

RETURN ANALYSIS OF COMMERCIAL FARMING: A SURVEY STUDY OF
SURYABINAYAK MUNICIPALITY, BHAKTAPUR

A Thesis

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By

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DECLARATION

I hereby declare that this research entitled **Return Analysis of Commercial Farming: A Survey Study of Suryabinayak Municipality, Bhaktapur** submitted to the Central Department of Rural Development, Tribhuvan University, is entirely my original work prepared under the guidance and super vision of my supervisor. I have made due acknowledgements to all ideas and information borrowed from different sources in course of preparing this thesis. The results of this thesis have not been submitted anywhere else for the award of any degree or for any other purposes. I assure that no part of the content of this thesis has been published in any form before.

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RECOMMENDATION LETTER

This thesis entitled **Return Analysis of Commercial Farming: A Survey Study of Suryabinayak Municipality, Bhaktapur** has been prepared by **Mr. Nimesh Bakhunchhe** under my guidance and supervision in partial fulfillment of the requirements for the Degree of Master of Arts in Rural Development. Therefore, this is recommended for the final evaluation and approval to the thesis evaluation committee of the Central Department of Rural Development.

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APPROVAL LETTER

The thesis entitled **Return Analysis of Commercial Farming: A Survey Study of Suryabinayak Municipality, Bhaktapur** submitted by **Mr. Nimesh Bakhunchhe** in partial fulfillment of the requirements for the Degree of Master in Arts (MA) in Rural Development has been approved by the evaluation committee.

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ABSTRACT

The agriculture sector is an engine of economic growth. Around 1.34 billion people worldwide have been working in the agriculture sector. Likewise, around 70-80 percent world's agricultural land is managed by around 500 million family-managed farms that produce more than 80 percent of the world's food. Our neighboring countries China and India are becoming top agriculture producers in the world. Even in Nepal, agriculture is the most important sector in terms of income and employment generation. The agricultural sector accounted for about 27.6 percent of national GDP in 2019/2020 and 60.04 percent of the total population derives its livelihood from agriculture and unallied activities. In this background, this study tried to explain return analysis of commercial farming practices performing around Suryabinayak Municipality. In doing so, the indicators private returns (i.e. economic and non-economic) and social returns (i.e. economic and non-economic) of commercial farming have been highlighted. The household survey was applied for collecting required data from 180 role model farmers residing in entire 10 wards of the Municipality.

This study found that agriculture is a priority sector of local government and primary source of family earning of the local people. The productivity of the role model farmers have been increased due to the modern farming system that is supported by the local government and other concerned institutions. The migrated households are also involving in commercial farming. Majorities of the farmers are young whose age falls between 21-32 years. More so, commercial farming is creating both self-employment and employment opportunities to the local people. Thus, private and social returns of the role model farmers found satisfactory that is upgrading their family income and improving quality of life. Besides, the trend of organic farming practices is increasing in the study area as majorities of the farmers are using compost fertilizers, organic insecticides and pesticides. Finally, knowledge generated from this study can be applied in knowledge level as well as practice and policy levels.

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ABBREVIATIONS/ACRONYMS

ADB	- Asian Development Bank
ADS	- Agriculture Development Strategy
AFU	- Agriculture and Forestry University
APA	- American Psychological Association
APP	- Agriculture Perspective Plan
BA	- Bachelor in Arts
BE	- Bachelor in Engineering
BSC	- Bachelor in Science
CBOs	- Community Based Organizations
CBS	- Central Bureau of Statistics
CC	- Correlation Coefficient
CTEVT	- Council of Technical Education and Vocational Training
DDC	- District Development Committee
DF	- Degree of Freedom
Dr.	- Doctor of Philosophy
EU	- European Union
FAO	- Food and Agriculture Organization
FGD	- Focus Group Discussion
GDP	- Gross Domestic Products
GNP	- Gross National Products
HDI	- Human Development Index
HHs	- Households
HICAST	- Himalayan College of Agriculture Science and Technology
HYV	- High Yield Value
IA	- Intermediate in Arts
IASS	- Agriculture and Animal Science
ICIMOD	- International Center for Integrated Mountain Development
INGO	- International Non-government Organization
IGA	- Income Generate Activities

IOF	- Institute of Forestry
JT	- Junior Technician
JTA	- Junior Technical Assistant
KG	- Kilogram
KM	- Kilo Meter
KU	- Kathmandu University
MA	- Master in Arts
MOAD	- Ministry of Agriculture and Development
MOE	- Ministry of Economic
MOF	- Ministry of Finance
N	- Number of Sample
NARC	- National Agriculture Research Center
NGO	- Non-Government Organization
NLSS	- Nepal Living Standard Survey
NPC	- National Planning Commission
NPI	- Nepal Polytechnic Institute
RS	- Rupees
OECD	- Organization of Economic Cooperation and Development
Prof.	- Professor
RD	- Rural Development
RTC	- Renewable Technology Center
RUPP	- Rural Urban Partnership Program
SDC	- Swiss Development Cooperation
SPSS	- Statistical Package for Social Science
SWOT	- Strength Weakness Opportunity and Threats
TU	- Tribhuvan University
TV	- Television
VDC	- Village Development Committee
VPL	- Valley Public Library

CHAPTER I

INTRODUCTION

1.1 Background of the Study

The agriculture sector is an engine of economic growth. Around 1.34 billion people worldwide have been working in the agriculture sector. Likewise, around 70-80 percent world's agricultural land is managed by around 500 million family-managed farms that produce more than 80 percent of the world's food. Our neighboring countries China and India are becoming top agriculture producers in the world. Even in Nepal, agriculture is the most important sector in terms of income and employment generation.

The agricultural sector accounted for about 27.6 percent of national GDP in 2019/2020 and 60.04 percent of the total population derives its livelihood from agriculture and unallied activities. For the development of agriculture, the sector government allocated Rs. 41.40 billion in the fiscal year 2077/78 is 2.81 percent of the total budget. Even though, comprehensive Africa agriculture development program (CAADP) (2010), has recommended governments to spend at least 10 percent of their total expenditure on agriculture.

Agriculture is the highly practiced occupation all around the world, i.e. there are a lot of people in this world, who earn their livelihood by growing crops, vegetables, fruits, flowers and rearing of cattle. The socio-economic development of all the countries of the world, mainly depends on its agriculture, as it is the - source of livelihood to many, as well as it adds to the country's gross domestic product (GDP). Indeed, the higher the growth of agriculture in a country, the more its trade and industry will flourish. Based on the geographical conditions, level of technology, the demand for produce, and workers required, there is two major classifications of farming, i.e. subsistence farming and commercial farming.

In subsistence farming, the farmer is involved in the production of crops for local consumption. But in the commercial farming the farmers and the labors are involved in the production of crops for commercial purposes. As population increasing day by day and the production are not being enough for all people and it is possible when there is the practice for commercial farming. With the expansion of urbanization and health

consciousness of the people and awareness created by different media the demand of vegetables has increased over the years and hence increased in area production and productivity. The area and production under vegetable is increased from merely 161048 hectares in 2001/02 to 244102 hectares in 2011/12 and production 1738086 metric ton to 3203563mt respectively (CBS, 2011).

Commercial Farming, or otherwise called as agribusiness is a farming method in which the crops are raised, and cattle are reared with the aim of selling the produce in the market, so as to earn money. In this type of agriculture, a huge amount of capital is invested, and crops are grown on a large scale in huge farms, with the use of modern technology, machines, irrigation methods, and chemical fertilizers. The basic feature of commercial farming is that high doses of modern inputs are used for higher productivity, such as high yielding variety seeds, fertilizers, insecticides, pesticides, etc. commercial agriculture is nothing but an agricultural business, wherein crops are grown for trading purpose.

However, the agriculture system is being changed and upgraded in Nepal but also the productivity and competitiveness in sectors are low. Most of the people of Nepal are engaged in agriculture and found dynamism in different sectors like dairy processing, tea, fisheries, vegetables farming which is not enough for making food security and decreasing malnutrition in the nation. Agriculture Perspective Plan was started in 1995/96 to make change in the agriculture system of Nepal and make progress in several indicators of well-being and development.

Through this plan per capita income and productivity of agricultural labor have increased, poverty has reduced and malnutrition has declined. Nepal is still in a low development stage in agriculture sector and change and improvement has been slow in comparison with our neighboring country India and China. In the case of agriculture, Nepal agricultural growth has been not only slow (about 3 percent), but also highly variable. Nepal's youth and some of its most productive labor force have looked for job elsewhere. About 300,000 migrants have left Nepal in 2010 and this has been a growing trend for the past 10 years. The migrants have sent home huge amount of remittances, estimated at over \$3 billion per year (representing more than 20 percent of GDP), but

most of these resources have gone into consumption and loan repayment rather than capital formation and investment (ADS, 2015-2035).

Agriculture development has been slow due to the large migration of people from rural area to cities and cities people migrate to abroad, in a result scarcity of labor and investment in rural areas. Peri-urban fertile agriculture land have been used as residential areas due to the rapid urbanization. Due to the political instability, many policies related to agricultural plan have been left at draft stage and lacked the supporting legislation and resources for implementation. Both private and public investment has been limited. During the first 10 years of the APP investment in agriculture by government and development partners has declined and not much private investment has taken place.

ADS expected to guide the agriculture sector of Nepal over the next 20 years in order to change the agriculture system of Nepal and increase the agribusiness and non-farm rural activities by strengthening linkages between agriculture and other sectors in the economy so that the problem of poverty, unemployment can be reduced in rural area. ADS had not only focused in the production sectors but also the processing sector, trade and other services.

1.2 Statement of the Problem

The country has huge potentiality for agriculture development but large amount of Nepalese economy has been expensing for agro imports. Majorities of the Nepalese farmers are involving in agriculture based occupation but the agro imports have been increasing annually as compared to other countries. It was 44.43 billion Rs in fiscal year 2009-2010 but reached into 138.32 billion Rs in last fiscal year (MoF, 2018). During the first eight months of the FY 2017/18, trade deficit has increased by 23 percent to Rs. 713.94 billion. During the corresponding period of the previous fiscal year, such deficit had increased by 47.6 percent to Rs. 580.34 billion (Economic Survey, 2017/18). Large portion of youths have been working in abroad and because of inflation of consumer price, large portions of family economy invested for daily necessities. The country has remittance based economy. The workers' remittance increased by 6.4 percent to \$3.9 billion in mid- February, 2018 and increased 30.2 percent to Rs.443.36 billion in the review period of 2018/19 (NRB, 2019).

Farming systems are different from place to place and season to season depending upon the terrain of the country ranging from the Terai, Hill, and the Mountain. The people of Suryabinayak Municipality are well engaged in commercial farming due to adequate facility of agricultural land and proper climatic condition. Despite these advantages, people are not able to fully achieve the return in their investment because of the unavailability of financial supports and markets. In addition to this, people are more incline towards the private job because of earning money without any investment.

In order to enhance the existing farming situation in Suryabinayak, people should be provided sufficient financial support in terms of agriculture loans at minimum interests from the local authority. Furthermore, different campaigns regarding commercial farming should be organized in terms of training in order to increase the productivity. Finally, there should be provision of good market so that the products can be easily sold without being waste.

1.4 Objectives of the Study

- To examine the social and demographic characteristics of the selected respondents.
- To assess private returns (i.e. economic/non-economic) of the commercial farming.
- To analyze social returns (i.e. economic/non-economic) of the commercial farming.

1.5 Significance of the Study

The study about the commercial farming can be a good reference for the local level authority in implementing and formulating different plans and strategies for the commercialization of agricultural sector in this locality. In addition to this, it is believed that this study will be equally useful to the interested readers, students and concern persons and among other institutions who desire to get knowledge and information about commercial farming. The research is also be useful in studying the socio-economic conditions of the local people before and after commercial farming. It can be well known from the study about the employment opportunities it has created in the locality and positive impact it has developed among the youths in preventing them from moving to foreign countries for the job opportunities.

1.6 Delimitation of the Study

Due to the lack of sufficient time, financial constraints, the rigorous time schedule and research capacity this study was conducted only in Suryabinayak Municipality of Bhaktapur district. So, it cannot be generalized all over the country and other area. The study was delimited to small size so the findings cannot be generalized as national indicator. Primary data were collected from 180 farmers who are directly involved in commercial farming so the results cannot be generalized for other similar area.

1.7 Organization of the Study

The study is organized into five chapters. First chapter deals with the introduction, background of the study, statement of the problem, objectives of the study, limitation of the study and organization of the study. Second chapter deals on literature review. Chapter three deals with the research methodology which includes research design, selection of the study area, nature and sources of data, universe and sampling procedure, data collection techniques and tools and methods of data analysis and interpretation procedure.

Accordingly, chapter four is concerned with the study area (Suryabinayak Municipality). Chapter five is mainly concerned with data presentation and analysis which includes social-economic condition of represents, vegetable production and related information, contribution of vegetable farming in income generation, level of income people before and after vegetable farming, In the last chapter i.e. chapter five summaries, conclusions and recommendation has been included.

CHAPTER II

LITERATURE REVIEW

2.1 Conceptual Review

In the 1950s and 1960s modernization, theory provided a conceptual structure for the analysis and explanation of the way in which new and particular farming population would adopt improved agro-technologies. Modernization theory did not such concern itself with the study of the generation of the new technologies, largely because of its stance toward technology. Modern technology was a technical not a social issue. It did not have a value dimension and the adoption of modern technology was usually assumed to be beneficial in terms their impacts on production and level of living and changes, which induced in social attitudes and behavior.

Modernization theory suggested that the main problem and modifying agricultural practices would not be in the research process, which was largely controlled by people with modern values. The great difficulties lay in the dissemination process, in which social and cultural obstacles to the adoption of new techniques and products could be anticipated in rural population with traditional attitudes and conservative values. With the process of modernization, rural society in influenced by the modern ideas i.e. follow the characteristics of modern society. Moreover; communication, transportation, education, media (Electric media and paper media), local leaders, development agent's geographical factors are the responsible to transfer new technology in rural society.

The modernization paradigm holds that child labor is a result of widespread poverty which compels families to send their children with the force. According to this theory, the employment of children is parents driven and a matter of economic necessity. Modernization of the agricultural sector may evolve in two ways. The first is the large-scale commercialization that consists of mechanizing the farming system derived from purely market-oriented purposes as well as the objective of profit maximization. The second way is the small holder and small-scale plantation deriving from the objectives of household food security and market commercialization. Agricultural modernization theory seeks to identify interdependent relationship between agricultural organization, transformation in agricultural industrial organization and agricultural technology as for

industrialization in the country. Hence, the theory portrays that an outcome of economic development cannot be achieved within the agricultural sector only. Therefore, in the current conditions, in order to facilitate agricultural modernization, we must transform the land system at the level of relations of production; promote the transformation of agricultural industrial organization and promoting the spontaneous revolution in agricultural production technology (Tang, 2011).

Agricultural modernization refers to the process of equipping agriculture with modern science, technology and production methods, organizing and managing agriculture with advanced scientific methods, improving agricultural laborers' cultural and technological qualities and transforming laggard traditional agriculture into modern agriculture which guarantees advanced productivity and maintenance and improvement of the sustainable development of environmental quality. Agricultural modernization is beyond transformation process form traditional to modern agriculture but a sum of policies and measures to facilitate it (Chunfa, 1998).

Table 1: Annual Percentage Change in GDP

Year	Annual Percentage Change in GDP
Japan	Food export 611.7 billion annually
India	The second largest producer of milk and rice.
France	World's fifth largest exporter and 18 percent EU food suppliers
China	Agricultural producer exporter at \$58 billion. However, 150 million Chinese still suffer hunger, mainly in rural areas.
USA	It is the largest agricultural exporter with exports estimated at \$110 billion annually
Brazil	Top five producers of milk, pork and beef
Mexico	Agricultural export is estimated at more than \$10 billion
Turkey	Every year 1.3 million tonnes of food ends up in bins.
Germany	Largest meat consumers in the world; each year 60 kgs of meat is consumed per person.

2.1.1 Contributions of Agriculture on National Economy

Agriculture has been an important sector in the national economy for most of the developing countries (Mongues, et al, 2012) while it plays an important role in virtually in all social and economic activities of any country (Lawal, 2011). “It is the agricultural sector that the battle for long-term economic development will be won or lost”-Gunnar Myrdal, Nobel Laureate in Economics. Nepal is predominantly an agrarian economy. It is the main source of livelihood of the Nepalese people. Still 74 percent of the people are dependent on agriculture sector. This sector contributes for about 35.0 percent of the GDP. Nepalese economy has undergone a gradual structural shift in the recent years. The share of service sector has increased gradually and reached nearly half of the GDP.

Table 2: Annual Percentage Change in GDP

Years	Annual Percent Change in GDP
2002/03	3.80
2003/04	4.40
2004/05	3.20
2005/06	3.70
2006/07	2.80
2007/08	5.80
2008/09	3.90
2009/10	4.30
2010/11	3.80
2011/12	4.60
2012/13	3.04
2013/14	4.14
2014/15	3.77
2015/16	4.60
2016/17	5.40
2017/18	5.70

Source: Economic Survey, 2015/16, Ministry of Finance, Nepal

The given table highlights the information on GDP contribution of the agricultural sector in Nepalese economy. The figure state that there was highest share (5.8 percent) in 2007/08 and lowest share (2.8 percent) in 2006/07. However there is a 4.03 percent average GDP contribution by agriculture sector but there has to be done various corrective measures for transforming agriculture sector.

Majorities of the farmers are practicing traditional farming system. Reasoning that huge amount of national and family economy has been invested to import agro products. In

fiscal year 2014-15, out of total imports Rs 784.58 billion, the share of agro based products' import was Rs 137.12 billion (See in Table 2 and 3).

Table 3: Share of Agro Imports in Total Imports

Year	Total Imports In Rs Billion	Agro Imports In Rs Billion	Percentage of Agro Imports in Total Imports
2009-2010	375.61	44.43	11.8 percent
2010-2011	397.54	54.47	13.7 percent
2011-2012	498.16	76.05	15.3 percent
2012-2013	601.21	99.35	16.5 percent
2013-2014	722.78	127.51	17.6 percent
2014-2015	784.58	137.12	17.4 percent
Total	3379.88	538.93	92.3 percent

Source: Trade and Export Promotion Center, 2015

The above table indicates that large amount of Nepalese economy has been expensing for agro imports. Despite, majorities of the Nepalese farmers are involving in agriculture-based occupation.

Table 4: Agro Imports in 2014-2015

S. N.	Particulars	Total Import in Rs Billion
1	Cereals	35.12
2	Fats and Oil	22.51
3	Vegetables	15.93
4	Fruits and Nuts	10.54
5	Animal Fodder	10.02
6	Oil Seeds	9.11
7	Coffee, Tea and Species	4.27
8	Sugar and Confectionary	3.49
9	Beverages	2.92
10	Tobacco	2.55
11	Live Animal	2.42
12	Dairy Products	2.15
13	Fish	1.15
Total		122.18

Source: Trade and Export Promotion Center, 2015

Latest data shows that Nepalese merchandise exports of cattle feed, vegetable ghee, thread, jute goods and readymade garments have been increased by 19.2 percent to

\$ 523.7 million and imports also increased by 23.9 percent to \$ 6.3 billion in the first seven months of this fiscal year (MoE, 2018).

2.1.2 Agricultural Education in Nepal

After the 1951 revolution, the ‘School of Agriculture’ was established under the Ministry of Agriculture in 1957. The school was set up to produce lower-level technical manpower to serve farmers called ‘Junior Technical Assistants (JTA)’. Later, in 1968, the school was upgraded to the College of Agriculture and a two-year ‘Intermediate of Agriculture Science (ISc.Ag)’ program was started, producing middle level technical manpower in agriculture, known as Junior Technicians (JT). In 1972, the college was upgraded to the ‘Institute of Agriculture and Animal Sciences (IAAS)’ under the umbrella of Tribhuvan University. The institute was then relocated from Kathmandu to its present site at Rampur in Chitwan district with an area of 110 hectares.

In July 1972, the institute was brought under TU and renamed as the ‘Institute of Forestry (IOF)’. Until the late 1970s, IOF was training only sub-professional or technical grade manpower through a BSC degree in Forestry. In response to the growing demand for agriculture technicians and graduates in the country, several private and governmental colleges were established at the start of 20th century. The Himalayan College of Agriculture Sciences and Technology (HICAST) was established in 2000 at Bhaktapur and offers Bachelor and Master’s level courses on agriculture and veterinary sciences. Similarly, Gokuleshwor Campus under IAAS was established in western region in 2010.

Realizing the importance of trained human resources in agriculture and forestry, the cabinet decided to establish a new ‘Agriculture and Forestry University (AFU)’ in 2010). Similarly, with the aim of producing competent and technical professionals in the field of agriculture, Nepal Polytechnic Institute (NPI) under the Center of Technical Education and Vocational Training (CTEVT) started a B.Sc. agriculture program at Bharatpur, Chitwan in 2011. Recently, under the Tribhuvan University system, two new campuses are now offering agriculture programs: Mahendra Ratna Multiple Campus, Illam, BSC in Floriculture/Horticulture (2012) and Mechi Campus, Jhapa, B.Sc. in Tea Technology. Presently, there are around 3500 agriculture graduates working in Nepal. In total, 250 agriculture graduates, 70 veterinarians, and 80 forestry graduates (2012) are being developed annually by different institutions around the country and out of which 30

percent are believed to go abroad either to study or for employment (Pyakuryal, 2013). The Ministry of Agriculture and Development (MOAD) has 378 extension offices and each office serves more than 11,000 farmers; one technician is responsible for an average of 1,500 farmers, whereas in developed countries this ratio is 1 technician/400 farmers (IRIN, 2013).

2.2 Theoretical Review

2.2.1 The Economic of Agriculture Development

Mellor uses economic analysis to organize, extend, understand, and evaluate the economic facts of the agricultural sector in a developing country. He highlights the interaction between agriculture and the rest of the economy (i.e. Agriculture and foreign exchange, agriculture and capital formation and alternative uses of industrial capital). He highlighted the *corresponding role of government is seen to be the facilitation of economic cooperation, rather than social engineering. In this regard he developed two big ideas:*

- The rapid growth of small commercial farmer dominated agriculture accelerates the economic transformation and is essential to the rapid decline in dominantly rural poverty
- Government has a prominent role if small commercial farmer dominated agriculture is to grow rapidly

In this process Mellor also developed three factors for agriculture development:

- **Expenditure by the small commercial farmer:** The magnitude of increased income to the small commercial farmer from **modernization** and its expenditure on non-farm
- **Relative size of the rural non-farm sector:** The size of the rural non-farm sector relative to the small commercial farm sector and the absolute size of both
- **Employment elasticity by sector:** The employment elasticity of each rural sector through production plus
 - A 10 percent increase in production of that sector's goods and services results in a 9 percent increase in employment
 - Fully consistent with Lewis's (1954) seminal position of "unlimited supplies of labor"

2.2.2 Theory of Agriculture Transformation

Nobel laureate economist (in 1979) Theodore William Schultz emphasized that key to agricultural transformation lies in emphasizing technological change in agriculture

(Author & Lekhi, 2008). Shultz argued that peasants are poor but efficient, they can bring about productivity increases and improvements provided they are given access to modern technologies. Peasant become rational actors would react to changes and apply new technologies, if they have the opportunity to do. According to the conception of this theory, Schultz has given more focus to following assumptions (Lekhi, 2012).

- Lack and availability of the capital is another reason and he thinks that peasants are more effective in producing output per additional unit of capital input.
- Given the enormous productive potential of agriculture, he stresses that poor countries with large agricultural sectors and large rural population should allocate more resources to agriculture.
- By saying that he does not belittle the importance of industrial sector but he wants the removal of those biases which stand in the way of transfer of resources from rural to urban areas.
- He further recommends that manufacturing and other urban sectors should not be subsidized with massive resource transfer of from rural to urban areas and this practice should be stopped forthwith.
- Agriculture as a tool of employment-based strategy requires three elements.
 - Accelerated output growth through technological, industrial and price incentive changes to raise the productivity of small farmers.
 - Raising domestic demand for agriculture output.
 - Diversified and non-agriculture labor-intensive rural development activities that directly or indirectly support and are supported by the farming community

2.2.3 Theory of Technology Transfer

The theory claimed that technology transfer is a reciprocal process that involves not only the product but also a set of practices. It is widely affected by the culture, which dictates a particular way of constructing, interpreting, and communicating meaning of technology, about what constitutes the knowledge about technology among government, experts, technicians and ordinary users. The technology transfer process describes the linkages which integrate the adoption of new science knowledge, and the functional interrelations of the different specialists within the process. For successful application of modern technology, one must follow the six interactive phases with key actions of

transfer to distinguish progress through a flow-system model. The process is presented to promote awareness and understanding about technology.

Technology Innovation: The technology transfer process begins when a scientist starts communicating ideas of how science can be used to solve a problem or improve a situation in a research priority area. This technology innovation phase is represented by the exchange of information which takes place between the scientist, colleagues and administrators to advance ideas on the application of science. A diagram is the first step toward communicating and refining ideas. The next step would be when the scientist starts discussing new theories with colleagues. This activity may aid the scientist in further refinement of the theories and gains suggestions in-house seminars and group discussions to encourage analysis and support or development of ideas.

Technology Confirmation: The technology confirmation phase is represented by the scientist first conducting research which provides data in support of the underlying theory about technology and then communicating the results to colleagues, peers and administrators (Trotter & Risdon, 1990). This phase address the issue of morale benefits which accrue from establishing the close relationship between morale and productivity.

Targeting Technology Consumers: During the third phase of the process decisions need to be made concerning who needs and can potentially benefit from the technology. The people involved in the targeting technology phase would be scientists and marketing personnel. These specialists need to be aware of factors such as cost, convenience which influence users' acceptance of new technology or factors which might serve to prevent the adoption of technology and multitude of factors for socio-economic considerations for targeting technology change.

Technology Marketing: The technology marketing phase of the process is concerned with disseminating the technology beyond the research center. Key actions for science liaison involve the talents of scientists, business leaders and marketing specialists to educate potential consumers to the social, economic and environmental benefits of the new technology in production system.

Technology Application: This phase concerns the understanding of users or consumers' behavior and establishing predictable steps to monitor the commercial application of technology. The talents and skills of social and financial consultants, and

marketing personnel are required to identify consumers' behavior and application patterns. It is the reason behind why the socio-economic, cultural and environmental factors can influence for adopting modern technology (Arnon, 1989).

Technology Evaluation: The sixth phase of the technology transfer process documents the success or lack of success of the technology to be adopted. Key actions for the technology evaluation phase are to establish assessment criteria for authenticating socio-economic and environmental benefits or harm that requires broad to specific measurement criteria (Cummings, 1990).

2.3 Policy Review

Policy is a formal set of ideas or plans that is used as a basis for making decisions, especially in politics, economics, of business. Policy is made for the improvement of the economies than the previous days. