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Surplus Generating Agriculture in Marginal-Fragmented Holding: The Social Engineering of Product Marketability and Compliances

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Abstract—*The Social engineering of small farm productivity and entrepreneurship has stated offering new dimension of researches on social ecology and market driven farm entrepreneurship. New alluvial zone of West Bengal, blessed by both bounty of nature and humane skills for agriculture and allied enterprises, has also been an arena of new end research on social ecology. The good quality of vegetables, rice and floricultural crops are grown , especially in Nadia and North 24 Pgs Districts, at the same time, the farmers are tirelessly striving with the experiments on new varieties and innovation blended with community know how and do how. While productivity and quality are one of the best in India, farmers are suffering from market constraints and non-functioning supply chain. The brunt of climate change and vagaries of marketing behaviour are posing conjunctive threats to ongoing farm and farm enterprises. The situations are very common wherein better and higher productions are not supported by performing market, leaving behind frustration of market price denials and access defiance. Methodology: The present study incorporates 18 agro-economic and techno-managerial predictors to estimate the marketed and marketable surplus generated in vegetable crop enterprises by the farmers in two villages under Bangaon Block of North 24 Pgs of West Bengal. Eighty respondents were selected by following both the purposive and probability sampling methods, Statistical tools: Multivariate analysis technique was applied to estimate the impact and interaction of the predictor variables on the Predictants, the marketed and marketable surplus in vegetable enterprise.. Empirical result: It has been evinced that the variables Land size, Decision Matrix, Education and Family Size have recorded substantive impact on Marketable surplus, while the other variables, irrigation, energy consumption, fuel consumption have been the significant contributors to marketed surplus. It is interesting to note that, Land size in most cases has exerted the highest indirect effect on marketable surplus to susses that land is the single most important factor to characterize the transformation process of vegetable enterprise from subsistence farming to a profitable farm entrepreneurship, which is extremely important for an agrarian economy predominant by small, fragmented but enterprisingly promising holding. The other component of revelation stands out that fertile soil, available ground water and fast moving urbanization process come together to catalyze the process of spearheading marked-led and market-fed agricultural enterprises in this alluvial agro-ecology oh India.*

Keywords*: Social Engineering, farm enterprise, marketable surplus, marketed surplus, urbanization process.*

1. INTRODUCTION

Creating entrepreneurship through generating marketable and marketed surplus offers both challenges and scopes for farmers of small and fragmented holding.. For farmers of small holding, enterprise comes later subsequent to its to the fulfilment of its requirement for food security (Das,Subhadip,2013). Of one hundred twenty five million small and fragmented holding of India, 70 percent and more are suffering from issues of food security, entrepreneurship as a proposition is both critical and challenging to them (Jasuja, S. , Bhati, D. S, 2009). The process of transforming biological produces in to entrepreneurial product needs change in social engineering of combining input-management-outputThe pace of modernization in cultivation of paddy and vegetables has been characterised with dicta of small and medium entrepreneurship. Even the marginal farmers have started creating marketable surplus in this area after satisfying their subsistent need has been a good indication for driving a low key traditional agriculture to a surplus generating farm enterprise. The present study has been conducted to elucidate the level of farm entrepreneurship in the form of marketable surplus which has to be estimated in terms of agro-economic and socio-ecological factors.

The **objectives** of the study are as follows-

1. To estimate both marketed and marketable surplus from small holding in terms of a score of agro-economic and socio-ecological factors.
2. To generate a relational analysis between independent and dependent variables i.e Marketable and marketed surplus.
3. To delineate a micro level policy, so much so, the constrains and prospects of marketed and marketable

surplus can be analyzed, and intervention programs can be operationally described

2. METHODS

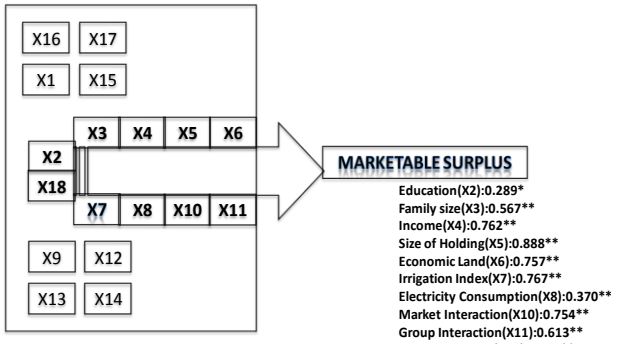
The present study was conducted in districts North 24 Parganas. The village Bhanderkola of Bongaon block in North 24 Parganas district of the state West Bengal were selected for the study. Purposive as well as simple random sampling techniques were adopted for the study. For selection of state, district, block and gram panchayat purposive sampling techniques was adopted because the area was ideal for entrepreneurship study, convenient for researcher to access and having the infrastructural facilities and in case of selection of villages and respondents simple random sampling technique was taken up. Before taking up actual fieldwork a pilot study was conducted to understand the area, its people, institution, communication and extension system and the knowledge, perception and attitude of the people towards farm entrepreneurship concept.

The following statistical tools were used for analysis of data viz. Mean, Standard deviation, Coefficient of Variance, Correlation of coefficient, Multiple regression analysis, and Path analysis.

3. RESULTS AND DISCUSSION

Two sets of analyses were carried for both marketable and marketed surplus, covering same tools of statistics ; co-efficient of correlation, step down regression and path analyses just to have a comparative look into the nature of entrepreneurial development in small and fragmented holding.

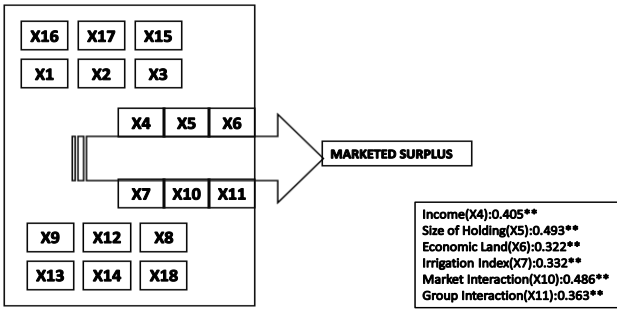
Model-1: Coefficient of Correlation Between Marketable Surplus and 18 Independent Variables



** Indicates, Correlation is significant at 0.05% level of significance(2-tailed).*
*** Indicates, Correlation is significant at 0.01% level of significance(2-tailed).*

Model-I : Here, the predicted character Marketable surplus has been characterized by the variables, education , family size, Income , size of holding ,economic land , irrigation index, Electricity consumption, market interaction, group interaction and risk orientation . These imply that with the importance of socio economic character and the improvement of socio economic condition, the entrepreneur efficiency of farmers has also been increased, which is reflected in the significance values.. The, irrigated agro eco system is not only characterized with higher yield, but also higher marketable surplus. The electricity consumption, market interaction, group interaction and risk orientation are basic indicators for enterprising agriculture.

MODEL-II : COEFFICIENT OF CORRELATION BETWEEN MARKETED SURPLUS AND 18 INDEPENDENT VARIABLES



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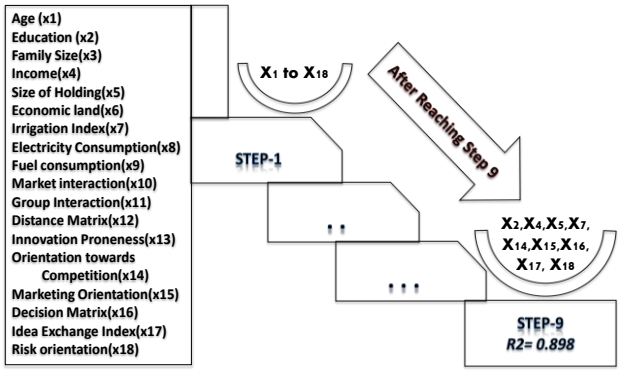
*.Correlation is significant at the 0.05 level (2-tailed)
**. Correlation is significant at the 0.01 level (2-tailed)

Income, size of holding, market orientation have been found directly and dominantly related with marketed surplus, which reveal that marketed surplus can better be predicted from higher income, higher land size and better market orientation . The group and market interaction have been instrumental in engineering the market led and market driven agricultural entrepreneurship. Irrigated agro-ecosystem has been better mover on entrepreneurship creation and management, resultant to marketed surplus.

Model-III : Step Down Regression Analysis between Marketable surplus vs. 18 Causal Variables



Dependent Variable: Y2; R = 0.947, R2 = 0.898, Adjusted R2 =0 .875

Model III; The contributory variables that characterize the generation of marketable surplus are education , income , size of holding , irrigation index , orientation towards competition , decision matrix , idea exchange index and risk orientation . The change in education , income , size of holding , irrigation index , orientation towards competition , decision matrix , idea exchange index and risk orientation have all contributed to transform low producing agriculture into surplus generating marketable enterprises. TheR^2 value being, 0.898, it is to infer that the combination of these 9 variables has been able to explain 89.80 % of variance embedded with marketable surplus.

MODEL-IV: STEP DOWN REGRESSION ANALYSIS BETWEEN MARKETED SURPLUS VS. 18 CAUSAL VARIABLES

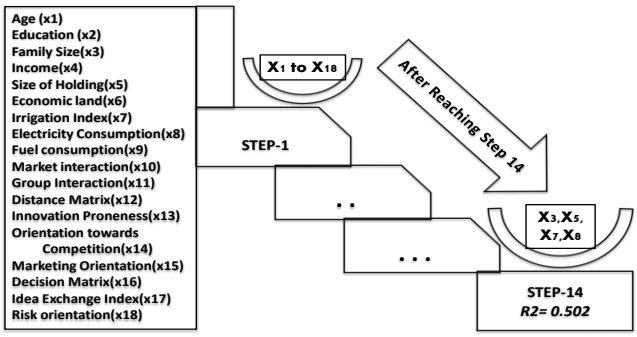
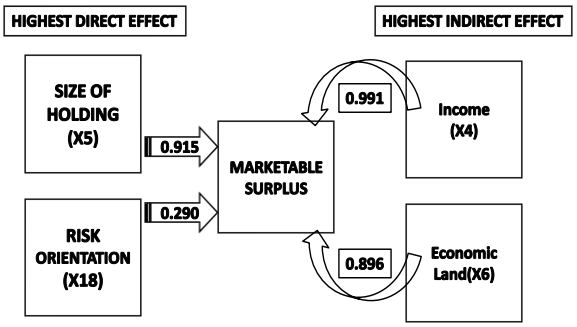


Table-2: Presents the step down analysis and it has been found that after reaching the step 14, the following variables have been retained, those are family size (X3), size of holding (X5), irrigation index (X7), electricity consumption (X8). The results indicated that, the firms having connectivity of source of electricity and better irrigation facilities are generating higher level of marketed surplus.

MODEL-V: OPERATIONAL AND CONCEPTUAL MODEL ON PATH ANALYSIS: MARKETABLE SURPLUS VS. 18 INDEPENDENT VARIABLES

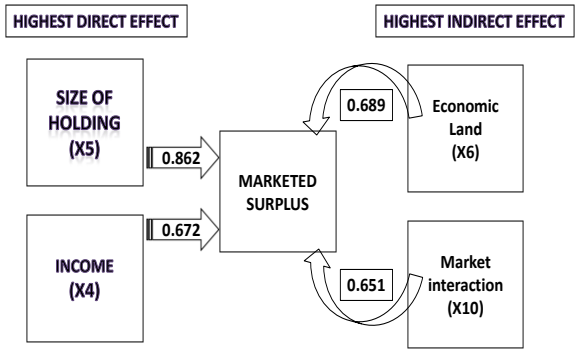


Residual Effect(R): -17.54

The R^2 value been 0.502, it is to conclude that the contribution of these 4 variables have elicited 50.20 % of the variance embedded with the consequent variable i.e. marketed surplus.

Model-v Presents the path analysis Marketable Surplus and18 independent variables and it has been found that the variables, size of holding and risk orientation have exerted dominant effect on Marketable surplus by the operating farmers. Interestingly, the variable income and economic land have substantive indirect effect on marketable surplus. This might be reason that size of holding and risk orientation as such cannot characterise the generation of marketable surplus unless it is being operationally supported by other variables like income and economic land. The residual effect implies that even with the combination of 18 exogenous variables there has been 17.54% variance in marketable surplus cannot be explained.

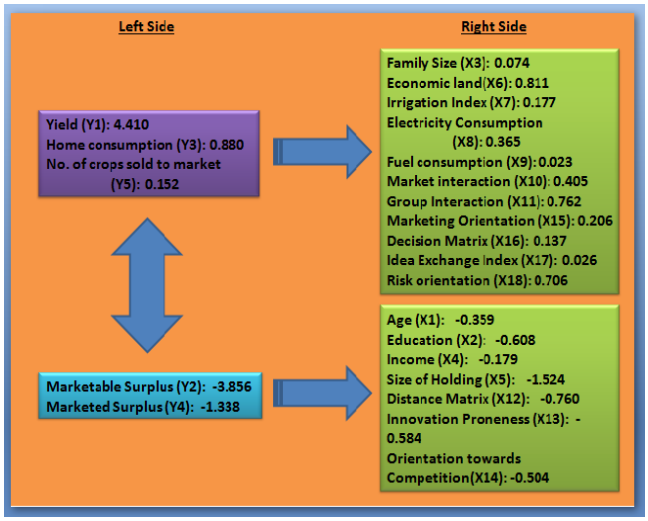
MODEL-VI: OPERATIONAL AND CONCEPTUAL MODEL ON PATH ANALYSIS: MARKETED SURPLUS VS. 18 INDEPENDENT VARIABLES



Residual Effect(R): -18.39

Model-VI presents the path analysis where in the total effect R value has been decomposed to direct and indirect effect. Here two variables based on importance have been considered for revelation. It has been found that the variables, size of holding and income, have exerted the highest direct effect in order of importance to imply that these two variables have gone strongly positive in generating marketed surplus. So, the respondent having higher income and size of holding have been able to generate more marketed surplus. The other variable family size have exerted substantial direct effect in a negative direction which implies that small the size of family higher the generation of marketed surplus. The economic land and market interaction have been found to exert higher indirect effect in order of influence to imply that in the process of generating marketed surplus these two variables have got substantive associating impact. The residual effect implies that even with the combination of 18 variables, there has been 18.39 per cent variance marketed surplus remains unexplained.

Model-VII: Canonical Covariate Analysis, interaction between *left side* (Dependent) and *right side* (Independent) variables.



Model-VII presents the canonical covariate, where in, the whole set of variable has been divided into ***left side*** **and** ***right side*** **variables**. Canonical covariate analysis is generally carried out where the number of dependent variable is more than one. It has been found that the left side variable have been sub grouped into two clusters of Y variables. In the sub-group 1 the variables are yield (Y1), home consumption (Y3) and number of crop sold to market (Y5). And all these are having positive signs vice Family Size, Economic land, Irrigation Index, Electricity Consumption, Fuel consumption, Market interaction, Group Interaction, Marketing Orientation, Decision Matrix, Idea Exchange Index and Risk orientation.

So, there constellation of left side variables, rice yield, home consumption and number of crop sold to market have recorded an interactional affinity towards the selected right variable which are mentioned above. Other sub-group of variable that is marketable surplus and marketed surplus have shown clear behavioural conglomeration while they show their affinity to right selected variables vice Age, Education, Income, Size of Holding ,Distance Matrix ,Innovation Proneness and Orientation towards Competition.

Thus, these canonical analysis have presented a clear bent one strategic implication where in the five dependent variable have shown a canonical sub grouping and at the same time a clean, selective and clandestine interaction with right side variable.

4. CONCLUSION

Hunger is the worst denial to humanity (Popielarski, J. A. ; Cotugna, N.2010). A dedicated monthly income from even a tiny holding and a proportion of fecundity to generate livelihood can save the million from starvation and social coercion. Even the kilogram of marketable surplus and even a lesser proportion to marketed surplus by small farmers have billion words of success and security, especially for the Indian farmers. The study splendidly reveals this social engineering of mixing land size with market orientation or decision matrix with idea exchange index, only thing goes immensely important whether this all will find a policy support and executioner's reality at the grassroots.

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