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Prescriptive model of twenty-one-point programme on retention of rural youth in agriculture

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Abstract

Agriculture is one of the major sources of the Indian economy where more than 60 percent of the population depends on it for survival. The increase in population size directly affects economic growth in the agriculture field. Over the past decade, many researchers have addressed this problem and provide solutions for the retention of rural youth in agriculture and methodologies for effective implementation of projects for rural youth. Most studies have only focused on the effective implementation of schemes, projects and programmes of youth development but till date challenged to retain rural youth in agriculture. This present study used an exploratory research design with a sample of 300 rural youth of Nagpur and Yavatmal district of Maharashtra state. Hence this paper is based on the field experience and major findings of research outcomes. The prime challenge for the stakeholders is “How to retain rural youth in agriculture”. The prescriptive model is multidisciplinary, focusing on all the possible ways and means for retaining the rural youth in agriculture and providing them handhold support to stay in agriculture. The twenty-one-point programme on RRYA - 2021 consists of 21 indicators and 77 sub-indicators items considered for computation of retention index. The proposed model is designed with the objective of retention of rural youth in agriculture.

Keywords: Prescriptive model, retention, agriculture, rural youth

1. Introduction

The global population is predicted to be around 8.0 billion by 2025 and 9.0 billion by 2050. Youth would represent around 26 percent (FAO, 2014) ^[4] global population. It's well-known that the Asia-Pacific region is incredibly young, because, it's home to over 60 percent of the world's youth. The Asia-Pacific region supports 70 percent of the world's agricultural population with one-fifth of the world's landmass. Youth are a very important asset of our country which are full of energy and enthusiasm. They are the future communities of states and nations. Youth are the foremost powerful division of the population of a country. They are the backbone of the country. Agriculture remains the key sector, providing livelihood and employment opportunities to over 60 percent of India's population living in rural areas. Overall, within the developing world, youth and agriculture are the twin pillars of progress and prosperity, especially for achieving sustainable development goals (Paroda *et al.*, 2014) ^[6]. This noticeably seems to reflect a bright future since around half of this population (nearly 200 million) lives in rural areas, which may well be motivated and attracted professionally to agriculture and allied fields. Contrary to the present situation only around five percent of the agricultural youth is currently getting engaged in agriculture (TAAS, 2018) ^[9].

Census, 2011 revealed that we have 95.8 million cultivators for whom agriculture farming is their core profession and which comes about 8 percent of the population (Down from 103 million in 2001 and from 110 million in 1991). If we include all marginal cultivators (22.8 million) which continue to be but 10 percent of the total population. India is losing about 2,000 farmers every single day and since 1991, the general number of farmers has dropped by 15 million (Sainath, 2013) ^[7]. Sixty-five (65%) percent of people of India live in rural areas and 35 percent in urban areas. The percentage residing in urban areas has doubled in 2020 from 17% in 1950 and is expected that half of the Indian population will be in urban areas by 2050. The share of rural youth in the total population has been increasing continuously from the level of 30.6 percent in the year 1971 to 34.8 percent in the year 2011. And after this, it is expected to decline and their share will come down to 31.8 percent by 2031 (CSO, 2017) ^[3].

The existing situation of rural youth engaged in the agricultural sector, becoming a threat against the improvement of agricultural sector performance in the future, is the rural young generation's low interest in and motivation to work in the agricultural sector.

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The data shows. That, the maximum number of operational land holders (33.7%), belonged to the age group of 41-50 years, followed by 33.2 percent in the age group of 51-60 years out of 100 million farmers in India. While this generation is reaching the age of retirement, the next one does not want to farm (Mahapatra, 2020) [5].

The investment in youth in agriculture remains minimal, as there are just some youth-focused programs and thus, few clear samples of impact. Nevertheless, the Indian Council of Agriculture Research (ICAR) and departments of Agriculture in many nations are recognizing the farmers including the young and innovative ones for the innovative and diversified farming ventures preoccupied with them. Many young farmers are taking over high-risk high returns agri-ventures like protected agriculture, precision farming, organic agriculture, floriculture, medicinal and aromatic plant cultivation, food processing, value addition, agro-tourism, etc. which are mostly avoided by the aging farmers. These new agri-ventures should be actively supported by the government agencies and financial institutions with skill training, financing and marketing support.

Youth participation in agriculture can solve the crisis of unemployment and migration. Questions required to be answered are whether the agriculture sector has enough prospects to provide decent livelihoods to youth, how youth are motivated to take up farming and farm-related businesses, and most importantly, whether leveraging youth for agriculture is an instrument for modernization and future growth of Indian agriculture. (Sukanya Som, *et. al.*, 2018) [8]. Retaining rural youth in agriculture is critical for Indian farming. Most of the innovations (both technical and institutional) required a talented agriculture workforce. Young farmers and producers often have a greater capacity to adopt innovation and entrepreneurship than older farmers. The genuine solution is to take a position of “the rural youth of today, the farmers of tomorrow”. Based on study findings of 21 retention indicators to formulate the “Perspective model of the twenty-one-point programme on retention of rural youth in agriculture” are expected to contribute significantly towards the worldwide and national efforts of skyrocketing production and ensuring food security through increasing rural youth retention in agriculture.

1.1 Methodology

In the present study, an exploratory research design was used. The present study was conducted in two districts of the Vidarbha region of Maharashtra state *viz.*, Yavatmal (from Amravati revenue division) and Nagpur (from Nagpur revenue division). Three talukas from each district and five

villages from each taluka were selected on the basis of the highest rural youth population, thus from 30 villages, a sample of 300 rural youth were selected as respondents from these villages by using a random sampling method. The rural youth (male and female) with the age group of 16-30 years who must have been engaged in agriculture farming was considered respondents in this study.

For the measurement of retention index of rural youth in agriculture, the procedure adopted by (Anamica, 2013) [11] was used with necessary modifications. For systematic and accurate measurement of the retention index of rural youth in agriculture. The 21 major indicators with 77 sub-indicators selected on the basis of the result 98 experts or judges of different institutions.

The finishing inventory of indicators was subjected to expert opinions. The experts or judges were from the cadres of Assistant Professor and above in teaching, research and extension faculty of social science group of Dr. PDKV, Akola and other agriculture universities throughout India and scientist working in ICAR Institutions.

Taking into consideration relevancy weightage, the indicators were screened for their relevancy. Accordingly, indicators having relevancy weightage of more than 0.76 were considered for inclusion in the retention index. Using this procedure, twenty-one indicators were selected under the Retention index. The rural youth were asked to give their responses based on a five-point continuum scale *viz.*, Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (D) and Strongly Disagree (SDA), for which the score was assigned as 5, 4, 3, 2 and 1, respectively. Sub indicators were sequenced as per their weightage under major indicators. The actual facts were collected personally with the help of a structured pre-tested interview schedule and data were analysed by suitable statistical methods to get a meaningful interpretation and obtained each indicator score used for the groundwork of prescriptive model of the twenty-one-point programme on Retention of Rural Youth in Agriculture (RRYA).

2. Results and Discussion

The result of step-down multiple regression analysis of 15 independent variables and retention index as a dependent variable the findings depicted in Table 1, it is worthy to mention here that out of the fifteen independent variables under the study only six variables *i.e.*, education, farming experience, family occupation, annual income, economic motivation and training received had significant contributions in deciding their retention in agriculture. These results provide evidence about the important role of six significant variables in attaining higher retention in agriculture.

Table 1: Step-down multiple regression analysis of personal, socio-economic, psychological and communication factors with retention in agriculture

Sl. No.	Variables	Regression co-efficient	SE of regression coefficient	't' value
	Intercept	0.0007	0.0389	0.0176
1	Education	0.4364**	0.0507	8.6092
2	Farming experience	0.0925*	0.0433	2.1385
3	Family occupation	0.1156*	0.0453	2.5533
4	Annual income	0.1403*	0.0545	2.5738
5	Economic motivation	0.1314**	0.0459	2.8659
6	Training received	0.1144*	0.0549	2.0826

*= Significant at 5 percent level, **= Significant at 1 percent level $R^2 = 0.5659$, $F = 24.68$ **

Table 2 reveals the contribution of independent variables towards the retention level of rural youth. The results confirmed that out of 15 independent variables like education (43.75%), annual income (07.66%), farming experience

(01.54%), economic motivation (01.16%), family occupation (01.01%) and training received (00.66) were found to be significantly contributing to the retention of rural youth in agriculture.

