

## Prioritising Agripreneurial Skills Required for Farm Youth: A Fuzzy Analytic Hierarchy Approach

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### ABSTRACT

The present research attempts to prioritise the agripreneurial skills essential for farm youth to successfully run agripreneurship. The various agripreneurial skill dimensions and specific agripreneurial skills of farm youth were identified and compared through paired comparison method by the key experts. The weights for agripreneurial skills were then estimated and analysed by using a multi-criteria decision-making technique called fuzzy analytic hierarchy process. The agripreneurial skill dimensions and individual skills were also prioritised based on estimated weights. The research sample in the survey location consisted of rural youth of the state of Odisha, India. The sample size was estimated to be 250 individuals based on the selection criteria by purposive sampling technique from the five different agro-climatic zones. Strategic thinking skill dimensions were ascertained as the most important in priority order while opportunity recognition skills, resilience, agripreneurial motivation, agribusiness planning, and strong decision-making skills were prioritised as the top five essential skillsets crucial for the success of agri-enterprise. Perseverance, agri-logistic management, and effective communication were found to be more deficient among youth. These required prioritised agripreneurial skills can act as an instrument to screen the farm youth for agripreneurship orientation programs.

**Keywords:** Agripreneurship orientation, Composite index, Fuzzy analytic hierarchy process.

### INTRODUCTION

The role of youth in agri-food sector has received greater interest among rural communities and their ability to contribute to their farm families is emerging as a potential pathway to employment opportunities for young job-seekers. There have been large scale youth unemployment problems that can be tackled by education and skills training, behavioural change interventions, and promotion of agripreneurship among youth (Flynn *et al.*, 2017). Young people who are engaged in agriculture play a crucial role in ensuring food security. The enthusiastic, vibrant, innovative nature of them brings much needed dynamism to the agricultural sector. Incidentally, now a days, young people born

into farming families do not take up farming as an occupation and typically migrate to urban locations in search of educational and better career opportunities. This phenomenon is worsened by the depeasantisation whereby there is shifting of farmers from agricultural to non-agricultural sector for various alternate source of livelihood. There is also continuous decline in number of youths engaged in or who aspire to pursue agriculturally-related professions or careers. The demographic stability of farm sector is an important issue for sustainable engagement of human resources. In developed countries, such as the United States, in 2017, the average age of a farmer was about 57.5 years, compared to 50.1 years for an average farmer in a developing country like India. As a result,

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the farming sector is increasingly getting ageing. The youth withdrawal from farming is also emerging as a reasonably widespread norm (Leavy and Hossain, 2014). There have been very few developmental interventions which are successful in reaching young people and limited empirical attention has been given to shape youth as futures in agriculture. Farm youth are extremely important target group for agricultural development perspective in rural areas, as their dissociation from farming will deprive the sector from next generation successor. Many policy makers and development professionals propounded that the agricultural sector can be solution to the problem of youth unemployment and underemployment (Filmer and Fox, 2014). Large numbers of young people entering agricultural sector will accelerate the pace of change, and in the process, young people can shift from job seekers to job creators. Development programmes focus upon considering entrepreneurship as solution and an orientation to farming as a business with the new opportunities open to enterprising farmers through engagement with new markets, value chains, agri-business and information technology.

A shift from agriculture to agribusiness is an essential pathway to revitalise Indian agriculture as the youth are interested in more remunerative agriculture than the traditional agriculture, which is being practised since generations (Bairwa *et al.*, 2014). It has been found that the migration of young people from rural to urban areas and their dissociation from agriculture has been reduced through identification of entrepreneurial opportunities and engagement of farm youth in agripreneurship (Aliabadi *et al.*, 2016). Self-employment through agripreneurial initiative can be an effective pathway for generating income and retaining farm youth in rural areas. (Bhuiyan and Ivlevs, 2019). Encouraging agri-preneurship in rural area among the farm youths would be instrumental in changing the face of the country as the majority of the population

still lives in rural India. Youth can play various roles as an agripreneur like input providers, transporters, brokers, or village change agents (Franzel *et al.*, 2020). The current state of global economic meltdown, economic crises or recession around the world has created the need to develop proper agripreneurial skills or training among youth for proper opportunity utilization in order to turn economy capacity towards more productive youth. Although there are many youth who possess business ideas, only few have the capacity and ability to turn it into viable businesses (Shane *et al.*, 2012).

