


## LAND MANAGEMENT FOR AGRICULTURAL ENTREPRENEURSHIP DEVELOPMENT: FARMERS' PERSPECTIVE FROM UDAYAPUR, NEPAL

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### ABSTRACT

This study aims to explore farmers' perspectives on land management for agricultural entrepreneurship in Udayapur, Nepal. The research is based on cross-sectional explanatory research design, and a structured questionnaire was administered for collecting the data from 297 farmers in Tiryuga, Chudandhigadhi, and Belaka municipalities in Udayapur. The results were derived with the help of descriptive and inferential analysis using STATA. The results show that agricultural training and market information play significant roles in gaining awareness about agricultural entrepreneurship and ideas on land management. Agricultural training, credit facilities, and market information have a positive relationship with an awareness of agricultural entrepreneurship and ideas on land management. In contrast, the age, land size, crop cycle, credit facility and agricultural subsidy have a negative relationship with them. This study suggests the need for increasing and enhancing the knowledge for farmers about agricultural entrepreneurship and proper land management in Nepal. The outcome of this study remains significant mostly in developing nations like Nepal and even in the developed ones to feed the growing population's increasing food demand, as land area is limited on earth and the population living on it is swelling.

### Contribution/ Originality

This paper contributes as a case study on the ongoing discussion on land management practices for agricultural entrepreneurial development in the developing country. It has discussed possibilities of development of land management and agricultural entrepreneurship empirically in the context of Nepal.

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## 1. INTRODUCTION

Different approaches applied for the best use of land is referred to as land management (Department of Agriculture, 2018). Land management as today's burning issue is a critical topic to discuss as the landmass is declining due to the rapidly growing population leading to the overuse of lands to fulfill the needs of the increasing population (Ahammad, 2017). Such a population trend and increasing land use ratio for the fulfillment of the needs of the people has caused various problems to the overall agriculture system and techniques used (Ramankutty *et al.*, 2002). Bao and Peng (2016) observed that due to over industrialization and urbanization, the land is rapidly declining and degrading, which leads to the loss of highly productive lands owned by a large number of farmers. Besides, Venter *et al.* (2016) observed that the human involvement and encroachment have affected about 83% of the global terrestrial land surface and have degraded about 60% of the ecosystem services in the recent past 50 years. Moreover, Chhabra *et al.* (2006) concluded that land use and the land cover change are the most visible indicators of human encroachments, hence the very most important driver for the loss of biodiversity and the other forms of land degradation. Grecchi *et al.* (2014) opined that such land use and the land cover changes are massive and terrible in the Brazilian Cerrado and impact is far-reaching.

Furthermore, the productivity of the land declines as a result of the decline in the quality of land, which, in turn, is due to the unmanaged agricultural practices (Helms *et al.*, 2017). In the present context, differentiation and fragmentation on land have created the problem in the land tenure and ownership. In this regard, Gupta (2005) argued for little scope for agricultural regeneration where there is increasing fragmented landholdings. For this Mochizuki *et al.* (2016) have suggested that the government has to be strict on managing new land policy and planning. In this context, Richards and Bulkley (2007) foresee the continuation of the co-existence of farm businesses and farm policy in the future too.

Regarding the land resources degradation and reduction in production, Borrás and Franco (2008) have observed in Central America, 75% of cropland has been degraded. For instance, such a global trend of declining land has led to the reduction of biological and economic productivity of land (Collantes *et al.*, 2018). Furthermore, one of every three people in the world, in some way or others, being affected by degradation of land irreversibly (FAO, 2010) and various factors like drought and population growth are responsible for the change in agricultural land (Long *et al.*, 2007; Seto *et al.*, 2002; Wood *et al.*, 2004) which have made the importance of natural resources and agriculture management in the hope of significant return (Wolka, 2014).

For such circumstances, Buhaug and Urdal (2013) show the importance of agriculture product to be managed by agriculture entrepreneurs, as there are the growing demands of agriculture products amid estimated future population to be 9.8 billion by 2050 and 2 out of 3 people living in the urban area. Furthermore, regarding the resource for agriculture entrepreneurship, capital, land, labor, and management expertise are the resources necessary for the agricultural enterprises, which are the determinant factors for the success of agricultural entrepreneurs (Rantamaki-Lahtinen, 2002; Lowe and Talbot, 2000; Evans and Jovanovic, 1989; Gasson, 1988). In this regard, small agriculture entrepreneurs being the mainstay of food production in the world's developing countries, are also the key group of food security (FAO, 2014). Moreover, Nordin *et al.* (2005) argue about the evidence showing that in developing economies and countries, it has been possible for small farmers to rise to agriculture entrepreneurs.

