

Determinants of Youth Involvement in Agriculture Sector in Sikkim

An Executive Summary Submitted

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Executive Summary

Despite its declining share to the GDP of the economy, agriculture is still an important occupation of the most of the rural population. However, the present scenario of agriculture presents an interesting contradictory picture which sketches that majority of farming population are in the later stage of life and their replacement after retirement can be done through the participation of young generation people. However, the youths either are not interested or made disinterested towards agricultural farming. In this context the present study focused on different issues of declining trend of farmers; to examine the perception of youth towards agricultural activities; to evaluate efficiency of the youth involved in agricultural activities and to explore the features which can attract and retain youth in agricultural and allied activities.

In this respect, primary data have been collected from the sample farm households, 150 sample for farmers' response, 259 sample on youths' perception, 30 agripreneur for efficiency calculation and 15 experts of farming (model farmers, agricultural scientist, policy maker, official, youth agripreneur etc) have been collected.

The farms household (150) have been surveyed to evaluate on the factors or issues affecting the farming livelihood in this study area. Further, to understand the perceptions of youth a questionnaire on perception towards agriculture have been framed. Each question has five likert scales (1 to 5) such as strongly disagree, agree, neutral, agreed & strongly agreed. In order to reduce all of the response variables into factors, principal component analysis has been applied. On the basis of obtained factors, structural equation modelling has been used and to evaluate the impact of the observed variable on the latent variable.

In the next step, the data from 30 agripreneur (as their number is very less in Sikkim) have been used to compute the relative efficiency of the agripreneur. Both Stochastic Frontline method and Data Envelopment Analysis (DEA) have been used to evaluate efficiency score, determinants of the level of output, their statistical significance, factors of inefficiency, and the projections of inputs to improve efficiency, peers of the inefficient DMU and the excess of inputs used. Lastly 15 experts have been consulted on the issues of how to attract and retain the youth in the agriculture or farm activities.

The entire thesis has been written under eight chapters; chapter 1 - On Scenario of Agriculture; chapter 2 – Theoretical Foundation and Literature Review; chapter 3 – Agrarian Crisis: A Historical Sketches; chapter 4 – Farmers’ Sample Survey Analysis of the Study Area: Glimpse from Sikkim; chapter 5 – Youths and their Perception on Agriculture; chapter 6 – Efficiency Analysis of Youth Agripreneur; Chapter 7 –Attracting and Retaining Youths in Agriculture and Conclusion in the last chapter.

As per the analysis, the study found that agriculture sector is facing a declining trend of the farmers involvement due to various factors among which lack of helping hands from the family members, lack of adequate labour power for farming, employment oriented activities like MGNREGA in rural areas, changing attitude of the village people towards work in farming, provision of food to the people under food security Act are prominent. Further agriculture market imperfection leading to distress sale of the agricultural product, crop damage in the study are due to wild animals sudden entry into the human habitats, lack of irrigation and extension services, lack of social & economic security in farming are the factors that led to decline in farmers participation in farming.

The increase opportunities in the non-farm activities, importance of education for the children are the prominent incentives for the farmers not encouraging their children to continue agricultural activities through direct participation. The traditional age old joint family is replaced by nuclear family and village instead of becoming place of residence became a holiday destination. The non-farm opportunity such as ‘one family one job’ program in Sikkim, 100 days employment scheme in MGNREGA adds to the declining trend of farmers’ participation in farming activities. Inadequate manure due to destruction of traditional *goath palnay chalan*(cattle grazing in forest), wild animal attack on of the crop dissuade farmers to go for farming activities.