The socio-economic factors and perceptions do play an important role in motivating youth towards agripreneurship, as the entrepreneurial environment is often characterized by imperfect markets and incomplete information. According to the study by Magagula and Tsvakirai (2020), the economic perceptions like agricultural remuneration is attractive, it is a profitable business, prevalence for opportunities for promotion in agriculture, farming as a business, and agriculture creating employment strongly influence the intentions of youth to participate in agripreneurship. While agripreneurship is being promoted by many agencies and being researched by many extension scientists and students, very little effort has been put in to understand the basic agri-preneurial skills of youth belonging to farm family or the “farm youth”. Over the years, there has been also rise in new generation of young farmers who refuse to be part of the rural exodus and want to make their mark on their own in their rural locality by developing agri-enterprises that require tenacity, stubbornness and belief in their own capabilities (Milone and Flaminia, 2019). These entrepreneurial choices of young farmer that emphasizes on autonomy need them to manage scarce resources, which is considered to be strategic for the success of the farm. The young farmers give importance to technical and economic planning and on developing new products and establishing working relationships with

other stakeholders through collaborative action. Therefore, with these essential skillsets in mind, which are necessary to make agriculture remunerative, it is crucial to develop a set of indicators for the farm youth that can enhance their prospect to successfully run agri-enterprise. In order to compare various agripreneurial skills required by farm youth for enhancing profitability, prioritisation in accordance to the ground realities play an important role.

The present study attempted to find out the desired agripreneurial skills required for enhancing income and ascertain the skill gaps existing among farm youth of locale area with regard to agripreneurship.

## MATERIALS AND METHODS

The essential skills that are critical for farm youth to get success in agripreneurship and enhance the prospects of youth employment and pave pathway for transformation in agriculture sector are termed as the required skills for agripreneurship for farm youth. The study was quantitative and descriptive analytical in nature, descriptive in terms of proper identification of facts at field setting, non-experimental in terms of control of variables, and quantitative in terms of data collection method. The research design was also diagnostic in nature as the required skills for youth agripreneurship were determined. The study was conducted in the Odisha state of India, which consists of 10 agro-climatic zones and 30 districts. The sample size included 250 farm youth representing five different agro-climatic zones of the Odisha state. In order to have proper geo-spatial coverage and to have a representative sample from different zones, 5 districts were purposively selected from five different agro-climatic zones inclusive of two broad regions of state i.e., coastal and highland regions. These districts were Kalahandi (Western undulating zone), Mayurbhanj (North central plateau), Ganjam (North-Eastern ghats), Puri (East and south

eastern coastal plains) and Balasore (North eastern coastal plains). Two blocks were randomly selected from each of the 5 districts. Then, 25 farm youth in the age range of 15-34 years who were already engaged in agripreneurial enterprise for enhancing their income were purposively selected for the study in consultation with field level extension personnel. The agripreneurial enterprise included horticulture, mushroom cultivation, poultry, fishery, animal husbandry, integrated farming system, apiculture, vermicomposting.

In pursuance for finding out the required agripreneurial skills of farm youth, the indicators of agripreneurial skills were found out through focus group discussions, review of literature, and opinion of experts. A total of 37 agripreneurial skills selected under different dimensions were collected and tested for relevancy with 50 key experts. Finally, 25 indicators or sub-criteria under 5 skill dimensions or criteria were selected for the study. The indicators were selected on the basis of their relevance, analytical soundness, timeliness, measurability etc. A composite index was developed to measure the skill gap. The difference between the required skills and existing skills of farm youth with regard to agripreneurship was considered as the gap.

### Empirical Measurement of Required Agripreneurial Skills:

#### *Analytical Hierarchy Process*

Analytic Hierarchy Process (AHP) developed by Saaty (1980) is a method used for decision making with multiple criteria. Ratio scales were developed by pair wise comparisons with the help of AHP because human is never fully consistent. Principal Eigen Vectors were used for developing weight. The AHP provides means of decomposing the goal into a hierarchy of criteria, sub-criteria, and alternatives that can be more easily comprehended and



subjectively evaluated. The subjective evaluations are converted into numerical values and processed to rank each alternative on a numerical scale.

### ***Fuzzy Analytic Hierarchy Process***

AHP is widely used in decision-making for real-problems in everyday life. Despite its simplicity and high efficiency, it is often criticized for neglecting the inaccuracy and inherent unreliability of decision-maker's perceptions and reflecting their opinions as crisp numbers. This problem persisted until fuzzy sets were finally introduced. The integration of these two methods helped overcome the drawbacks of AHP. Fuzzy AHP paved the way to provide more accurate descriptions and more realistic decisions by clearing the human decisions. The fuzzy AHP method sets the AHP scale into the fuzzy triangular function scale to be accessed by priority. While in AHP the values of pairwise comparison matrix is crisp numeric values, in case of FAHP it is converted to fuzzy numbers. Most studies have used this method to quantify the evaluation indicators (Chen *et al.* 2007, Yadav *et al.* 2012). FAHP is composed of the following steps (Lu *et al.* 2007).

1. Weighting the criteria and sub-criteria: After the main criteria,  $F_i$  ( $F_1, F_2, \dots, F_n$ ), and sub-Criteria,  $C$  ( $C_1, C_2, \dots, C_n$ ), were specified, their Weights ( $WC$  and  $WFi$ ) are determined.
2. Determining the fuzzy relative importance of each individual alternative versus each individual sub-criteria: The Alternatives,  $A_i$  ( $A_1, A_2, \dots, A_k$ ), are assessed with respect to each Criterion,  $C_j$  ( $C_1, C_2, \dots, C_n$ ).
3. Finally, their fuzzy relative importance is determined.

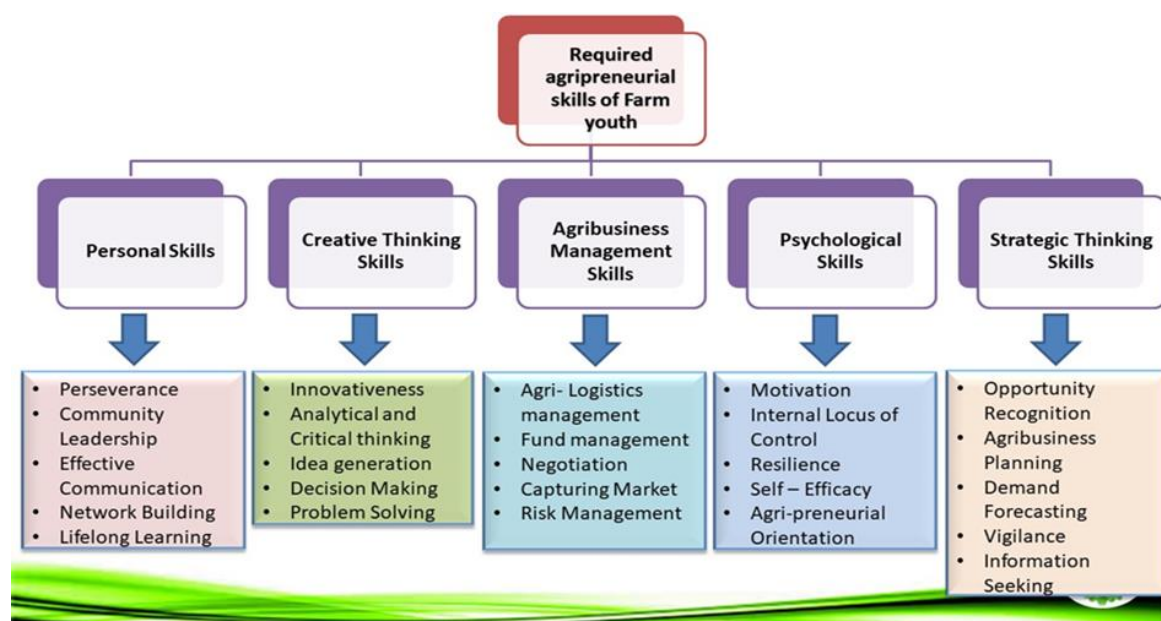
Data were collected from the 10 key experts with notable work in terms of publications and mentoring in areas of youth agripreneurship for prioritisation by pairwise comparison and provided subjective ranks as equally important, weak or slightly important,

moderate, moderate plus, strong, strong plus, very strong, very very strong, extremely important for 1, 2, 3, 4, 5, 6, 7, 8, 9 respectively. The paired comparison matrix, which was presented by Saaty (1980), the comparisons were made on a 1–9 scale. In order to calculate the consistency ratio in fuzzy AHP, the triangular fuzzy matrix is converted into two independent matrices. As the two matrices were generated, there would be two Consistency Indices ( $CI_m$  and  $CI_g$ ) and Two Consistency Ratio ( $CR_m$  and  $CR_g$ ). To be consistent, the consistency ratio of both matrices should be less than 0.1. (Liu *et al.* 2020, Buckley, 1985), (Figure1).

To assess the skill gap, an interview schedule was developed for measuring each construct through various ways. For example, in order to measure the agribusiness planning, the respondents were asked to develop an agribusiness plan in accordance to their farm for the next five years. While psychological skills like motivation, resilience, and self-efficacy were measured by 5-point continuum, the perseverance, community leadership, agri-logistic management etc. were assessed by quantifying questions. The indicators of the developed index were assessed in terms of estimated prioritised weights assigned upon the index for quantitative measurement. The face and content validity of the index was confirmed by an expert panel. To estimate the reliability of the index, a pilot study was carried out on 30 non-sample farm youths outside the research area. Then, the coefficient of Cronbach's alpha was calculated for different sections of the interview schedule to be 0.71–0.91, showing the acceptable reliability of the research variables. Finally, all collected data were analyzed in the SPSS<sub>21</sub>.

## **RESULTS**

The agripreneurial skill requirement was determined by pairwise comparison of agripreneurial skills by the experts engaged in agripreneurship promotion. The responses



**Figure 1.** The conceptual framework of the study in the form of a hierarchal structure.

of experts were analysed by fuzzy analytic hierarchy process.

It is revealed in Table 1 that all the skill domain has consistency ratio well below 0.1, which implies the calculated weightage are consistent.  $CR_g$  of all the skill domain was 0.1, which is in the tolerable range. Table 1 also presents the prioritisation of weights assigned to agripreneurial skills, which was found by analysing the preferences of the experts by Fuzzy Analytic Hierarchy Process. According to the findings, strategic thinking skills were ranked as the most effective criteria in accounting for the extent of agripreneurial skills as they were weighted at 0.228, which was the highest. This means that in their attempts to establish agri-enterprises, farm youth should have key skills like motivation, resilience, internal locus of control, self-efficacy, and agripreneurial orientation. These components altogether were named psychological skills. To be specific, strategic thinking skills domain are among the utmost priorities for farm youth. The creative thinking skills domain were ranked the second most effective criteria with weightage 0.222 for the establishment of agri-enterprises. It implies that farm youth should acquire the ability of decision making

that is the ability of farm youth to effectively choose a logical choice from various alternatives available. This domain also includes innovativeness, analytical and critical thinking, idea generation and problem solving. The next ranks were assigned to psychological skills (0.216), agri-business management skills (0.171), and personal skills (0.163), respectively.

Among the specific agripreneurial skills that need to be given importance on priority basis, opportunity recognition (0.076), resilience (0.058), agripreneurial motivation (0.055), agribusiness planning (0.055), decision making skills (0.050) and internal locus of control skills (0.050) are the five most essential individual skillsets crucial for success of an enterprise in terms of calculated final weightage. The extension officials and training institutes must focus upon the capacity building of farm youth in priority order of these skills.

### Assessment of the Skill Gaps of Farm Youth with Regard to Agri-preneurship

A close look at the data in Table 2 indicated that the majority of farm youth viz.

**Table 1.** The estimated weights and consistency rate of criteria and sub-criteria.

Sl No	Criteria	Criterion weight	Sub-criterion weight	Final weight	Sub-criterion CR <sub>m</sub>	Sub-criterion CR <sub>g</sub>
1.	Personal skill	0.163			0.036	0.1
	Perseverance		0.287	0.047		
	Community leadership		0.163	0.026		
	Effective communication		0.192	0.031		
	Network building		0.181	0.030		
	Lifelong learning		0.178	0.029		
2.	Creative thinking skill	0.222			0.04	0.1
	Innovativeness		0.207	0.046		
	Analytical and critical thinking		0.176	0.039		
	Idea generation		0.184	0.041		
	Decision making		0.232	0.052		
	Problem solving		0.200	0.044		
3.	Agri-business management skill	0.171			0	0.1
	Agri-logistics management		0.202	0.034		
	Fund management		0.196	0.033		
	Negotiation		0.132	0.023		
	Capturing market		0.250	0.043		
	Risk management		0.221	0.038		
4.	Psychological skill	0.216			0.04	0.1
	Motivation		0.253	0.055		
	Internal Locus of Control		0.231	0.050		
	Resilience		0.270	0.058		
	Self-efficacy		0.165	0.036		
	Agripreneurial orientation		0.083	0.018		
5.	Strategic Thinking	0.228			0.07	0.1
	Opportunity Recognition		0.334	0.076		
	Agribusiness planning		0.226	0.052		
	Demand forecasting		0.196	0.045		
	Vigilance		0.122	0.028		
	Information Seeking		0.122	0.028		

**Table 2.** Personal skill gap of farm youth with regard to agripreneurship in terms of index values (n= 250).

Sl No	Personal skills	Benchmark	Highest score	No of farm youth below the benchmark	Percentage skill gap
1.	Perseverance	0.010	0.019	147	58.80
2.	Community Leadership	0.007	0.011	87	34.80
3.	Effective Communication	0.007	0.017	85	34
4.	Network building	0.007	0.008	105	42
5.	Lifelong learning	0.025	0.029	71	28.40

58.80% had skill gap in perseverance skills among all personal skills in rural Odisha followed by network building skills (42%), community leadership skills (34.40%), effective communication skills (34%) and lifelong learning skills (28.40%). Perseverance is an important skill that inspires entrepreneur to keep on going or push toward the business when the instant success is out of reach.

A close look at the data in Table 3 indicated that a considerable number of farm youth viz. 49.20% have skill gap in problem solving skills among the creative thinking skills in rural Odisha followed by idea generation skills (39.60 %), decision making skills (38%), analytical and critical thinking skills (36.80%) and innovativeness (36%). Problem solving skill is a crucial skill by which agripreneur work out through both simple and complex problems to reach a solution in the workplace as well as personal situation.

The data in Table 4, which presents the skill gap in agribusiness management skills, revealed that the majority of farm youth viz. 58% had skill gap in agri-logistic

management skills followed by capturing market skills (41.20 %), fund management skills (36.80%), negotiation skills (34%) and risk-management skills (27.60%). Agri-logistic management is the ability of farm youth to ensure the optimal and continuous flow of agro-goods from manufacturers/suppliers to producers and, eventually, to consumers.

Among the psychological skills, self-efficacy skills (40%), which is the ability of farm youth to maintain a sense of self-confidence regarding one's ability to accomplish a particular task, is highly deficient among farm youths in rural Odisha. Resilience (33.60%) and motivation (32%) are the next most deficient skills among psychological skills. They are followed by agripreneurial orientation (28.40%) and internal locus of control (22.40%), (Table5).

Agribusiness planning is the most deficient strategic thinking skills (39.20%) among the farm youths. Lack of ability to plan properly for their agribusiness can hinder the prospects of their enterprise. They also have considerable amount of skill gap in opportunity recognition skills (36.80%)

**Table 3.** Creative thinking skill gap of farm youth with regard to agripreneurship in terms of index values (n= 250).

Sl No	Creative thinking skills	Benchmark	Highest score	No of farm youth below the benchmark	Percentage skill gap
1.	Innovativeness	0.021	0.034	90	36
2.	Analytical and critical thinking	0.017	0.029	92	36.80
3	Idea generation	0.017	0.041	99	39.60
4.	Decision making	0.027	0.039	95	38
5.	Problem solving	0.019	0.028	123	49.20

**Table 4.** Agri-business management skill gap of farm youth with regard to agripreneurship in terms of index values (n= 250).

Sl No	Agri-business Management Skills	Benchmark	Highest score	No of farm youth below the Benchmark	Percentage skill gap
1.	Agri-logistics management	0.019	0.029	145	58
2.	Fund management	0.023	0.028	92	36.80
3	Negotiation	0.015	0.019	85	34
4.	Capturing market	0.024	0.043	103	41.20
5.	Risk management	0.018	0.025	69	27.60

**Table 5.** Psychological skill gap of farm youth with regard to agripreneurship in terms of index values (n= 250).

Sl No	Psychological skills	Benchmark	Highest score	No of farm youth below the benchmark	Percentage skill gap
1.	Motivation	0.047	0.055	80	32
2.	Internal Locus of Control	0.023	0.031	56	22.40
3.	Resilience	0.007	0.010	84	33.60
4.	Self-efficacy	0.023	0.028	100	40
5.	Agri-preneurial orientation	0.009	0.010	71	28.40

**Table 6.** Strategic thinking skill gap of farm youth with regard to agripreneurship in terms of index values (n= 250).

Sl No	Strategic thinking skills	Benchmark	Highest score	No of farm youth below the benchmark	Percentage skill gap
1.	Opportunity recognition	0.055	0.076	92	36.80
2.	Agribusiness planning	0.040	0.052	98	39.20
3.	Demand forecasting	0.030	0.045	89	35.60
4.	Vigilance	0.017	0.021	67	26.80
5.	Information seeking	0.020	0.028	73	29.20

and demand forecasting (35.60%). This is followed by skill gaps of 29.20% in information seeking and 26.80% in vigilance skills, (Table6).

## DISCUSSION

The results of the prioritisation showed that, among five categories of agripreneurial skills, the strategic, creative thinking, psychological, agri-business management, and personal skills were the most to least important for rural youth. This means that strategic thinking skills are crucial in contributing towards success of firm and enhancing profitability. The components like opportunity recognition, agri-business planning, demand forecasting, vigilance, and information seeking play substantial role in enhancing supplementary income as they develop strategic foresight necessary for success of enterprise. There has been great emphasis upon developing agripreneurial skills for agripreneurship. Over the years, agricultural firms necessitate adapting to

new challenges such as changes in the market, consumer habits, food safety, sustainability and biotechnology (Lans *et al.* 2017). Among the important personal skills, perseverance is an important skill that inspires entrepreneur to keep on going or push toward the business when the instant success is out of reach. Thus, youth who want to start an agribusiness enterprise should focus on persistence before and after they start a business to become successful agripreneurs. This finding is in track with findings of Hatthakijphong and Ting (2019) who conducted their study on aspiring entrepreneurs and successful entrepreneurs. Networks allow the agripreneurs to use their professional and social relationships to gather resources they need to successfully run a business, which makes network building an essential skill (Mailfert, 2007; Rønning, 2011). Farm youth must have problem solving skills in order to attain success in agribusiness enterprise. This finding is in track with findings of Ataei *et al.* (2020) on entrepreneurial competencies required for launching small and Medium-



Sized Enterprises (SMEs) among the rural youth in Iran. Agri-logistic management is another crucial modern-day skill, which enables the farm youth to effectively supply produce from producer to consumer to satisfy their needs and achieving the proper value of product. The inefficiencies inherent in the food supply system in India lead to massive post-harvest wastage estimated to be around 13bn dollars per annum and the decision makers should channelize the supply and resources to key areas in order to derive maximum profit (Jakhar and Srivastava, 2018). Self-efficacy skills are essential psychological skill set of farm youth for agripreneurship. In accordance to a study by Piperopoulos and Dimov (2015), the higher self-efficacy is associated with lower entrepreneurial intentions in the theoretical courses, and higher entrepreneurial intentions in case of the practical courses. The importance of identifying these required skills helps in recognising the characteristics of successful entrepreneurs and help in selecting farm youth into agri-business incubation programme in order to launch an enterprise. These agripreneurial skills can pave the way in launching and managing new agri-business enterprise and it is demonstrated in the findings that perseverance, capturing market, problem solving, agribusiness planning must be given proper importance in training as the youth lack these essential skills for viability of agri-enterprise.

## CONCLUSIONS

The complexities of agri-business systems and dynamism of the market ecosystem demand for developing agripreneurs with specific capabilities and, above all, with specific agripreneurial skills (Aliabadi *et al.*, 2019). The paper contributes to the actual skills of the farm youth in accordance to the desired agripreneurial skills. The main contribution of this study is the effort of prioritisation of various indicators to determine the required agripreneurial skills of

farm youth and their practical applicability in the field situation to address the skill gaps, that would aid the decision makers in better utilisation of their limited resources, especially in a developing economy. When it comes to establishing an agri-business firm, some skills need to be prioritised in order to pave the way for the other phases of the business for continual success in the enterprise. Farm youth's networking with their village ecosystem and linking with other groups, extension professionals and cosmopolitaness can make them more determined to start a business. According to the findings, in order to empower farm youth, it can be recommended that the capabilities such as perseverance, effective communication skill, proper idea generation, agri-logistic management, and capturing market skills need to be given due importance in training programmes. The agripreneurship training, both before and after establishing an enterprise, can directly affect its viability and sustainability. The government should enhance and strengthen the implementation of formal and informal training sessions through establishment of the farm youth clubs and agripreneurship centres at village level. These prioritised agripreneurial skills can act as an instrument to screen the farm youth for selection into various producer groups like farmer producer company positions and business development programs in agribusiness incubators. The successful young agripreneurs possessing these desired agripreneurial skills above the set benchmark can be utilised as key resource persons in training program for agripreneurship development among youth as they become role model in their locality and have resonating impact upon the other farm youth to pursue agripreneurship. The untapped potential of these ideal agripreneurs need to be tapped upon. Rather than focusing on just developing and creating young agripreneurs, which seems to be the priority, sufficient resources must be invested in sustaining the already existing agripreneurs. In future works, it is recommended to include larger samples for application of fuzzy analytic



hierarchy process and composite index and to test for component consistency. As many institutions focus upon agripreneurial skills promotions of rural youth, impact analysis studies may be conducted for these training activities. The effectiveness of these agripreneurial skills on entrepreneurial behaviour of the youth through behavioural models can be studied. Further studies are required to replicate the conceptualised index of this study in a larger scale to confirm the required agripreneurial skills of farm youth. This study can act as a ground work to build future research in this particular area of assessing the skill gaps of rural youth, which has immense scope and significance.

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## اولویت‌بندی مهارت‌های ضروری کارآفرینی کشاورزی برای جوانان روستایی: رویکرد سلسله‌مراتبی تحلیلی فازی

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### چکیده

پژوهش حاضر تلاشی است در اولویت‌بندی مهارت‌های ضروری برای کارآفرینی کشاورزی برای موفق شدن جوانان روستایی در کارآفرینی کشاورزی. به این منظور، ابعاد مهارت‌های مختلف کارآفرینی کشاورزی و مهارت‌های مشخص کارآفرینی کشاورزی در جوانان روستایی شناسایی گردید و با روش مقایسه‌زوجی (paired comparison) توسط کارشناسان خبره مورد مقایسه قرار داده شد. در این زمینه، وزن‌دهی به مهارت‌های کارآفرینی کشاورزی با استفاده از تکنیک‌های تصمیم‌گیری چند معیاره (که فرایند سلسله‌مراتبی تحلیلی فازی خوانده می‌شود) برآورد و تحلیل شد. ابعاد مهارت‌های کارآفرینی کشاورزی و مهارت‌های فردی نیز بر مبنای برآورد‌های وزنی اولویت‌بندی شد. جمعیت نمونه در محل مطالعه شامل جوانان روستایی ایالت آودیشا در هندوستان بود. برآورد اندازه نمونه بر اساس معیارهای انتخاب با روش نمونه‌گیری هدفمند در حدود ۲۵۰ نفر از پنج ناحیه با شرایط آب و هوایی و کشاورزی مختلف انجام شد. بر اساس نتایج، مهارت‌های فکری راهبردی به عنوان مهمترین مهارتها مشخص شد، و مهارت‌های تشخیص فرصتها، تاب‌آوری، انگیزه‌های کارآفرینی کشاورزی، برنامه‌ریزی کسب و کار کشاورزی و مهارت‌های تصمیم‌گیریهای محکم که در مجموعه مهارت‌های لازم برای موفقیت در کسب و کار کشاورزی نقش تعیین‌کننده دارند پنج رتبه اول را به دست آوردند. کمبودی که در میان جوانان روستایی بیشتر مشاهده شد شامل پشتکار، مدیریت تدارکات کشاورزی و ارتباطات



موثر بود. این مهارت‌های ضروری برای کارآفرینی کشاورزی می‌توانند ابزاری باشند در جداسازی  
و غربال‌گری جوانان روستایی برای برنامه‌های جهت‌گیری کشاورزی.