Simons (1985) argues that despite no uniqueness to any specific region of the world, fragmentation for some countries like Pakistan, Peru, and Syria shows the average farm consisting of at least four separate land parcels. In addition, Niroula and Thapa (2005) contended that gradual decrease of landholding size due to their fragmentation into parcels as a typical phenomenon in South Asia attributes to equal sub-division of different qualities of land parcels among household. Van Dijk

(2003) viewed such land fragmentation as an often-overlooked disadvantage leading to the wastage of a considerable proportion of productive land in unnecessary networks of paths, boundaries and bunds. Further, such fragmentations have huge effects on the agricultural land management and distribution (Jha *et al.*, 2007; Sunquist, 1998). For such a problem in Nepal and elsewhere, Blaikie and Sadeque (2000) have substantially viewed land fragmentation as a critical problem attributable to a decrease in productivity and sustainability of land resources in Nepal, India, and other places. However, Hooi (1978); Wong and Geronimo (1983) did not see land fragmentation as a problem, as their study in Malaysia and Philippines revealed that paddy farm is not affected by land fragmentation. Whatever that is, fragmentation of such unlimited and unrestricted patterns is due to the lack of policy designed in these countries. For such policy lacking, Ding (2003) discussed that generally, improving land use-efficiency, enhancing land management, increasing government revenues along with financing urban infrastructure and protecting farmland are to be the goals and objectives of the land policy reforms for any country and government and in this regard, Okoth-Ogendo (1998) sees contemporary land policy reform needs to be formulated within a macro-level policy framework and complementary programmes with its ownership, distribution, utilization alienability, management, and control. Now, regarding policy to be formulated in Nepal, Acharya and Shrestha (2011) asserted that land use policy and planning are not in the state of functioning according to the international standards. There are several reasons for that as many Nepalese are landless and jobless, and ultimately many of them are invading the government land. In this sense, Okoth-Ogendo (1998) argued that land policy challenges still dominate public debate in the twenty-first century. For this, Toulmin and Quan (2000) suggested strong human-centered land policy and land rights in those regions where poverty, vulnerability and human suffering have been endemic. Due to the lack of state policy, in many places of Nepal, lands are found being left barren and development works along with growing urbanization have caused to affect agricultural lands to a greater extent (Dhakal and Khanal, 2018).

Shrestha *et al.* (2008) analyzed that as a major sector of employment, Nepal can use agriculture and land management as the key to alleviating poverty, which, in turn, can help for sustainable agricultural development. For this, Christiaensen *et al.* (2011) have considered agriculture to reduce poverty among the poorest of the poor significantly and effectively. Similarly, Bourguignon (1998) observed that lower-income inequality among the small and medium farmers cultivating a larger share of land has led to the greater impact of growth on poverty. Amazingly, Ravallion and Chen (2007) have evidenced that more or less equal land distribution in China is responsible for four times poverty reduction than growth in industry and services. On the other hand, Ravallion and Datt (1996) argued that despite widespread land inequality and landlessness, growth in agriculture and services were equally found to be reducing poverty. In the context of Nepal, we are also very much familiar with the reality that one-third of Nepal's GDP comes from agriculture (Gauchan and Shrestha, 2017; Paudel *et al.*, 2016). Also, in the case of Nepal, it has been examined that there have been unique social and economic changes as the youths of the nation are out of the country for foreign employment, and many of the agricultural lands are being unused (Paudel *et al.*, 2016). Therefore, the world is looking at agriculture to produce more nutritious food and improve the livelihood of the peoples, especially the people who are poor (Wu *et al.*, 2014). By understanding such phenomena of agricultural land and importance for the management of these lands for poverty reduction and country's development, this paper aims to explore farmers' perspective in land management for agricultural entrepreneurship in Udayapur, Nepal.

The remaining part of the paper is organized into four sections. The next section will represent the overall methodology of the study, where materials and methods will be discussed. Then, the results and discussion of key issues will be presented, followed by the concluding remarks.

## 2. MATERIALS AND METHODS

### 2.1. Theoretical debate

Agricultural intensity can be termed for the productivity of land or proper utilization of land (Dietrich *et al.*, 2012). Various researches are conducted in land-use intensity, which suggests that the land-use intensity should be systematically integrated from inputs to the production system (i.e., land, labor, capital) with output (i.e., products) which is in line with the view of economic principle dealing with an input-output relationship (Brookfield, 1972). It also gives a similar framework as of pivotal Boserupian notion of cropping frequency dealing with the theories and relationships of land intensity and expansion. Such integration can aid output (production per year) and input (land area) based on biophysical indicators along with other production functions of economics. To support the statement, certain indicators that exist and reinforce can be witnessed for the power of such approaches. For example, 'energy returns on investment' showcases how energetic inputs and outputs can be used and illustrated for land intensification strategies (Court and Fizaine, 2017). Further, as revealed from time series analysis, though labor efficiency can be achieved with industrialization, it deteriorates energy balance causing it to fall below one sometimes (Krausman *et al.*, 2005).

However, only assessing the input-output relation is not enough; the outcome generated from land-based production should also be assessed, which are resulted frequently from the unintended alteration of the socio-ecological system by quantifying the ratio between inputs, output and changes in ecosystem properties. It would further provide insight to interact between society and nature, allowing it to balance the cost and benefits of land-based production, acknowledging land-use intensification strategies as well. There are only a few examples that give evidence of such integrative perspectives at the level of agricultural products. According to Dubreuil *et al.* (2007) life cycle assessment approach has been developed to access how the environment impacts to land and its production chain.

Likewise, the efficiency of final biomass products can be calculated at the land system level with the help of HANPP framework (Haberl *et al.*, 2009), which can further be used to analyze and evaluate environmental pressure related to biomass products. Similar to HANPP is a carbon footprint concept (Hertwich and Peters, 2009) dealing with carbon emission related to the consumption of final products (foods). One of the compelling indicators to evaluate land and to identify the sustainable land systems could be local or global biodiversity loss that exists in every unit of input or output (Lanzen *et al.*, 2012). These approaches and strategies will help to tackle emerging issues related to the land system and their relation to land-use intensification pathways.

Therefore, further indicators should be developed that will integrate socio-ecological outcomes, land-based production associated with direct, indirect, and opportunity costs. Further, enhancing capacities, strategies, synergies, and feedbacks to make sustainable future land use.

### 2.2. Econometric estimation

Land management for agricultural entrepreneurship is the psychological and behavioral cognitive aspects. The decision-making criteria of farm households revealed that farmers' preference for agricultural production depends on their understanding (Devkota *et al.*, 2018) and the cost-effectiveness (Devkota *et al.*, 2017). In behavioral sciences, such behavioral aspects can be measured using logistic regression analysis (Probstl *et al.*, 2016). Land management under logistic analysis has desirable statistic properties with probability value ranging from 0-1, one for those who have managed their land and 0 for the rest. It gives a clear picture of the analysis purpose and provides a difference in the result as per the respondents' socioeconomic and other deterministic characteristics.

Following the study of Devkota *et al.* (2018), a binary logit model was selected to identify the significant variables that determine the knowledge about land management and agricultural entrepreneurship. The model is given as:

$$\ln\left[\frac{P_i}{1 - P_i}\right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad \dots \dots \dots (1)$$

Here, P = Probability of the outcomes,  $\beta_0$  = Intercept term,  $\beta_1 \dots \beta_k$  = Coefficient and  $X_1 \dots X_k$  = Independent Variables.

Based on the model, the final equation is:

$$Y = \beta_0 + \beta_1 Gen + \beta_2 Age + \beta_3 Ftype + \beta_4 Edu + \beta_5 Train + \beta_6 Occup + \beta_7 Exp + \beta_8 Income + \beta_9 Lsize + \beta_{10} Irri + \beta_{11} Fpractice + \beta_{12} Ccycle + \beta_{13} Omember + \beta_{14} Minfo + \beta_{15} Bdistance + \beta_{16} Fcredit + \beta_{17} Alabour + \beta_{18} Subsidy + \varepsilon \quad \dots \dots \dots (2)$$

Where,  $Y_1$  = Dependent Variable,  $\beta_0$  = Intercept terms,  $\beta_1 \dots \beta_{18}$  = Coefficient of X and  $X_1 \dots X_{18}$  = Independent Variables as described in Table 1.

The study aims to measure dependent variables based on explanatory variables. To carry the study forward following hypothesis is formulated;

- H0: Farmers are not significantly aware of agriculture entrepreneurship,
- H1: Farmers significantly have no ideas on land management.

**Table 1: Description of variables**

Variable	Details of variables	Description	Value	Expected sign
Gen	Gender	Respondent’s gender	1= Male, 0 = Female	±
Age	Age in years	Respondent’s age	In years	±
Ftype	Family types	Respondent’s family types	1= joint, 0 = otherwise	±
Edu	Level of education	HH education status	1= Educated, 0 = uneducated	+
Train	Training	Received any agricultural training	1= yes, 0 = no	+
Occup	Occupation	Different profession	1= yes, 0 = no	±
Exp	Experience	HH total farm experience	Years	+
Income	Income	Monthly Income	In Nepali Rupees	+
Lsize	Land size	HH land ownership (In hectare)	1= more than 1 hectare, 0 = less than 1 hectare	±
Irri	Access to irrigation	Availability of irrigation	1= yes, 0 = otherwise	+
Fpractice	Farm practice	Farming practices by the farmers	In years	±
Ccycle	Crop cycle	Crop production in a years	1= 2 and more 0 = one	±
Omember	Organization member	HH member(s) membership on any agro groups/ or organizations	1= yes, 0 = no	+

Minfo	Market information	HH receiving information related to agriculture and market	1= yes, 0 = no	+
Bdistance	Distance bank	HH nearest distance to the bank	1=1-5 km, 0 = more than 5km	±
Fcredit	Credit facility	Availability of any credit facility	1= yes, 0 = no	±
Alabour	Labor access	Availability of labor in times needed	1= yes, 0 = no	±
Subsidy	Agro subsidy	Any subsidy programs practiced	1= yes, 0 = no	±

### 2.2.1. Study area and data collection techniques

Udayapur district, located in province 1 of Nepal, was selected as the area of this study. Mahabharat hills from the north and Shiwalik from south surround the district, whereas both hills meet together by West, which forms a valley, called Udayapur valley. Udayapur covers 2063 sq. Km of Nepal's total land area (CBS, 2014). As the district connects three ecological zones, Mahabharat hills, Churiya hills and Inner Terai, the region is favorable for farming and agricultural activities, which have resulted in people adopting farming as their main occupation and agriculture as the main source of income. Hence, the area was chosen for the study as the main aim of this study is to analyze farmers' knowledge of agro-entrepreneurship.

Both the primary and secondary data were collected for the research. A structured questionnaire was designed to collect the primary data from the farmers of 3 different municipalities of Udayapur District. Besides, Key Informants Interview (KII) was conducted among different experts who have knowledge and understanding of Agriculture, Agriculture Entrepreneurship, and Land Management. Further, the secondary data are used for the strengthening research, making it reliable and rational enough and they were collected from research papers, articles, and different websites of the ministry of agriculture, journals of Food and Agriculture Organization, and Ministry for Land Management. Landowners and farmers of Triyuga, Chaudandigadi and Bela municipalities are the populations for the study. According to the census conducted in 2011, the total population in Triyuga, Chaudandigadi and Belaka municipalities is 87,557, 48,574 and 42,386, respectively (CBS, 2012). For this research, a non-probability sampling was used for the survey. In the sampling process, purposive sampling was applied for selecting individuals who were involved in agriculture. A total of 297 individuals as a modest sample size were selected from three municipalities in Udayapur. Both descriptive, as well as inferential data analysis, were performed.

## 3. RESULTS

### 3.1. Farmer's characteristics

Out of the 297 total respondents, the results show that 37.37% of the respondents are female and 62.63% of the respondents are male (Table 2). The study shows that the major respondents were of the age group from 41-60 (51.51%). It also shows that the respondents have different occupations, and agriculture is the main occupation (92.25%). Our result also reveals that 43.09% of the respondents have an income level of less than 15000 per month. In this context, [Naminse and Zhuang \(2018\)](#), showing the evidence from their research in Guangxi Province of China, observed that the poor rural population with an income of around less than 1.25\$ per day practice agriculture and forest activities as their dominant economic choices. Regarding education level, [Bao and Peng \(2016\)](#) in Zhejiang Province, China reported that the majority of the respondents didn't attend college or higher education showing land-lost farmers' low education levels. In our study, 43.43% of the farmers have mentioned they have a high school level of education.

**Table 2: Socio-demographic status of respondents**

Field		Male	Female	N (297)
Gender	Sex	186 (62.63%)	111 (37.37%)	297 (100%)
Age (in years)	21-40	40 (13.46%)	51(17.17%)	91 (30.63%)
	41-60	101 (34%)	52(17.50%)	153 (51.51%)
	61-80	42 (14.14%)	8(2.69%)	50 (16.83%)
	Above 80	2 (0.67%)	0	2 (0.67%)
Work experience (in years)	1-10	27(9.09%)	27 (9.09%)	54(18.18%)
	11-20	61(20.53%)	45 (15.15%)	106(35.69%)
	21-30	49(16.49%)	23(7.74%)	72(24.24%)
	31-40	17(5.72%)	11(3.70%)	28(9.42%)
	41-50	24(8.08%)	6(2.02%)	30(10.10%)
	51-60	7(2.35%)	0	7(2.35%)

### 3.1.1. Land ownership and utilization

Regarding the average area of land possessed by per person, [Ahammad \(2017\)](#) revealed that Bangladesh, as a densely populated country, accounts for only 0.06 hectares area of land per person (Table 3). Further, [Dhakal and Khanal \(2018\)](#) blame the socioeconomic, legal and infrastructure development factors responsible for the fragmentation of agricultural land and reduction in landholding size. Our research result shows 87% of farmers own land less than 1 hectare. In the survey, it is observed that 13.80% of the farmers have sloppy land, 21.88% of farmers have barren land, 249 farmers of low land and three farmers have other types of land. Here, individual farmers may have mixed type or two or more types of land such as a farmer may have sloppy and low land according to the geographical distribution, and the quality of the land one possesses.

**Table 3: Information related to practice by farmers land crop cycle**

Field	Type	Numbers (N)= 297
Type of land	Sloppy land	41(13.80%)
	Barren land	65(21.88%)
	Low land	249(83.83%)
	Others	3(1.01%)
Source of irrigation	Accessible	269(90.57%)
	Not accessible	28(9.42%)
Fertility of land	Very fertile	13(4.37%)
	Fertile	229(77.10%)
	Neutral land	44(14.81%)
	Infertile	9(3.03%)
	Very infertile	2(0.67%)
Types of crop cycle practiced	1 type of crop	5(1.68%)
	2 types of crop	94(31.64%)
	3 types of crop	191(64.30%)
	4 types of crop	7(2.35%)

Further, regarding the availability of irrigation, 9.42% of respondents don't have access to irrigation, whereas 90.57% of the farmers are found to have access to irrigation. There has been found that out of those who have access to irrigation; it has been recorded that there are many tools to water used, such as rainwater, tube-well, canal, others (pump, motors, collecting in pots). In this context, [Gutzler et al. \(2015\)](#) talked about two agricultural management responses for future challenges, which are the extended use of irrigation and increased production of energy crops. From the survey, it has been found that 69% of the irrigation is done with the help of canal, 17% of them rely on rainwater, 12% of the farmers rely on tube-well and 2% of them rely on other tools of irrigations like pumps, etc.

The survey shows that 3.03% of people have their land irrigated about 21-40%, 15.82% of them have their land irrigated about 41-60%, and 25.85% of them have their total land irrigated to 61-80%. In the Udayapur district, it has been found that the respondents have a different perception of their fertility of the land. It has been found that in 297 respondents, 4.37% of the respondents have very fertile land, 86.53% of them have fertile land, and 14.81% of them have neutral land.

The survey on 297 respondents shows there have been different crops cycle practiced in Udayapur, Nepal. It is found that only 1.68% of the respondents practice 1 type of crop cycle, 31.64% of the respondents practice two types of crop cycles, about 64.30% of the respondents practice three crop cycles and 2.35% of the respondent's practice four types of the crop cycle. The change in cultivation has been a significant issue in today's situation in Nepal. The cultivation practices are affected by many factors. The major factors are climate change, shortage of labor, improvement in technology and easy access to the market. In this sense, [Probstl-Haider et al. \(2016\)](#) argued for significant effects of climate change on the traditional landscapes despite the governmental regulations and incentives for agriculture, and they considered farmers as the crucial decision-makers while implementing the different policies on climate changes. In our survey, the result reveals that 29.62% of the respondents think the change in cultivation is due to climate change and 10.34%, 92.59% and 5.05% of them think it is due to shortage of labor, improvement in technology and easy access of market respectively. Giving the importance of the impact of climate change, [Zabel et al. \(2014\)](#) suggested for the requirement of an inventory on the changing potentially suitable areas for agriculture under changing climate conditions. Our survey suggests that 69.69% of respondents have 1-5 kilometers distance from the bank, 13.46% of respondents are 5-10 kilometer far away from the bank, and 14.81% of respondents are more than 10 kilometers far away from the bank. Credit facilities play a vital role in expanding and encouraging agricultural activities. It has been found out that the credit facilities are either formal, informal, or both. Out of 297 respondents, 36.70% of respondents do not have any credit facilities, where 43.09% have formal, 14.14% have informal and 6.06% of the respondents have access to both formal and informal credit facilities. The results also reveal that 92.59% of respondents cultivate their land themselves or with the family support, while 7.07% of them have their land cultivated by others.

### 3.1.2. Binary logistic regression

The binary logit regression, in table 4, indicates significance between dependent variables with independent variables. The first model shows that six independent variables have a significant relationship with the awareness of agricultural entrepreneurship. Out of the three of the factors have positive signs and remain negatively significant with the awareness of agricultural entrepreneurship. The three factors market information, agricultural-related training and monthly income are positively significant at 5% and 1%. And looking at the odds ratio, our results indicate that one unit change in market information, agricultural-related training and monthly income the odds of being aware of agricultural entrepreneurship increases in market information, agricultural-related training and monthly income by 5.06 times, 5.79 times and 9.81 times respectively. The results conclude that the monthly income of the farmers highly affects the awareness of the farmers and also the agricultural training and market information leads to awareness of agricultural entrepreneurship.

The second model shows that four independent variables have a significant relationship with ideas on Land Management. Out of the four, two of the factors have positive significance, and the remaining of them have negative significance with the ideas on Land Management. The two factors, agricultural-related training and credit facility, are positively significant at a 1% level. And looking at the odd ratio, our results indicate that one unit changes in agricultural training and credit facilities by 3.5 times and 3.22 times. The results conclude that the agricultural-related training and credit facilities highly affect the ideas on land management when there are changes in these above factors.



**Table 4: Results of binary regression**

Variables	(1) Awareness on agricultural entrepreneurship	(2) Idea about land management
Gender	0.739 (0.572)	-0.141 (0.379)
Age	-0.066** (0.030)	0.029 (0.018)
Family types	-0.343 (0.567)	-0.097 (0.373)
Highest level of education in your family	0.898 (0.582)	0.253 (0.316)
Agricultural related training	1.726*** (0.635)	1.374*** (0.451)
Occupation	-1.518 (0.950)	-0.539 (0.765)
Experience	0.011 (0.027)	-0.0007 (0.024)
Income (monthly)	2.320*** (0.738)	0.718 (0.616)
Land size	5.228* (2.797)	-4.583* (2.505)
Access to irrigation	-1.116 (1.007)	0.425 (0.547)
Farm practice	-0.044 (0.0337)	0.0017 (0.026)
Crop cycle	-0.806 (0.590)	-1.163*** (0.315)
Organizational membership	-0.086 (0.947)	-0.862 (0.541)
Market information	1.702** (0.664)	0.226 (0.517)
Distance of bank	0.856 (0.886)	0.772 (0.492)
Credit facility	0.667 (0.751)	1.222*** (0.397)
Labour access	-1.784** (0.728)	0.677 (0.492)
Agricultural subsidy	-1.620** (0.751)	-1.086** (0.492)
Constant	1.231 (1.775)	-1.036 (1.417)
Observations	279	279

**Note:** Robust standard errors in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

### 3.1.3. Managerial implication

Out of 297, only 5.05% of the respondents said no or did not have any ideas on the utilization of fallow land for commercial farming and the remaining 94.94% of the respondents agreed on the utilization of the fallow land for commercial farming. Among the awarded farmers, it has been found that many of the farmers believe in commercial farming like Lemon farming, cash crops, vegetable farming, animal husbandry, Organic farming, fruits farming, poultry and fisheries, and technology support based farming. 6.73% of the respondents do not have any ideas and 93.26% of

the respondents believe that investments from the government at all levels, easy access of loans and low rate interest loans play important roles in the enhancement of the farmers and farming. As well as irrigation, subsidy, training, technical learning and protection of farmers and identifying the leading farmers can be other significant support for the enhancement of commercial farming. Regarding entrepreneurship, our survey result shows that only 11.78% of respondents have an awareness of agricultural entrepreneurship and the remaining 88.21% of respondents do not have any awareness of agricultural entrepreneurship. Such entrepreneurship in agriculture is evidenced by [Esiobu et al. \(2015\)](#) observation which suggested that despite significant role of entrepreneurship to farmers as evidenced in the Imo State in Nigeria, they are getting poor and late information about entrepreneurship and they lack adequate capitals to invest and lack nearby markets for selling their products. The research results show that only 11.7 % of the respondents are aware of entrepreneurship, which is very low. From the results, we cannot deny that there are entrepreneurship programs, but it seems the entrepreneurial programs have not been able to reach its target and able to make the program successful. However, [Dias and Franco \(2018\)](#) have analytically suggested that agricultural entrepreneurs in Nigeria, with the help of inter-organizational networks, have been playing a fundamental role in developing activities through horizontal and vertical networks. Similarly, [Mupfasoni et al. \(2018\)](#) authenticate evidence on agriculture entrepreneurship mentioned about a few groups of farmers in Burundi changing their banana product into juice and opening restaurants. But our study shows that only 5% of the respondents have gained entrepreneurship programs while 95% do not have attended any entrepreneurship programs. Now, [Dias and Franco \(2018\)](#) suggested for support to the small farmers by the organization and the local and national authority to influence more farmers to make them agriculture entrepreneurs.

The land policy can be any policy from owning land, house or business purpose and agricultural land. In this sense, [Sun and Akiyama \(2018\)](#) have mentioned that China has introduced a new policy, popularly known as Agriculture Land Use Right Transfer in order to meet the sustainable development of agricultural demand there. Similarly, [Halbac et al. \(2018\)](#) observed how the impact of political, socioeconomic, and cultural factors worked on implementing environment-friendly techniques for sustainable land management and climate change mitigation in Romania. Our survey results show that 15.82% of the respondents know about the land policy and practices and the remaining 84.17% do not have land policy ideas. It shows that the farmers lack knowledge of different land policies they must know for their betterment. The study shows that only 16% of farmers know or use the land policy, where the majority 84% do not have ideas or knowledge on land policy. 37.17% of the respondents responded that there is the availability of subsidy programs and out of the subsidy programs the famous subsidy programs are seeds and animal husbandry and investment of 50 percent in irrigation and agricultural tools.

#### 4. DISCUSSION

This study involves 37% female and 63% male respondents indicating that female respondents have given their perception over agriculture entrepreneurship and possibilities upon it. Further, only the high school level education attended by 43.4% of the respondents suggest that investment in education is considerably needed for farmers to equip them even for farming activities and subsequently to make them generate more and rational income. The results now show a majority of the respondents (92.25%) are following agriculture as their occupation, which reveals the fact that mainstream Nepalese rural population is still carrying out farming activities, which is also evidenced in Southeast Asia as argued by [De Koninck \(1986\)](#) that dominant ethnic groups who occupied densely settled lowland areas in peripheral and mountainous regions domesticated forest and forest plant and brought both of them into the national mainstream agriculture. It is, however, so, earning less than 15000 a month by slightly less than 50% farmers show that income generation level of the respondents is not so satisfactory, unlikely to meet the need for monthly family expenditure.

The issue of land ownership has been very problematic in Nepal, not justifying the reasonable and scientific distribution of the land among different strata of the population (Adhikari, 2006). In our study too, the results show 87% of the respondents own less than 1 hectare of the land, revealing the fact that ownership over a low area of the land does not encourage agriculture entrepreneurship. Contrary to this situation, more than 90% of the respondents have access to irrigation implies the fact that the efforts of farming by irrigation at the local level or community level gives the evidence of enhancement in agricultural activities in Nepalese societies (Aryal *et al.*, 2019). Results further show that majority of the respondents have fertile land, suggesting that fertile land, irrespective of the size, can be properly used for the agriculture entrepreneurship. In this regard, Rosairo and Plotts (2016) argued that those who have adequate and sustainable assets, to a greater extent, are entrepreneurial farmers. Further, as an experience of Western Europe, McElwee (2008) argued that a key entrepreneurial requirement for British farmers is the recognition of business opportunities. Now, in our study respondents' response to causes of change in cultivation time and product range is varied and they are a shortage of labor, improvement of technology and climate change, which implies that farmers are variously affected by these factors. Therefore, it can be strongly recommended technology innovation along with coping with climate change for the proper cultivation of the land and promotion of agriculture entrepreneurship.

In addition, the research results show that the farmers have bank accessibility with a slight variation of distance to reach the bank and 43.1% of farmers have formal credit facilities for promoting agro-entrepreneurship, whereas 36.7% does not have any such facilities, which significantly suggests the considerable lacking of such privilege to the farmers. On the verge of such a scenario, Tsie (1996) contended that the government, through the National Development Bank and other organizations, has provided to local farmers through several institutional initiatives in Botswana. Contextually, McElwee (2008) asserted that when the discussion of entrepreneurship in farming is made in front, the matter of policy comes virtuously. Further, the survey result shows 95% of respondents' perception of the utilization of fallow lands for commercial purposes, which gives strong evidence of how the farmers are eager to commercialize their land and production. It is a much suggestive viewpoint for the development of agriculture entrepreneurship.

Moreover, more than 90% of the farmers view that investment from all levels of the governments, easy access to a loan with low-interest rates can have an important role in the enhancement of farming activities. It can help in the subsequent development of agriculture entrepreneurship. Despite these facts of favorable circumstances, only 11.7% of respondents are aware of agricultural entrepreneurship, which demands prompt intervention from the government and non- government side to train and equip the farmers for starting any agriculture business. Chaudhary (2018) mentioned such unawareness of agriculture business due to the unfamiliarity in land policy. Moreover, as taken anecdotal evidence from South African cities, Hovorka (2004) suggested that entrepreneurial urban agriculture is the result of a great agricultural diversification in Botswana. More significantly, Rosairo and Potts (2016) asserted that an entrepreneurial farmer is a person who can create and develop a profitable business in a changing business environment. Again, in our survey, respondents further suggest various vocational or agriculture-based training program to be launched on land policy, technology innovation, marketing of the product, and investment for them that can help in making their interest in agriculture entrepreneurship. Regarding the significance of the policy adoption and implementation, Hickey (1982) elaborated a historical incidence that in the form of old and traditional agricultural entrepreneurship, the French administration during the first decades of the twentieth century formulated a policy that initiated the development of plantation agriculture to encourage Viet settlers in the Central Highland to stabilize them from itinerant agriculture. Lastly, it is noteworthy to mention here from the farm management viewpoint that Schultz (1939), in his research and theoretical interpretation, mentioned the role of farm management, which was forced to allocate resources in avoiding economic surplus appropriately.

## 5. CONCLUSION

This research aims to explore land management for agricultural entrepreneurship development from farmers' perspective. The research concluded that 274 of the respondents had agriculture as their main occupation. The land size of the respondents differs according to their own, only about 13% of the respondents have land above one hectare and 87% of the respondents have land less than one hectare. The majority of the farmers have access to irrigation, which indicates there are different ways of irrigation applied. 188 of the respondents have formal, informal, or both credit facilities and 109 do not have any credit facilities. The results show very few farmers are aware of the agricultural entrepreneurship and below 40% of the farmers express their ideas on land management and few percent of the respondents are aware of agricultural training and had taken agricultural-related training and such that there is a significant positive relationship between market information, agricultural-related training and monthly income for awareness to agricultural entrepreneurship. It concludes that one-unit change in market information, agricultural-related training and monthly income increase the awareness about agricultural entrepreneurship by 5.06 times, 5.79 times and 9.81 times, respectively. For land management, it concludes that the factor agricultural-related training and credit facilities are positively significant. The odds ratio results one-unit change in agricultural training and credit facility increase by 3.5 times and 3.22 times. After analyzing the data results and different suggestions collected from the farmers, recommendations that are possible for the development of land management and agricultural entrepreneurship are discussed: to organize awareness program on land management; to help maintain unity among entrepreneur farmers; to manage to protect from wildlife and to take the initiative from government to promote the agro-entrepreneurship.

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