PDS (Public distribution system) is another factor for declining farming as profoundly stated by farmers. Having said that, its objective is to secure food for all and which is novel thing in general but its impact on village is out of imagination. It has provision of Antodaya Yojana (free 35 kg rice per month per family) for poorest of the poor and for other same in subsidized rate i.e. @ 3/kg, otherwise same rice would cost @30/kg at market price i.e. 10 double of subsidized rate. This easy access of food at cheaper rate or free, made people feel

that without or by less working also they can feed family, earlier for the same they had to work hard in agricultural field. Even by one day MGNREGA wage i.e. @177/day in Sikkim, enough to purchase 35 kg PDS (@3/kg) rice for a month. Access of this and in association to work culture inculcate from MGNREGA, leads to seen agricultural activities as hard work to feed the family.

Another is farmers get less price of their produce due to lack of efficient supply chain, which hardly able to fulfil need of the family lead to work in non-farm sector to fulfill other needs of the family. Slowly, this process made mindset that, even after cultivating, need of the family can only fulfilled by working outside the agriculture then why should they devote their time for farming, it's better to have non-farm sector work. This situational mindset also lessen the farming.

Other reasons are, inadequate irrigation facilities, extension service not in proper time like seed provided untimely, no compensation for crop damage by monsoon and wild animal. Instead of having many central govt. schemes, rarely it is executed in Sikkim due to small land holdings. All these reasons cumulatively have impact on farming. As per sample observation within 20 years or prior to it and present 56.9 percent area of cultivation has declined and similar is the case with number of farmers. So, one of the major factors which can help to continue farming is availability of man power mainly youths.

But, as per findings youths don't seem to be interested to opt farming as a livelihood. Therefore, as a 2nd objective study tries to access the perception of youth towards agricultural activities. As per analysis, livelihood preference of majority of youths for jobs and only 3.9 percent are for farming. Major reason to choose other than farming is to become successful, to have regular/good salary, to get facilities, as a respectful profession etc. In general youths perceive that agriculture sector is full of hard and painful, tiring and it is the work done of uneducated people to earn livelihood. These two perceived thinking of youths towards agriculture and farmers indicate that it is not a livelihood for good/educated persons to become successful. In terms of interest on agricultural activities, majority of the farmers are not interested by citing the reason that it will not help to fulfill dreams and most importantly farming is not a profession for educated (considering themselves as educated even after class 10). Parents are also not encouraging (nearly 87.3 percent) their children for farming by saying that 'they are doing hard work in agriculture to make them educated for better jobs other than farming' as responded by youths. In other hand, farmers (85 percent) themselves

also not supported educated to involve in farming. In terms of respect or prestige on farming livelihood, 68 percent said it is not respectful profession. Further, youths postulated (87 percent) that education or educational degree is a barrier to enter into farming.

The, perception of youths evaluated with the help of factor analysis and SEM model, by considering different items on likert scale ranging 1-5 (strongly disagree to strongly agree). While analyzing the factors, study developed three latent variables i.e. economic perception, social perception and personal perception. As per the result, economic perception has negative relation among social and personal perception and social and personal perception has positive relation to determine the perception of youth to choose agricultural activities as a livelihood.

To evaluate youth's perception, 12 items such as agricultural activities can fulfil needs, agriculture is part of life, agriculture cannot fulfil dream, like to do agricultural activities and others have been used to get the response of each youths on 5 likert scale. After that through PCA the items have been reduced into three important variables (factors). Using Structural Equation Modelling (SEM) the causal relationship among the factor as well as between factors and observed variables have been estimated. The three factors are economic perception, social perception and personal perception. On the basis of factor loading economic perception is explained by fulfil no dream, part of life, like agriculture and many jobs available in agriculture and other 8 response items explain social and personal perception.

The correlation analysis shows that agriculture is part of life is correlated ($r = 0.6471$); need fulfil is correlated to like agriculture ($r = 0.6714$); part of life is correlated to like agriculture ($r = 0.5125$). Since, pairwise correlation is a prerequisite for factor analysis, hence correlation analysis is made. Then as per the smallest value of AIC criterion three factors have been considered to capture 100 percent of the variance. On the basis of factor loading need fulfill, part of life & like agriculture load jointly on 2nd factor.

Education is not to make agriculture as a profession, joining if no other opportunity, agriculture is hard work, family will not encourage, no interest on farming and no respect from society loads highly on 2nd factor, where as there are many jobs in agricultural sector, agricultural occupation is respectful are same as white collar. The factors, on the basis of loading points, have been named as economic perception, personal perception & social perception.

As per the SEM results economic perception is positively and significantly explained by items (agriculture activities is my part of daily life, I like to do agricultural activities, there are many jobs or livelihood in agriculture and allied sectors for you). The economic perception as a latent variable explains 0.89 unit and the error is 0.22 unit. The value of coefficient of each item shows for example that higher economic perception among the youth explain that there is longer need fulfilment. Hence, agriculture is most needful activities only if it is economically beneficial. Agriculture will be part of life only if it is economically beneficial.

Similarly, the personal perception is explained positively and significantly by the items – I will not get respect from society if I derive my livelihood from agriculture. But agriculture occupation is respectful negatively explained by personal perception. Similarly, social perception explains joining agriculture if no other job is found. The four items are positive and statistically significant. Hence, youths personal perception is strongly against agriculture because lack of social prestige.

The covariance between economic perception and personal perception is negative implying higher economic benefit leads to low personal perception that it leads to less prestige etc. Despite all these the model is not a good fit. So make a good fit model the model is further modified.

So the last modification model suggested to have a covariance between likes agriculture and fulfils no dream. The fit statistics presented in the 3rd column (of Table 5.14) shows that LR value is $0.1022 > 0.05$, RMSEA is 0.32 (>0.05), CFI is 0.990 and coefficient of determination is 0.974 on this basis the path diagram of the best fit, presents all the coefficients of the observed variable which are highly significant. That means all the latent variables explain these observed variable significantly.

As per SEM result, the most important part is to see the association among all these three latent variables. There is a negative association between economic & personal perception, economic & social perception. But there is positive association between social and personal perception. It infer that, if economic perception increase than social and personal perception decline, which means, if importance of economic factors increases then importance of social and personal factors put aside or its influencing power reduce. And in other hand, personal and social has positive relation means if personal factors increase then social factors also increase.

In short, economic factors more influenced the perception than other factors. As the analysis infer that economic perception has negative relation with social and personal perception and in other hand social and personal perception has positive relation. Hence, youth preference of agricultural livelihood determine by economic, social and personal perception. Among these perception, economic perception has negative relation between social and personal perception which means even if socially and personally agricultural livelihood is not preferred but economic opportunities/prospect is more on agricultural activities then youths would ready to join. Similarly, even if economic opportunity or prospect is low youths would chose to be in agricultural activities if social and personal perception is high. Altogether, it infer that economic, social and personal perception has different degrees of influence on choice of agricultural activities as a livelihood by youth. Power of different perception to choose livelihood depend on one individual's priorities or values (may be economic, social and personal) attach to the livelihood.

The next analysis the Technical Efficiency of youths and factors affecting the efficiency by SFA method. Since there are few youth agripreneur in Sikkim, data from 30 agripreneurs have been collected (15 agripreneur from dairy farming and 15 farmers vegetable farming). The result suggests that the producing units are using more labour in proportion to other inputs. The result therefore shows a negative and significant impact on dairy production.

Further the LR test supports the justification for the use of SF function against the simple production function. The null hypothesis that the one sided inefficiency term follows a mixed Chi-Square distribution is accepted at 5 percent level of significance. The gamma value (γ) suggests that 98 percent of variation of the total variance is due to technical inefficiency.

In the inefficiency component δ_2 & δ_3 are statistically significant and have negatively significant on inefficiency i.e. 1 percent increase in δ_2 (educational level) reduces inefficiency by 41 percent and 1 percent increase in δ_3 (experience) reduces inefficiency by 3 percent (in round figure). The economic implication is that educational level of the farmer (producer) is acting as a significant shifting parameter for production of dairy output. Similarly experience of the farmer is an important and significant factor reducing inefficiency.

In case of vegetable farming, the mean efficiency score is 0.982 more than efficiency score in dairy farming. In both cases education and experience reduces inefficiency significantly. In case of vegetable labour, bullock, seed costs and manures are statistically significant. In case of dairy labour has negative and significant impact on value of output. Medicine and feed have positive and statistically significant. Altogether, efficiency analysis infer that youth has potential to change the fate of agriculture if they get proper technicality for this activities.

For attracting and retaining youth in agriculture, first and foremost thing is to motivate them on this line. Motivation determined by human needs like physiological needs, safety needs, social needs, self-esteem needs, self-realization needs and psychological needs. Among these, degree of needs at the time of professional choice matter a lot. Another factor which motivate youths in choice of livelihood is expected value of outcome and its support to achieve individual's goal. Altogether, self-satisfaction is major motivation to opt for profession but for youths this self-satisfaction arise only through its value of outcome and its nature of work. Hence, to attract young generation on it, farming must be uphold as economically and intellectually attractive. For this, it is essential to create awareness that agriculture is not only equated to farming but also includes many opportunities for entrepreneurship, including production, processing, and value addition, branding and marketing. However it is essential to recognize that youth have diverse aspiration and the regional conditions need to be judiciously taken into account while developing any initiative to attract and retain young people into agriculture and allied activities.

Altogether, factors which help to attract towards livelihood are determined by awareness and counselling about the profession, self-interest, possession of skills, family and social encouragement/pressure. On other hand, determining factors to retain in one livelihood are achievement of personal growth, work environment, socially respectful with rewards and recognition and self-realization of satisfaction. Even it is found in survey that majority of youth will select agri-tourism and agri-business in case of dearth in the opportunities in other sector. Interest on this could be the reason of its 'term' and value it oriented in mind, as tourism and business is a prosperous sector. This means, agriculture and farming as a term directly perceived as non-lucrative, hence, to attract and retain youth in farming its perceived notion in the mind of youth need to change and that is only possible if they get it in the form of education.

Therefore, study advocated the need of agricultural education as compulsory subject from school level (more focus on hand on experience) and in addition exposure to children in model farm and periodic agricultural exhibition as like science and technology and environment exhibition to showcase its prospect and innovative ideas. In general level, for present day's youths who are lying idle, provision of training from POP to supply chain followed by internship in model farm need to establish. After completion of internship allocate land and basic inputs, for this proper monitoring team need to establish to evaluate and to provide extension services until and unless he/she start fetching return from its produce. The study believes that, when return or earning started from farm produce it will automatically motivate youths to scale up their activities but till that time, proper execution mechanism needs to be established by government level. Until and unless it is not taken in mission mode, sustainability of agriculture will become question mark and lead to food insecurity and led to uncertainty for existence of life. Hence, everyone need to understand the fact that sustainability of agriculture sector and human existence has indispensable relation and act accordingly.

Suggestion

In Sikkim, as per official undisclosed sources 60,000 farmers are cultivating land, but study presumes actual number of farmers is less than this number. In this small state, government has schemes called OFOJ, in which government tried to provide one job (initially in casual form) per family in govt. sector to those who are domicile of state. Due to special provision in Indian constitution under article 371f, land is owned by domicile holders. So, there is gap in number between state population in census and domicile holder. The study want to suggests that under OFOJ provision appoint one member (especially young) from farming family to perform own farm duty instead of appointing for any other department just by paying some incentives. This will help to secure family income, given employment and mainly it will add the manpower to farming. The government should monitor their activity of cultivation through VLW and its production evaluation. Altogether, it will boost agricultural production and fallow land used productively.

Redistribution of fallow land among the land less people and new farmers (especially youths) who want to start new venture in agriculture. For this Land Bank provision needs to be established in which land owner can deposit his/her fallow land to the Gram Panchayat mentioning the some limited locking period and Gram Panchayat will allocate fallow land to

those who want to cultivate. This mechanism must be similar to the actual monetary bank function, in which people deposit their surplus money to bank under different saving schemes and later same money credited to needy in form of loan or other way round.

Livestock rearing and farming are complementary activity to each other. Ban on grazing may have positive impact on forest and greenery of state but it obstructs the farming structure. So, lifting ban on grazing (*Goath Palan*) and promoting it in existing *gaucharan* area and identify new pasture land for grazing is suggested. To prevent or minimize crop loss by wild animals, one of the best mechanism is to plant wild fruits trees in forest or to create edible forest to fulfill food requirement of wild animal as a long term plan.

Similarly, natural calamities and monsoon failure with periodic hailstone damages crop. So for all kinds of crop damages, respective department should have scheme to compensate crop damage within fortnight. For that, evaluation of damage need to be exercise in each farm field with the help field level staff in a manner that expected yield (considering amount of seed sown) in area as per past year trends of production need to be finalize. After estimation of expected yield of crop and its present value of market, that amount need to compensate by respective authority as a moral support to continue its cultivation activities.

In context of PDS, need of reclassification of beneficiary as per availability of land for paddy cultivation and its family requirement of food monthly/annual (considering cultural, festival requirement) is highly warranted. But before, this all other suggestion should be implemented. With respect to public work schemes local level authority need to monitor the activities as per norms. To sustain agricultural activities out of monetary trap PARMA, age-old social capital of sharing labour for agricultural activities, need to preserve and should be promoted.

For supply chain, strong farm produce collection network needs to be set up with micro cold storage for surplus produce with in village. The way Dairy chain is sustained (through Milk Union Cooperative) similarly other (especially daily need items like vegetable and other chain) also can sustain. Increase the availability of seeds and inputs in local level.

Farmers should be provided complete autonomy in deciding the price of their produce. To accelerate the power of autonomy the Cooperative and FPO must be strengthen. Among with organic farming, more natural farming practices need to be adopt for sustainability by preserving and promoting indigenous seeds and technique. In context of

Sikkim, small farm size is more productive than large, as study infer, and Sikkim's natural physiology also as such where small farm is possible. So for volume of production, collective farming can be alternative solution, as observed in the study area. Efficient functioning of FPO and Cluster projects can help farmers for both backward and forward linkages for farm production. But for this convergence of all the farmers' scheme from different agencies under one umbrella can be effective.

Parents and Society do generally not supportive to encourage new generation to step up for farming, by pointing farming is not a profession for educated. Hence, society and parents should inculcate the value of education not only for jobs but to make meaningful and productive life. In addition, education system need to create the equal value for every sphere of work and to make life meaningful but not successful. Compulsory agricultural education subject should introduced from school level. In addition, allocate farming land for each school for its practical purposes. For this appoint agricultural graduates, which will help to solve some unemployment problem in short term and in long term it will generate manpower for farming. In addition, organizing agricultural exhibition for student and youths for circulation of new and innovative ideas just like science & technology, environment exhibition at school level should be promoted. And periodic exposure visit to model farm near to school region.

Linkage of banks, credit agencies and marketing agency help the farmers to have quick and effective access. Further farmers and youths must be have role at policy making level. Periodic rewards and recognition for youth farmers/agripreneur. As a socio-economic security, for initial period there should be monthly financial incentives, fixed provision for medical facilities for youth farmers and his/her dependencies and security as pension for old age. These three are major concern, so for that govt. can make mechanism of registering youth farmers and provide them guarantee by putting condition that they should continue farming, for that monitoring and evaluation team including village level worker (VLW) of agricultural department need to be set up.

To, conclude youths are backbone to the economy and society. Their immense skill can have lot of contribution in agriculture which is in jeopardy. They can bring all kinds miraculous changes not only in agriculture but in the economy provided they are properly recognized and are assigned prominent role as per their skills. Their participation will bring a sea change when agriculture will be intellectually and economically accepted.