into account the critical role of asset accumulation in economic and social well-being..."implicitly we seem to believe not only that the poor have no wealth, but that they can have no wealth" (Abadi, 2010).

As per the policy guidance sheets of United Kingdom Department for International Development (DFID, 2000; Abadi, 2010), the Sustainable Livelihood Approach (SLA) can be seen as one of a

number of analytical frameworks that deal with the dynamic dimensions of poverty and well-being by enabling a typology of assets which poor households and communities deploy to maintain their well-being under changing conditions. Livelihood outcomes are achieved with the following strategies:

1. Food security: availability of and access to balanced food at household level.
2. Occupational & financial security: access to regular and satisfied employment and sound financial conditions of the respondents.
3. Habitat security: includes housing with amenities.
4. Educational security: includes the family's educational level and access to educational facilities including higher education
5. Health security: includes family health status and access to health care
6. Social security: involves social participation and social status of the family
7. Environmental security: included pollution free environment, access to water resources, eco-friendly farm management practices and flood protection.

Methodology

Local context of the study

The study was carried out in the National Capital Region of Delhi, India. Following purposive and random sampling including five districts (one in Delhi and two in Haryana and Uttar Pradesh respectively) representing different socio-cultural backgrounds. From each district, one block and from each block one agricultural cooperative marketing society (AMCSs) was selected randomly. The study comprised two major categories of respondents, members and non-members of AMCSs. One hundred non-members and two hundred members were randomly selected to form a total sample of 300. Impact due to the AMCSs were measured with member and non-member farmers of AMCSs. So, 300 respondents from the NCR of Delhi (i.e., 100 from Delhi, 100 from Haryana, 100 from Uttar Pradesh) were selected. Expost-facto research design was used, and data collection was done through interview method. Secondary data also collected from various sources.

Components of the livelihood security index (LSI)

The livelihood security index (LSI) of the beneficiary—livelihood security index and livelihood endowment status—was operationalized in this study as adequate access to income and other resources to meet basic needs including food and nutrition, health facilities, clean environment, habitat facilities, educational opportunities, community participation, and social integration. In order to measure the livelihood security of the respondents' households, LSI was developed with required modifications.

The components of the LSI selected following Abadi (2010) were as follows:

1. Food security: Operationalized as the availability and access to balanced food at household level.
2. Income security: Operationalized as the access to regular and satisfied financial source of income.
3. Habitat security: Included housing with basic amenities.
4. Educational security: Included the educational level of the family and access to educational facilities including higher education.
5. Health security: Included the health status of the family and access to health care facilities.

6. Social security: Included social participation and social status of the family.
7. Environmental security: Included pollution free environment, access to water resource, eco-friendly farm management and protection from flood and drought conditions.

Components of livelihood endowment status (LES)

The components of the Livelihood endowment status (LES) followed the various categories of assets (capital) identified by (Abadi, 2010):

1. Human capital: Included skills, knowledge, ability to labour, and good health.
2. Social capital: Was operationalized as the social resources upon which people draw in pursuit of livelihood objectives (e.g. networks and connections, membership of groups, relationships of trust etc.)
3. Natural capital: Included the natural resource stocks from which resources flow and services are derived (land, forests, water resources, protection from draught and flood, etc.).
4. Physical capital: Included the basic infrastructure and producer goods needed to support livelihood infrastructure; components include affordable transport, secure shelter, adequate water supplies and sanitation and access to information; producer goods are the tools and equipment that people use to function more productivity.
5. Financial capital: Includes savings and credits.
6. Political asset: Includes participation in election, project monitoring, etc.

The total score value for the respondents is the sum of all score values of items for which responses collected index was calculated using the following LES index formula:

$$LEI = \frac{O_i}{E_i}$$

Where LEI=Livelihood Endowment index, O_i =Observed score, E_i =Expected score

Impact of AMCSs in enhancing rural livelihood

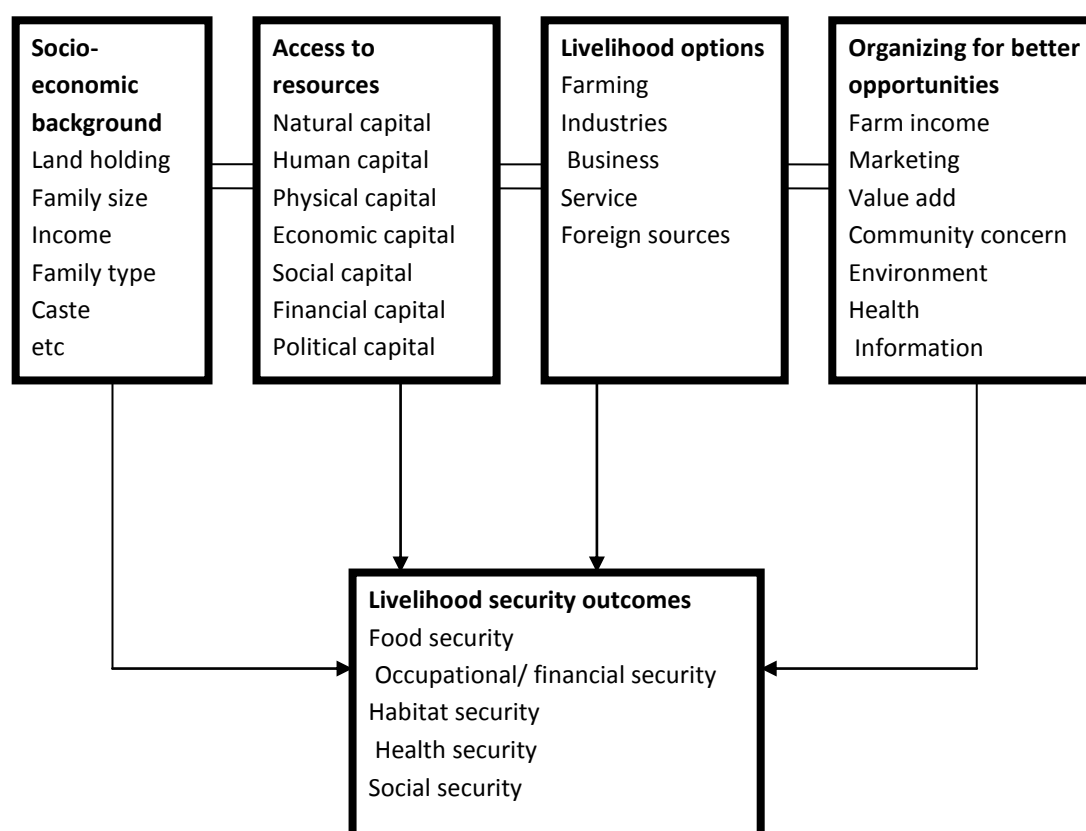
The studies reviewed earlier could clearly illustrate that the livelihood security of rural people has multiple dimensions, which are the outcome of the intricate relationship between the socio-economic characteristics of rural people, their access to and control over various livelihood resources and the resulting multiple livelihood options followed by them. When there are constraints regarding socio-economic background as well as access to resources, people organise and cooperate with each other for better opportunities, resulting in livelihood pattern changes. A holistic analysis of the livelihood systems begins with the understanding of the farmers' socio-economic background, an assessment of their access to resources like natural, financial, human and social assets, factors determining the access and thereby organized in marketing society as livelihood options. It was conceptualised that there is an overlap between the access to resources as the indicators of livelihood security and as the factors determining the various livelihood options to achieve livelihood security. Understanding the livelihood would lead to the identification of intervention points and formulation of an effective marketing system for their produce to support the rural people in

achieving livelihood security with multiple dimensions like food security, occupational/financial security, habitat security, health security, environmental security, educational security, and social security (Figure 3.3).

Based on the foregoing discussion on the theoretical dimensions of livelihood security (Fig 3.3) and assumed for the study, the main objective of the conceptual framework developed here was to provide a perspective reference for systematically analysing the livelihood systems of rural people. The framework was expected to facilitate a theoretical and empirical analysis of rural livelihood systems.

Conceptual framework of the study

Figure 3.3 Conceptual frameworks of components of rural livelihood



Operationalization of livelihood security

“Research carried out in the late 1980s and 1990s indicated that the focus on food and nutritional security, as they were conceived, needed to be broadened. It was found that food security was but one subset of objectives” (Frankenberger et al., 1999) of rural people and it was misleading to treat food security as a fundamental need independent of their wider livelihood considerations. Thus, a livelihood security approach to rural development was adopted, which advocated a shift from a concern for national and regional food security to a concern for food and nutritional security of households. It focused not only on food production but also on the ability of households to procure

adequate food for a balanced diet (Dahl, 1995; United Nations Development Programme (UNDP), 1997; Chambers, 1998; Abadi, 2010).

In this context, livelihood security was operationalized as adequate access to income and other resources to meet basic needs including food and nutrition, health facilities, clean environment, habitat facilities, educational opportunities and community participation and social integration. In order to measure the livelihood security of rural households, a Livelihood Security Index (LSI) and Livelihood Endowment Status (LES) was developed.

Development of livelihood security index (LSI)

(a) Determination of scale values

It was decided to give specific weights (scale values) to each component of LSI & LES based on their perceived significance. The standardized rank method suggested by Guilford (1954) was used for determining the scale values. The method has the unique advantage that it can be used with any number of variables and does not require a large number of judges. Mathew (1989) and Baby (2001) used this method to compute the scale values for the dimensions of managerial leadership and the dimensions of quality management in agricultural research respectively. As per the method developed by Abadi (2010), seven different components of LSI and six components of LES were ranked by a group of judges according to their perceived significance in determining the livelihood security of rural people. Rankings were obtained from 20 judges who were experts in the fields of social science. The rankings were then tabulated and a frequency distribution denoted by 'f_{ji}' was worked out for each component. For different numbers of stimuli ranked 'n' corresponding 'c' values were made available from the statistical table. Then 'f_{ji}' multiplied by the corresponding 'c' value and summated over all the ranks gave a total score ' $\sum f_{ji} c_i$ ' for each component, which was further divided by the total number of judges and the consequent value 'R_i' was subjected to linear transformation to arrive the scale value 'R_c' using the formula : $R_c = 2.357; R_j - 7.01$.

Scale values of the components of LSI & LES are given hereunder.

LSI		LES	
Components	Scale value	Components	Scale value
Food security	11.25	Human capital	7.36
Occupational/ financial security	9.13	Social capital	4.89
Habitat security	5.71	Natural capital	5.01
Health security	7.13	Physical capital	11.61
Environmental security	5.36	Financial capital	9.48
Social security	7.13	Political capital	6.77
Educational security	6.54		

(b) Selection of items/ indicators of components of LSI & LES

Items under each component of LSI and LES were selected through expert consultation and literature scan. Special care was taken to include all relevant items. The procedure involved could

ensure the efficiency of the instrument to measure the livelihood security and endowment status of the households by ascertaining content validity. Thirty eight items covering the seven components of livelihood security were selected initially. The selected items were pre-tested on a sample of ten farmers in a non-sampling area. The items that were found irrelevant were dropped. Thirty two items covering the seven components of livelihood security and forty-one items covering the livelihood status constituted the final indicators for both. The items along with their maximum and minimum scores possible and the normalized rank scale matrix frequency for LSI & LES dimensions were developed.

(c) Computing the composite index of livelihood

Each component of LSI and LES consisted of a different number of items/indicators and hence their range of scores was different. Therefore, the scores of all the components were converted into unit scores by using simple range and variance as given below.

$$U_{ij} = \frac{Y_{ij} - \text{Min } y_j}{\text{Max. } y_j - \text{Min } y_j}$$

Where,

- U_{ij} = Unit score of the i th respondent on j th component
- Y_{ij} = Value of the i th respondent on the j th component
- Max y_j = Maximum score on the j th component
- Min y_j = Minimum score on the j th component

The score of each component ranged from 0 to 1 i.e., when y_{ij} is minimum, the score is 0 and when y_{ij} is maximum the score is 1.

The unit scores of each respondent were multiplied by respective component scale values and summed up. The scores thus obtained were divided by the total scale value and multiplied by 100 to get the Livelihood Security Index for each respondent. $i = 1-300, j = 1-7$

$$LSI_i = \frac{\sum U_{ij} \cdot S_j}{\sum S_j} \times 100$$

Where,

- LSI_i = Livelihood Security Index of i th respondent
- U_{ij} = Unit score of the i th respondent on j th component
- S_j = Scale value of the j th component

$$LES_i = \frac{\sum U_{ij} \cdot S_j}{\sum S_j} \times 100$$

Where,

- LES_i = Livelihood Endowment Status of i th respondent
- U_{ij} = Unit score of the i th respondent on j th component
- S_j = Scale value of the j th component

Subsequently, mean LSI and LES for each group of members and non-members of the AMCSs was calculated. Reliability of the index was tested using the 'test-retest' method and the 'r' value 0.813 was found to be highly significant.

Results

Livelihood security index (LSI)

The distribution of households livelihood classes of clients based on LSI is presented in Table 1. A cursory glance of the value shown in the table reveals that ex-post formation of the AMCSs 79 percentage of rural household under each livelihood class attain a high level of livelihood security. Among the majority of the members ex-ante the formation of AMCSs, their level of livelihood security index were placed 59%, while most of the members shifted to better livelihood standard ex-post AMCSs formation. It can be concluded that ex-post formation of the AMCSs, a shift of 20% in terms of farm income profitability was observed, with a significant role in livelihood security. An understanding of the dimensions of livelihood security of these members of AMCSs livelihood groups, i.e. on ex-ante and ex-post basis, is presented below (Table 1).

Table 1: Components of livelihood security index of members with mean index

(n=200)

Components	Mean Index		
	Ex-ante	Ex-post	Shift
Food security	0.65	0.86	0.21
Occupational/ Income security	0.49	0.75	0.26
Habitat security	0.35	0.73	0.38
Educational security	0.83	0.91	0.08
Social security	0.20	0.56	0.36
Health security	0.91	0.95	0.04
Environmental security	0.69	0.78	0.09
Mean LSI	0.59	0.79	0.20

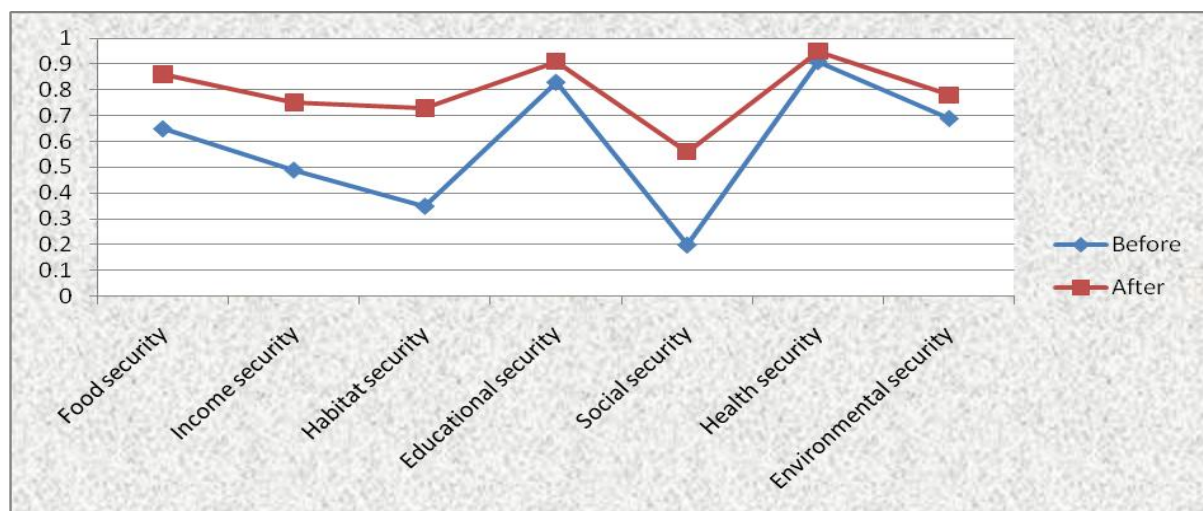
Food security index: Food security at the household level indicating availability and access to food sufficient to meet the nutritional needs of the family members was explained in the study. In Table 1 and Figure 1, the food security of the members in comparison of the average indices on the basis of the parameter food security ex-ante and ex-post basis pooled together show a positive shift of 21%.

The study tries to point out that adequate food production in the local farming system should be encouraged as a necessary step towards regional and national food security. The habit of consuming quality and nutritious food needs to be cultivated in rural people as they have a general tendency to cut back on food expenses to meet other basic needs. The study also attempted to look into some critical issues of food security like food availability in terms of production of staple foods like rice, vegetable and milk by the cultivators themselves, rather than dependence on external markets. Regarding the multi-food security of households, the consumption pattern meeting the balanced food requirement as well as access to quality food items were assessed rather than the calorie intake.

Occupational/Income security: As shown in Table 1, the ex-post formation of the AMCSs reveals an increase of 26% in terms of farm income profitability, with a significant role for the rural household. Regarding income security, the majority of the rural livelihood could attain only a medium level of income and occupational security (Figure 1). Among the farmers, a good number of members had a low level of occupational security. This indicates that the member farmers who are not able to

pursue agriculture as their major occupation due to their limited land holding are not having access to regular and satisfied employment opportunities in the non-farm sector. The acute labour shortage reported in rural Delhi and the present finding of a lower occupational security of rural labour could be a paradox. It has been found that the high wage rates prevalent in Delhi lower the demand for labour, especially in the agricultural sector, which leads to unemployment. Nair (1997) has reported this paradox of high unemployment and high wages in the rural labour market of India.

Figure 1: Livelihood indicators security of AMCSs members



Habitat security: **Table 1** and **Figure 1** present the distribution of respondents based on the habitat security index. With respect to habitat security, the mean score obtained by the members on habitat security ex-ante and ex-post the formation of AMCSs was 0.35 and 0.73 respectively. Some of the members constructed a portion of their house ex-post AMCSs. Sanitation and transport facilities improved as their market share on consumer prices is ensured as a result of marketing society interventions. A majority of the members ex-post AMCSs formation revealed a slightly more positive shift of 38%.

Educational security index: The educational security index developed in the study included the educational status of rural households and their access to educational facilities, including higher education. The data in Table 1 highlight that there is wide variation in the educational security levels of the livelihood classes explored in the study. The index obtained by the members on educational security on an ex-ante and ex-post basis is 0.83 and 0.91 respectively. On the basis of ex-ante and ex-post mean indices of the members display an 8% shift after the formation of AMCSs.

Health security index: Table 1 reveals that in majority, the AMCSs members households were under the high level categories with regards to the health security index. This indicates the higher health status of rural households and their better access to health care facilities available in the state. This finding adds to the fame of Delhi, whose health standards have been praised repeatedly. Post-formation of the AMCSs, a shift of 0.04 was observed. The index was 0.91 and 0.95 respectively for members on ex-ante and ex-post formation of AMCSs.

Environmental security index: Environmental security of rural households comprise indicators like access to natural resources, i.e. water, eco-friendly farming practices and protection from natural calamities (floods or drought in this study, a major dimension of livelihood sustainability in rural

areas). Table 1 reveals that most of the rural households in the study had a medium to high level of environmental security. According to the finding, ex-post formation of AMCSs display a 9% shift in the locality. It can be concluded that environmental management in rural areas calls for special attention to water management in order to reduce the vulnerability of rural households to pollution and natural calamities like flood or drought.

Social security: Figure 1 reveals that the mean score obtained by the respondents on social security ex-ante and ex-post AMCSs was 0.20 and 0.56 respectively. In majority, the members ex-post formation of AMCSs show a positive shift of about 0.36.

Table 2: Comparison of member of AMCS with respect to LSI components

Components	(n=200)		
	Mean index		“t” value
	Ex-ante	Ex-post	
Food security	0.65	0.86	8.84**
Occupational/Income security	0.49	0.75	5.86**
Habitat security	0.35	0.73	4.26 ***
Educational security	0.83	0.91	6.82 *
Social security	0.20	0.56	8.56***
Health security	0.91	0.95	1.75
Environmental security	0.69	0.78	3.87*
Mean LSI	0.59	0.79	11.75*

*** Significant at 0.01, **0.05 and *0.10 level, respectively.

Table 2 reveals the results of LSI component comparison. In the case of member groups, a significant difference was noted at $P < 0.01$ level of probability in components such as habitat security, and social security, whereas income and food security index differed significantly at $P < 0.05$ level, and education and environment security differ significantly at $P < 0.10$ probability level, while there is no significant difference in health security on an ex-ante and ex-post basis.

Comparison of the livelihood classes based on LES and its components

Table 3: Summary of livelihood asset portfolio index

Components	(n=300)		
	Livelihood endowment status		
	Members	Non-members	Pooled
Financial asset	0.83	0.67	0.16
Physical asset	0.80	0.61	0.19
Human asset	0.89	0.88	0.01
Social asset	0.59	0.55	0.04
Political asset	0.96	0.94	0.02
Natural asset	0.80	0.75	0.05
Over all asset portfolio status	0.81	0.73	0.08

Table 3 presents the comparison of members and non-member based on their mean LEI and the mean Index of its different components. It is found that the mean of AMCSs LES for members of AMCSs (0.73) is significantly higher than that of the members of AMCSs (0.81) respectively. The

data in Figure 2 provide the values of six different LES components. Figure 2 also reveals that physical asset shows the most significant positive change with 0.80 and 0.69, for both groups of members and non-members respectively which had been improved with a shift of 0.19.

Regarding financial asset, the maximum index of 0.83, followed by 0.67 for the two groups of members and non-members respectively, was observed with a positive shift of 0.16 (Figure 2). Human asset display a maximum index for members and non-members at 0.89 and 0.88 respectively. Figure 2 reveals that the least pooled index of 0.01 was for human asset. Table 5.4 reveals that human asset had not changed significantly for any of the groups. With respect to political asset, there was a considerable change of 0.02, with an index of 0.96 and 0.94 for the members and non-members respectively. In the case of social asset, members have an index of 0.59, followed by non-members at 0.55. As for natural asset, a drastic decrease was shown per respondent. The highest index was members, with 0.80, and lowest was 0.75 for non-members.

Table 4 reveals the comparison results of LES components. In both members and non-members groups, a significant difference was noted in components such as financial, and physical asset was significant at $P < 0.05$ level of significance, whereas human, social, political and natural asset index did not show a significant difference.

Micro analysis of the Livelihood Endowment Status and Asset Building

Livelihood is identified as a system comprising various resources including natural, financial, physical, political, human and social capital, household access to and control over these resources, dependent upon the socio-economic and development factors of the local region.

Comparison of (members and non-members) based on LSI components

From the “t” test value given in Table 4 it can be concluded that the member farmers have a significant higher mean index of all the components in physical and financial asset of LES. The LES of the respondents was calculated for the individual respondents and the mean index was found out for each group. Comparison of LES and its components were done in all groups separately.

Table 4: Comparison of members and non-members with respect to LES components

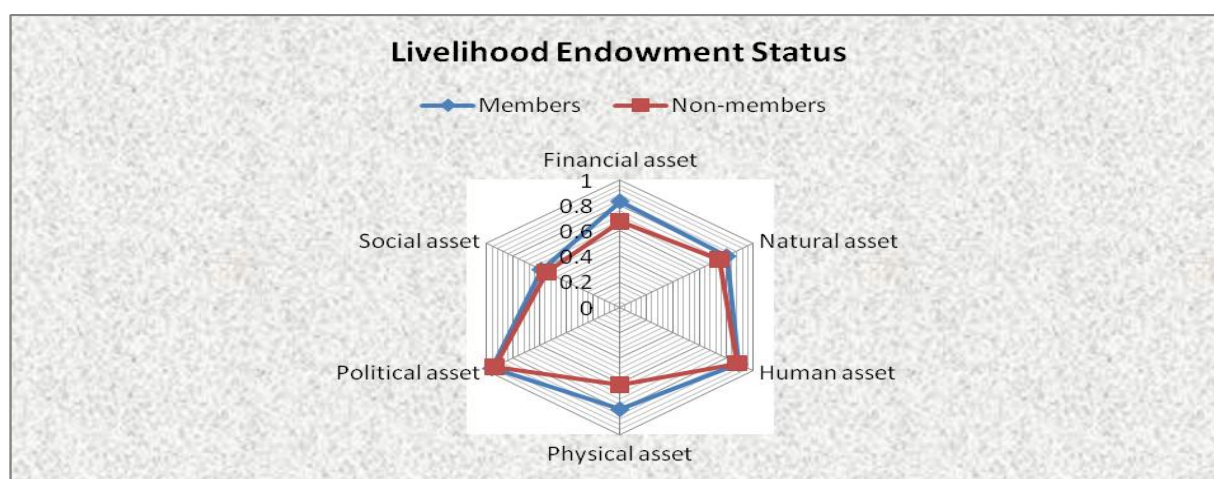
Components	(n=300)		
	Mean index		“t” value
	Members	Non-members	
Financial asset	0.83	0.67	0.53*
Physical asset	0.80	0.61	4.81*
Human asset	0.89	0.88	0.38
Social asset	0.59	0.55	0.51
Political asset	0.96	0.94	0.38
Natural asset	0.80	0.75	1.33
Over all asset portfolio status	0.81	0.73	

*Significant at 0.05 level

From a comparison of mean LES value, within both groups of respondents, we can understand whether there was significant improvement or decline in their livelihood endowment status (Fig.2). There was a significant positive change in the case of the members group in the physical and financial asset components for members of AMCSs, with a $P < 0.10$ level of significance, as evidenced by the t-value in Table 4. A comparison of member and non-member farmers of the two groups is presented in Table 4. It was found that the financial and physical asset indices of the member farmers were significantly higher than that of the non-members, while there is no such significant difference in all other dimensions.

An asset polygon allows us to visualize simultaneously the variation in each of the six components of assets (Figure 2). The full asset-based approach thereby generates a hexagon that emphatically illustrates all-around favorable asset base of the NCR of Delhi, particularly marked for physical and financial capital. The members show a relatively high index for finance and physical assets, but relatively low index on the other capital, particularly social, natural, human and political. Members have relatively favorable index for physical and financial capital. Non-members in contrast tend to be low-indexed all around.

Figure 2: Livelihood endowment status of asset building



The reduced-asset based approach generates a characteristic livelihood pentagon (Figure 2). Despite a much narrower indicator base, it reiterates the favorable asset base of members and unfavorable asset base of non-members. The portfolio index of the full- and reduced-asset based approaches generates respectively two livelihood components in terms of physical and financial asset with shifts of 0.19 and 0.16 respectively (Table 3). The corresponding index scores provide relatively similar proxies for members and non-members, 0.81 and 0.73 respectively. Both index scores and predicted poverty incidence thereby reiterate similar patterns of aggregate variation, particularly the general superiority of members in terms of a more favorable asset base and reduced poverty incidence (Table 4).

The relatively low poverty incidence in the NCR of Delhi is thus associated with an overall favorable livelihood asset base, particularly pronounced for physical and financial capitals. This result is due to farm profit income benefit resulting from the existence of AMCSs, which long benefitted from favorable policy support and investments

Association between selected predictor variables and response variables

The association between selected predictor and response variable, namely rural livelihood security, with a zero order correlation was worked out, the result is presented in Table 5. Critical examination of the data in Table 5 reveals that education, farm power, farm implement, extension contact, communication and social participation were positively and significantly related towards rural livelihood at a 1% probability level.

Achievement motivations, risk orientation, irrigation potentiality were significantly related towards rural livelihood at a 0.05 level of probability, meaning that these selected predictor variables exert influence significantly on the rural livelihood of the respondents. Farm power and extension contact were found to have a negative association with rural livelihood achievement. The finding also revealed that age, occupation, caste and credit behavior were not significantly related towards rural livelihood.

Table 5: Relationship of the selected predictor variable with rural livelihood

Predictor variable	'r' values
Age	-0.053
Education	0.269**
Farm power	-0.459**
Family Size	0.392**
Achievement motivation	0.194*
Occupation	-0.003
Risk orientation	0.199*
Farm implement	0.606**
Caste	-0.103
Credit behavior	0.123
Extension contact	-0.267**
Irrigation potentiality	0.612*
Communication & media	0.734**
Social participation	0.274**

** Significant at 0.05 and *0.10 level, respectively.

To predict the important predictor variables, multiple regression was used. The technique was used to determine the effect of these selected variables on the response variable, i.e. rural livelihood security. The following symbols were used to denote the variables.

Response variable: Y=Rural livelihood security

Predictor variables: X1=Age, X2=Education, X3=Farm power, X4=Family size, X5=Achievement-motivation, X6=Occupation, X7=Risk-orientation, X8=Farm-implement, X9=Cast, X10=Credit-behavior, X11=Extension-contact, X12=Irrigation-potential, X13=Communication, X14= Social participation.

Table 6 reveals that all the predictor variables taken together explained the variation in the level of rural livelihood security to the extent of 78.2%. Thus, the result implies that all the predictor variables would account for a significant amount of variation in the rural livelihood security.

Table 6 Multiple regression analysis of predictor variables with rural livelihood

Independent variables	B-value Regression coefficient	SE of R.C.	"t " value
Age	-0.01	0.26	0.04
Education	0.85	1.52	0.56**
Farm power	0.59	0.44	2.34**
Farm Size	4.35	3.36	2.30*
Achievement motivation	0.36	0.37	1.961*
Occupation	-1.22	4.75	0.26
Risk orientation	0.28	0.38	1.968*
Farm implement	1.89	0.60	-3.17*
Caste	-0.86	5.85	0.15
Credit behavior	0.78	1.78	1.42
Extension contact	-0.06	0.10	0.58
Irrigation potentiality	0.21	1.95	2.68*
Communication & media	0.73	0.32	2.88**
Social Participation	4.22	3.50	1.98*

R²=0.782** Significant at 0.01 and *0.05 level, respectively.

The value of the result also as depicts (Table 6) that regression coefficients were non-significant for X1, X6, X9, & X11. Therefore, education, achievement motivation, risk orientation, social participation, farm size, farm power, farm implements, irrigation potentiality and communication factors are the most important to predict rural livelihood security.

Education level was found to be positive at 0.01% level of significance, i.e., higher levels of education generate higher rural livelihood security. This implies that a unit increase in education would increase livelihood security by 0.85 unit *ceteris paribus*. The level of education was a crucial factor in judging respondents' rural livelihood. An individual with a higher level of education is more exposed to different sources of information and, therefore, she is more extrovert and keeps contact with scientific personnel. Perhaps this is the reason for the above finding.

Social participation was found to be positive at 0.05% level of significance. This shows that a unit increase in social participation *ceteris paribus* would increase the livelihood security by 4.22 units. Farm size was found to be positive at 0.05% level of significance, which means that a unit increase in farm size *ceteris paribus*, would result in increasing livelihood security by 4.35 units. Farm power was influenced positively at 0.01% level of significance. This indicates that a unit increase in farm power *ceteris paribus* would increase livelihood security by 0.59 unit. Farm implement had negative coefficient at 0.05% level of significance. This shows that a unit increase in farm implement *ceteris paribus* would increase livelihood security by 1.89 unit. It also means that the number of farm implements have a significant impact on the rural livelihood of the farmers. A higher number of farm implements was observed to be owned by large farmers/farms. This may have an influence on their livelihood.

Irrigation potentiality was found to be positive at 0.05% level of significance. This shows that a unit increase in irrigation potential *ceteris paribus* would increase livelihood security by 0.21 unit. The regression coefficient value was found to be positively significant for achievement motivation and risk orientation at 0.05% level of significance. This reveals that a unit increase in achievement motivation and risk orientation *ceteris paribus* would increase the livelihood security by 0.36 and

0.28 unit respectively. The variable communication and media significantly influenced positively livelihood security at 1 percent level. This shows that a unit increase in media participation ceteris paribus would increase the security of livelihood in rural area by 0.73 unit. Credit orientation and extension contact was not found significant with rural livelihood security levels.

Caste was not related with the rural livelihood security, meaning that caste is not an important factor. This may be due to the fact that present day cooperative societies are gradually becoming free from caste system. Age was not related with rural livelihood achievement, so age is not an important factor in rural livelihood achievement. Occupation was not associated with the rural livelihood of the respondents and is not having an important role in farmers' rural livelihood.

Step wise regression: To remove the effect of multicollirarity by dropping non-significant variables, step down regression analysis was carried out, resulting in the regression equation as X5(social participation), X6(farm size), X7(farm power), X8(farm implements), X9(irrigation potentiality),X11 (communication factors) predictor variables, and included in the final set of multiple regression equation.

The data presented inTable7 reveals that all the predictor variables taken together explained 67.3% at 1% level of significance. Thus, the results imply that the predictor would account for a significant amount of variation in the rural livelihood security.

The "t" test of significance indicates that regression coefficients(b-values) were statistically significant at a 0.01% level for farm implement (X1), communication factors(X2) and irrigation potentiality(X6). The variables farm power, farm size, and social participation was found to be statistically significant at 0.05%, put together they contributed 67.3% of the variation in livelihood security.

Table 7:Step-wise regression analysis of significant predictor variables with rural livelihood security(n=200)

Significant predictor variables	b-value	SE of b	T- value
Farm power	0.60	0.43	2.41*
Farm Size	4.38	3.10	1.42*
Farm implements	1.89	0.58	3.25**
Irrigation potentiality	0.82	0.58	3.01**
Communication & media factor	0.81	0.29	2.80**
Social Participation factor	4.65	3.26	3.43*

R²=0.673, **Significant at 0.01 and *0.05 level, respectively.

The finding revealed that a unit increase in communication and media, ceteris paribus, would result in an increase of livelihood security by 0.81 unit. This implies that greater access to information in agricultural marketing cooperative societies through media sources such as television and radio would increase their awareness.

With regards to farm implements, a unit increase *ceteris paribus* would result in an increase of 1.89 unit of livelihood security. A larger number of farm implements was observed to be owned by large farmers/ farms. This might have influence on their livelihood security and encourage them to become members of the agricultural cooperative society. A unit increase in irrigation potential *ceteris paribus* would result in an increased livelihood security of 0.82unit. This finding makes it clear thatfarmers with irrigation potential were in a better position to produce more for market, which means that irrigation potentiality is an important factor affecting rural livelihood security.

Table 7 reveals that a unit increase in farm power, *ceteris paribus*, would result in a 0.60 unit increase of livelihood security, so farm power is an important factor in livelihood security. The finding also revealed that a unit increase in social participation, *ceteris paribus*, would result in an increase of livelihood security by 4.38 units. The results in Table 7 show that a unit increase in farm size, *ceteris paribus*, would result in an increase of livelihood security by 3.10 units. The higher the farm size, the higher rural livelihood security. Farm size is an important factor in affecting rural livelihood of the farmers.

Discussion

Livelihood Security Index (LSI)

Green (1994), in his analysis of poverty and food intake in Delhi, reported that the state was known for its low cereal and energy intake in India and had a low calorie recovery per capita of cereal expenditure due to the relatively high price of rice in the state, in spite of universal coverage of the Public distribution system(PDS). Various factors like small land holdings and a preference for cash crops based cropping patterns have made the NCR of Delhi a food-dependent state. When the rural households need to spend a good part of their income on food from the market, it results in a consumption pattern sacrificing the nutritional requirements of families. This study correlates with the food security index of member farmers on the basis of ex-ante and ex-post pooled together, with a favorable positive mean score shift of 0.21. Farmers fallow distress sale of their farm products like grain, milk, etc. creating surplus food in the market. Hence, adequate food production and consumption in farm households should be ensured in order to achieve rural household food security, which could be the real indication of national food security.

There are only limited employment opportunities in the industrial and service sector of Delhi for the relatively better educated labour class of the states. The WorldBank (2001) had similar views in explaining poverty in Delhi. Even though the occupational security index of member farmers on the basis of ex-ante and ex-post pooled together show a favorable shift of 0.26 mean score, as a result of extensive commercialization, we find that most households participate in the market economy. However, the poor rural households are caught in a paradoxical relationship with the market system. As they have lost the traditional patronage of land lords and lack sufficient land for subsistence, employment in the non-farm sectors is vital. In spite of the high rate of social welfare payments, land reforms, health care and literacy are prevalent in the state, these households suffer from restricted access to the market system because of their limited access to it, employment opportunities, lower per capita income, limited purchasing power and consumption. This is a paradox of commercialization and indicates the nature of modern poverty in the state.

An intriguing dimension of occupational security in Delhi is the higher rate of educational unemployment, related to secondary and above levels of education. This is because the output of the educated system is in excess of what the economy can absorb, creating job seekers who are

educationally qualified but have been surpassed by others with even more education. This “cascade model” (Edwards and Todaro, 1974) represents the situation in Delhi, in particular when work seekers are constrained to accept jobs for which they are overqualified, resulting in a fall in their earnings relative to their educational credentials. Hence, only employment according to educational qualification could be a true indicator of occupational security.

Gopikuttan (1988) reported that of the institutional factors like land reforms by the Delhi government, bringing radical change in the agrarian relations and the housing development schemes followed by the government since 1972 could lead to housing ownership for those who were landless laborers earlier. Political commitment to provide rural electricity and better water supply even in remote rural areas could increase habitat security. The study indicates that the habitat security index of member farmers on the basis of ex-ante and ex-post pooled together shows a favorable shift of 0.38 point, which is very high. It is said that one of the priority demands in the NCR of Delhi citizens who aspire to socio-economic improvement in society is to own a house of their own. Education and better awareness may kindle the aspiration of the farming community to emulate wealthier citizens. The various social, cultural and institutional factors that caused the housing boom in Delhi might have largely consisted in attaining this status.

Bahalla and Hazell (2003) and the World Bank (2006) have observed that although Delhi could attain a higher literacy rate of rural people, the majority of households have limited access to higher education, which would enable them to attain a higher level of livelihood security. This is viewed as the crisis in the Delhi mode: development is facing second generation problems like deterioration in quality of social services such as education. The high growth in the state domestic product has undermined the ability of the state government to raise resources in educational sectors. This has resulted in the mushrooming of large numbers of unaided schools and colleges, especially in the professional education sector. In addition, a large number of educations depend on the capital states due to insufficient professional colleges in the rural area. The potential number of farmers' classes have limited access to information about these. Expanding modern education opportunities are expanding, yet the income to access these high cost facilities is limited. In this situation, these households would be trapped in the low level balance with lower aspirations and lower scope for upward occupational and social mobility. Even these marginalized households pursue education but the chances of achieving better livelihood options seem doubtful in the state.

Comparative analysis of the livelihood classes based on mean LSI and its components indices showed that AMCSs members had a significantly higher livelihood security ex-post formation of AMCSs in all LSI dimensions. Though the majority of LSI, the livelihood security of members was found to be significantly higher than that of ex-ante formation of AMCSs in all the dimensions of LSI, except the case of health security. A majority of the respondents, after becoming member of the society, have achieved a significantly higher mean livelihood security index. A predominant portion of the respondents ex-post formation of the AMCSs show a shift of more than 20% in their livelihood status.

The limited income households cannot afford to wait out in the “educational tunnel.” Education also has a high opportunity cost to the members class in the form of wages foregone. This highlights the fact that the provision of physical facilities and the enrolment of children are not enough to achieve educational security as many other factors determine the functioning of being educated.

Studies of Kannan (1999) revealed that Delhi health indices, in spite of its lower per-capita income, registered a steady upward movement toward levels comparable to those in developed countries. The study reiterates that public investments in social welfare programmes like health and education is fruitful in improving human capital, recognized as an important livelihood resource. This study supports the result of the Livelihood Security Index (LSI), health security index on ex-ante and ex-post formation of AMCSs, for the member livelihood class was found the highest, while their social security index was the lowest ex-ante formation of the AMCSs.

Sarup and Vasista (1994) and Pedaria (2000) observed farmers who made better investment in natural resources conservation practices, such as irrigation water management and adoption of other eco-friendly farm management practices, could achieve a high level of environmental security index. Among the members ex-post formation of the AMCSs, a slight positive shift of only 0.09% could come under the high level category. This shows that farmers have poor access to natural resources and have a limited capacity to manage their scarce resources like irrigation water, land quality and follow eco-friendly farm management practices. This finding highlights the need to persuade farm households to adopt sustainable farm management practices and get technology management support for better farm profitability. It is also important to note that the members are most vulnerable as they are most prone to pollution and natural calamities.

The AMCSs helped the members improve social security, better social status and interaction among society. More farmers among the respondents become members of the village committee, which helps to formulate far ranging plans of AMCSs for the locality (Kannan, 1999). This result is against this finding with components of the Livelihood Security Index (LSI), social security index on ex-ante and ex-post formation of AMCSs, for member livelihood class was found to be the lowest ex-ante formation of the AMCSs.

According to Kannan (1999), a shift seems to have taken place in the social expectations of the younger generation of agricultural households; they prefer non-agricultural employment or to wait (hopefully) until they secure such employment. These kinds of social changes are initially related with the livelihood changes in farm households in Delhi.

Livelihood endowment status

In aggregate terms, there are areas where cooperatives have made notable changes in the different facets of the livelihood assets. Generally, members made insignificant gains in financial and physical assets. The same LES rank reveals that cooperative societies have shown to improve the well-being status of the members relative to that of non-members. For members who are engaged in the cooperative society, this finding means that such engagement adds interesting value to their well-being status. By exploring further into various sub-cluster descriptive analysis, it is evident that cooperative societies have a significantly positive impact on members' ability to secure better housing, motorcycle, electric transformer to the farm, water to the house, nutritious food, and also belong to more than one group. These different areas of gains cover all family members, both male and female.

There was significant positive change of member group ex-post formation of AMCSs in the component of physical and financial asset. This study correlates Prakash (1998) reporting that even the small and marginal farmers of this region who receives better income aspire to better housing standards, emulating others in the society. It was reported that in addition to farm income, migration

to urban areas and inflow of remittance have largely contributed to the housing boom in the NCR of Delhi.

LES was an indication of the condition of the respondents' livelihood. It was also indicative of its six components. While considering LES change, the maximum change noted was in the member group, which might be an indication of the positive influence of AMCSs. But the range of LES was also maximum in the members group, indicating a vast difference between respondents with higher and lower LES values. This could reflect the social disparities in rural areas among the farming society. This could be better examined if we analyze LES components and changes. The significantly different LES values, in both members and non-members respondents, might be a result of the changes occurring in their lifestyle due to their AMCS membership. This provided a clear idea about how the livelihoods of the rural people had changed ex-post formation of the AMCSs, and one reason might be the influence of the marketing cooperative society.

Even though a majority of the respondents in the study belong to the highest livelihood category (Erenstein, 2007), it revealed that the livelihood approach is based on the premise that an unfavorable asset-base enhances the incidence of poverty by undermining poor people's efforts to escape from poverty. The index of the asset building confirms that livelihood asset indicators and livelihood asset-based livelihood portfolio components are inversely related to poverty incidence and can thus be used to reasonably predict poverty at household level. A comparative analysis of the various dimensions of the livelihood endowment status of members and non-members presented in the study and a perusal of the data ex-post the formation of AMCSs reveal that members had a significantly higher mean index in physical and financial assets compared with non-members, while they were not significantly different on the human, natural, social and political asset indices.

Association between selected predictor variables and response variables

The 't' test of significance indicates that regression coefficients (b-values) were found to be significant for X2 (education), X3 (farm power), X4 (Farm size), X5 (achievement motivation), X7 (risk orientation), X8 (farm implement), X12 (irrigation potential), X13 (communication), X14 (social participation) (Table 6). The percentage contribution of each of the influencing variable towards rural livelihood security was determined using step-wise regression analysis. The result indicates that farm power, farm size, farm implement, irrigation potentiality, communication and media, and social participation, together contributed 67.3% of the total variability (Table 7). Table 7 revealed that mass media was found significant at 0.01 level of significance with those respondents owning goods such as a radio; television; video cassette player, which might have facilitated to gather adequate information. This may motivated farmers to understand the importance of increasing their market share in the consumer price, getting input with reasonable price at the required time, and value addition through organized marketing and achieving the required marketing society.

Table 7 also reveals that respondents with better farm implement would have bestowed greater attention in increasing their agricultural production for market and by far become interested in organized marketing, as this would give them access to input and marketing their produce. It means that number of farm implements have a significant impact on rural livelihood security. It is a well-known fact that farmers with good irrigation potential produce more in their fields and are happy with the income they derive from their little patch of land. This may be the reason for the significant relation with the rural livelihood security. This might have made them to become more interested to

establish a marketing cooperative society in order to increase their profitability and gain access to input and better market price for their produce (Table 7).

Table 7 shows that farm power was found statistically and positively significant at a 0.01 level. This may be due to the fact that farmers with more farm power try to utilize their power efficiently for agricultural production. This might have made them interested to become an AMCS member.

Table 7 revealed that social participation was found significant at a 0.01 level. This may be due to the fact that individuals with more social participation have more social interaction with different categories of people and different types of organizations, and are thereby more favorable to organized marketing and rural livelihood. This finding may be due to the fact that the larger a farmer's land holding, the higher their risk-bearing ability and involve more in organized marketing, which might as a result cause him to increase his agricultural production for market (Table 7).

Conclusion

This paper demonstrates how the impact of cooperative societies could be assessed from a beneficiary perspective. The findings showed that cooperative societies, in aggregate terms, improve on the well-being status of their members relative to non-members. This finding, however, portrayed that cooperative societies facilitate, to a limited extent, few facets of member's livelihood asset hexagon.

Interestingly, the financial and physical asset of the member farmers is significantly higher than that of the non-members. This indicates that better housing and facilities improve the standards of rural people in this region, and that better financial income from this increase adds value and market price gain as a result of the AMCSs.

There were improvements in habitat, food security, occupational/financial security, and social security indices. This may be attributable to increased income and an urge of the people to gain better habitat facilities for themselves. There was also an improvement in the social security index among members and non-members in the rural area. This might be due to increased social interactions in home and work places in rural areas. There was considerable improvement in occupational/financial security and food security among members, which may be due to the increase in income ex-post the formation of the AMCS.

Ex-post commencement of the AMCSs in the area, some farmers moved towards a higher livelihood security level. The study reveals that positive change occurred among members in terms of asset building in the areas under study. So far, AMCSs have achieved one of its goal of improving livelihood security in rural areas. Yet, effort should be made to expand the program to non-members in the future.

Recommendations

The livelihood approach puts poor households as its central focus. It takes into holistic consideration that the poor might be vulnerable to assets and resources that help them thrive and survive policies and institutions that impact their livelihoods, how the poor respond to threats and opportunities and what sorts of outcomes they aspire to. The notion of livelihood diversity is based on a framework that considers the activities of the rural poor as being determined by their portfolio of assets, including social, human, financial, natural and physical capital.

The findings of this study indicate that there was significant change in habitat, social, income and food security among the members of the agricultural marketing cooperative societies (AMCS). Evidences suggest that many household decisions (e.g., sending children to school, participating in community organizations, etc.) are directly related to whether they are below or above the food security threshold.

The study shows that there was an overall favorable livelihood asset base particularly in physical and financial capital among the members of the marketing cooperatives. Poverty is an outcome of people's livelihoods. Livelihood assets thereby provide both a proxy for absolute poverty and a broader poverty measure. A study by Erenstein (2007) also reported that people's natural, physical, human, financial, social and political assets are the major complementary building blocks for their livelihoods.

There is substantial loss of agricultural produce at farm level because of poor post-harvest management. The improved technology must be applied in the field of post-harvest losses and value addition. This would entail establishing cold chains consisting of pre-cooling units, refrigerated transport, establishment of cold storage for production and consumption centers, etc., especially for perishables such as fruits and vegetables. Ellis (2000) also observed that activities and livelihood strategies therefore reflect farmers' assets and are further influenced by the institutions that they interact with and broader economic trends such as market prices and shocks such as drought.

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