Table 2: Contribution of fifteen independent variables to the retention of rural youth in agriculture by using step-down regression

Sr. No.	Variables	Multiple R	R ²	Change in R ²	Variation expressed (%)
1	Education	0.661	0.437	0.437	43.75
2	Annual income	0.717	0.514	0.076	07.66
3	Farming experience	0.728	0.529	0.015	01.54
4	Economic motivation	0.735	0.541	0.011	01.16
5	Family occupation	0.742	0.551	0.010	01.01
6	Training received	0.746	0.557	0.006	00.66
7-15	Others (09)				00.80
	Total				56.58

R² = 0.5659

The calculated R² value was 0.5659 which means that selected variables had contributed to the tune of 56.59 percent of variation in retention level of rural youth in agriculture.

The plausible reasons might be that personal, socio-economic, psychological, communication and others characteristics of rural youth were the deciding factors of retention of rural youth in agriculture. Independent variables have synergic effects to one another, helping each other to have a positive relation to the aspirations and retention of rural youth in agriculture.

2.1. Retention Index

In this study, retention of rural youth in agriculture has been

operationalized as empowering and keeping rural youth in rural areas to take up agriculture as a profession for sustainable livelihood in society. The existences of selected indicators are important to the retention of rural youth in agriculture.

The twenty-one major indicators are included in the retention index. Each major indicator has been analysed with sub-indicators. Each major and sub-indicator were already subjected to standardization procedure.

From the obtained scores, indicator-wise index scores were calculated. The results are presented in Table 3.

Table 3: Indicator wise Retention Index Score

Sl. No.	Retention Indicators	Mean Index Score
1	Skill development	76.00
2	Family income	75.80
3	Affiliation	75.60
4	Intrinsic motivation	75.40
5	Autonomy (Self-sufficiency)	75.20
6	Access to market	75.00
7	Quality education	74.40
8	Access to technology	74.40
9	Employment policy	74.40
10	Perception	74.20
11	Access to agricultural input	73.40
12	Aspiration	73.40
13	Health care services	73.00
14	Exposure to agribusiness management	72.60
15	Reward and recognition.	72.60
16	Social support	72.40
17	Access to farm mechanization	71.80
18	Access to finance services	70.40
19	Government schemes	70.20
20	Access to digital technology	69.60
21	Agricultural policy	69.00

It could be inferred from Table 3 that, the indicator wise index scores for the twenty-one components were skills development (76.00), family income (75.80), affiliation (75.60), intrinsic motivation (75.40), autonomy (75.20), access to market (75.00), quality education (74.40), access to technology (74.40), employment policy (74.40), perception (74.20), access to agricultural input (73.40), aspiration (73.40), health care services (73.00), exposure to agribusiness management (72.60), reward and recognition (72.60), social support (72.40), access to farm mechanization (71.80), access

to financial services (70.40), government schemes (70.20), access to digital technology (69.60) and agricultural policy (69.00), respectively.

Finally, the composite retention index worked out was (73.00). The indicator-wise discussions of the retention Index are presented below.

Prescriptive process model on retention of rural youth in agriculture (Fig.1) based on the field experience and major findings of research outcome.

The prime challenge for the stakeholders is “How to retain

rural youth in agriculture”. Keeping in view the outcome of the study, an attempt was made to retain rural youth in agriculture. The prescriptive model is multidisciplinary, focusing on all the possible ways and means for retaining the rural youth in agriculture and providing them handhold support to stay in agriculture

The twenty-one-point programme on Retention of Rural Youth in Agriculture - 2021 consists of 21 indicators and 77 sub-indicators items considered for computation of retention index. The details of each of the 21 indicator points included in the model are as follows.

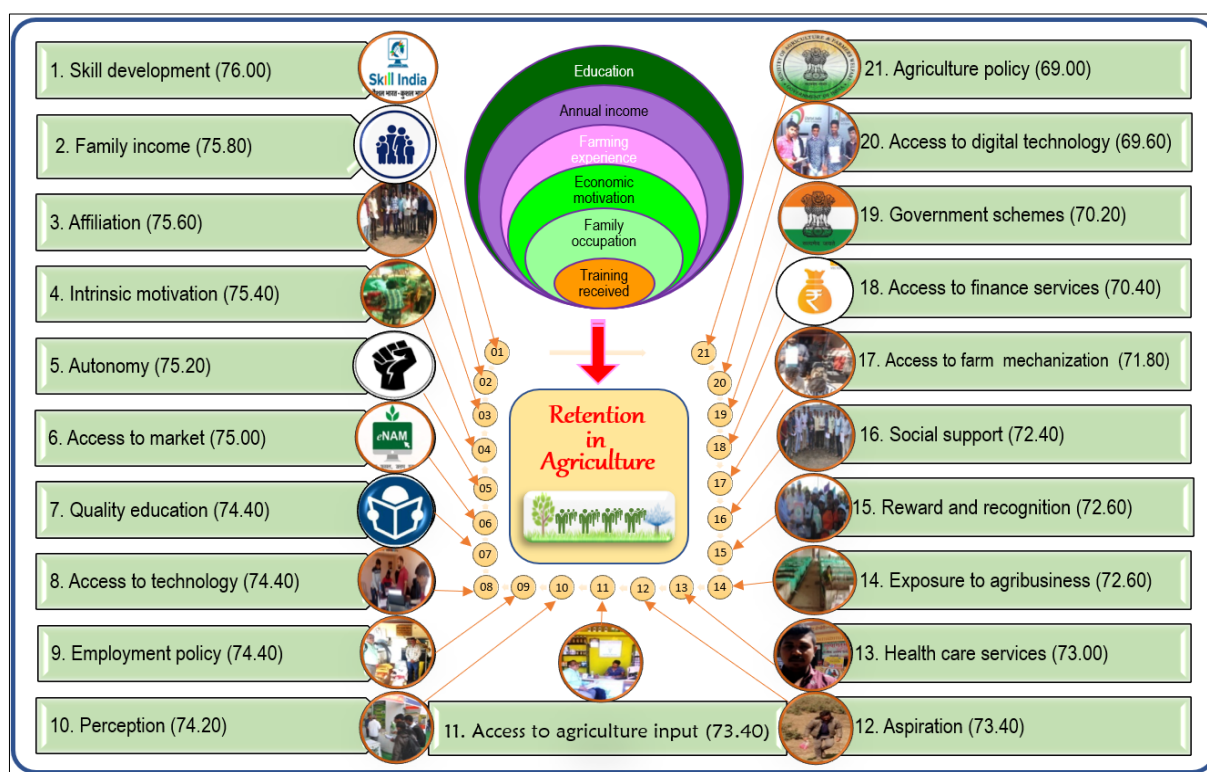


Fig 1: Prescriptive model of the 21-point programme on retention of rural youth in agriculture

3.1.1. Skill development

Skill development is the most significant factor for the well-being of the rural youth in agriculture. The majority of the rural youth in agriculture were found to be poor in their skills essential to meet the challenging demands of the dynamic agriculture activity. Campaign-oriented extension activities must be taken up in the form of specialized multidisciplinary training programs with the latest cutting-edge technology demonstration which will enrich their skill components.

3.1.2. Family income

Family income is a major determinant of the economic status of rural youth. Every rural youth’s standard of living is decided to a great extent by his regular and reliable family income from agriculture and allied occupation. Lower-income can create difficulties in managing the economic and social affairs of the family. Steps required to be taken for engaging family members properly in planned agriculture management and made the availability of need base modern technology in agriculture so they can achieve strong economic stability in their family.

3.1.3. Affiliation

It was found to be a more perceived attachment to agriculture. The only agriculture business is an important activity for livelihood and employability in a rural area. The strong in-group team spirit of farm families of these rural youth would have prompted their affiliation towards agriculture. It needs a plan for encouraging their forthcoming generations to engage in agriculture.

3.1.4. Intrinsic motivation

The rationale behind it is their enthusiastic outlook towards agriculture as a profession because they feel self-satisfaction as they can provide food for people and other living beings. The rural youth need to be made aware about a scope/prospectus for skill variability, task identity, task significance, substantial freedom to innovate suitable technology in agriculture with a high level of recognition from stakeholders in the field of agriculture.

3.1.5. Autonomy

Most of the rural youth aspired to attain more independence in their profession. They must be encouraged by providing essential opportunities in the agriculture sector so that he takes his own decisions to decide and manage resources in near future on their own.

3.1.6. Access to market

Favourable marketing policies are needed to develop and encourage rural youth in their agriculture activities. Hence there is required to be strict control and regulatory system to supervise the cost of inputs as well as the minimum support prices for the produce. As well as rural-urban roads, cold storage, warehousing, market yards, input supply agencies and other essential facilities are essential. The rural youth engaged in agriculture need to be created awareness on all the sources of export farm products and e-marketing opportunities in agriculture products.

3.1.7. Quality education

A possible remedy for this is to introduce agriculture education like science, commerce and arts as one of the subjects in the school level itself and exposing the school children and youth at higher education level about the farming practices and agricultural entrepreneurship which will help them to realize the importance of farming and the necessity of taking it as the profession in future. When some of them finally take agriculture as an occupation and due to awareness regarding agriculture knowledge and skill they can be engaged in a farming better way and also create a valuable asset to the family and encouraging their forthcoming generations to engage in agriculture.

3.1.8. Access to technology

The justification behind it is their enthusiastic outlook. The digital platform should be provided to the rural youth engaged in agriculture and allied sectors not only to enhance productivity and efficiency. The current digital sector is improving day by day and developing with sophisticated features like convenient access to different improved agriculture technologies at the fingertips. Different web portals on Artificial intelligence (AI), Expert system (ES), Decision Support Systems (DSS), market information and agri-business firms, different mobile apps on technologies related to production, access to finance, trading, markets, and consumption are flourishing enormously. Consequently, the liability of government to set up necessary information center's in rural areas.

3.1.9. Employment policy

The rural youth accepted that agriculture is a better option at the present situation and can take up agriculture with value addition for different farm produce and establish their own enterprise which can generate employment in rural areas because of wider/diversified opportunities available in agriculture. At present paradigm shift from primary production activities to secondary activities especially value addition, post-harvest handling through processing of farm produce is vital to improve agri- entrepreneurship and also prevent wastage of farm produce. This helps to development of entrepreneurial culture among rural youth. They must be encouraged by providing crucial venture capital required to set up the enterprises with sophisticated infrastructure in rural areas. It helps to retaining of rural youth in agriculture.

3.1.10. Perception

The rural youth believed that agriculture is a primary occupation that would be the best profession for them because a career in agriculture is noble and blessed as they are working with the soil. The farmer's lifestyle is a very busy and hectic one and multi-tasking. A lot of tasks and works must be completed every day to achieve their ultimate goal.

3.1.11. Access to agricultural input

High-input farming may generate high yields in the short term. Quality of output depends on the quality of inputs, present farm inputs are of very poor quality in some of the cases and misleading advertisements are causing huge losses in the agriculture sector. Strict vigilance towards the quality of all types of inputs is necessary. It is also important to educate the rural youth about the quality parameters of different inputs and evaluations. Input subsidy is one of the significant factors to reduce the financial burden. But

technology is improving day by day and the expenditure on production is also rising. At this moment there is a need for subsidies that will support the rural youth in farming to use all such innovative technologies for getting high returns.

Therefore, rural youth suggested the agricultural credit to be made available at a reduced rate of interest in time and needs to be sanctioned to purchase the inputs at the subsidized rates for them.

3.1.12. Aspiration

Rural youth have the aspirations of attaining a stable economic, social status, material and property possession. Additionally, the researcher was able to observe an intricate relationship between the educational status and the aspirations of rural youth. On contrary, it was interesting to note that the educational attainment of the rural youth did not discourage aspiring for a better economic and social status.

3.1.13. Health care services

The present studies explored access to health care for rural youth. Rural youth experience poorer access to health care services in rural areas as compared to urban areas. They need more improvement in services available in villages for increasing retention of rural youth in the villages.

3.1.14. Exposure to agribusiness management

The reason behind it would be that the rural youth who are currently involved in agriculture, it is energetic will help them to expand their talents in several aspects of management of agriculture, horticulture, livestock production, marketing, finance and employment skills in rural areas. The agriculture department's integrated different training approaches regarding business management theories and practical skills so that they may respond to the needs of a modern agricultural sector.

3.1.15. Reward and recognition

The rationale behind it would be the reward and recognition are the expectations of the rural youth in receiving appreciation and high opinion from family and social system while practicing modern agricultural technologies in his/her profession. Such an approach needs to give strategic importance at local, taluka, district, state, regional and country levels to ensure rural youth's inclusive growth in agriculture.

3.1.16. Social support

The majority of the rural youth felt proud being a young farmer and felt happy about their increase's social status in society if they are retaining in agriculture. Rural youth needs high level of social support due to which they experience less stress when they are in stressful situations and are able to cope with stress more successfully. It helps to motivate rural youth to retain in agriculture.

3.1.17. Access to farm mechanization

During the ground visits, the researcher was able to observe the subdued opinion possessed by the rural youth towards farm mechanization in agriculture. There is a need to promote bank-linked sufficient credit facilities with subsidies for farm mechanization and entrepreneurship involving trained rural youth from the same village. Farm mechanization centers with custom hiring options should be promoted.

3.1.18. Access to finance services

Responses obtained from rural youth revealed that finance, banking, crop insurance and credit facility were the primary preferred crucial requirement of rural youth in starting profitable and sustainable agriculture. If credit institutions have given the right support, these youth enterprises can succeed and they will retain in agriculture.

3.1.19. Government schemes

Rural youth were found to be interested in contribution and involvement in the planning process of different schemes/projects/ policies/programs for self and rural development. Most of the younger generation suggested that government should make available a single-window information system that should be developed for rural youth.

3.1.20. Access to digital technology

The justification behind it is their enthusiastic outlook. The digital platform should be provided to the rural youth engaged in agriculture and allied sectors not only to enhance productivity and efficiency. These rural youth should be taught what great amount of information these devices can provide and are easily available on hold and how their correct utilization can make them own boss. It is of prime importance to maintain proper connectivity of data speed in a rural area.

3.1.21. Agricultural policy

From the field-level survey, observed that the government is on track for achieving the target of doubling farmers' income by 2024. On the same side will also provide a unique opportunity for rural youth to start Agri-tech start-ups with a commercially viable solution. The government of India has and is announcing multifarious policies. These policies are based on the principle of social inclusion, gender equality, sustainable development and felt need of the rural youth living in a rural area. The implementation of those policies at the ground level is most important.

3. Conclusion

The recommendations of this prescriptive model suggest the necessity or need for a concentrated effort of extension agency on skill development, increasing in family income, institutional affiliation, training on motivational aspects, make them self-sufficient, easy access to market information, facilitated quality education in rural areas, easy access to technology, with better employment policy, increases perception towards agriculture, supply of quality inputs, increase aspiration, better health care facility, training on agribusiness management, innovative rural youth facilitated with reward and recognition at various levels, gives more social support, avail facility of custom hiring centre for farm machinery, better access to financial services, proper implementation of government schemes, availability of high speed ICT connectivity and involving rural youth in agriculture policymaking to prepare reliable new image of agriculture that can help to the retention of rural youth in agriculture.

In this study, for measurement of retention of rural youth in agriculture retention index was developed and standardized, on the basis of results of retention index proposed a model on "Twenty-one-point programme on retention of rural youth in agriculture" this model consists of 21 indicators *viz.*, skill development, family income, affiliation, intrinsic motivation, autonomy, access to market, quality education, access to

digital technology, employment policy, perception, access to agricultural input, aspiration, health care services, exposure to agribusiness management, reward and recognition, social support, access to farm mechanization, access to financial services, government schemes, access to digital technology and agricultural policy. These indicators are very important in the development of a project or programme. Therefore, it is implied that policymakers, development agencies and extension functionaries should consider these indicators while preparing and planning programs or projects for the development of rural youth.

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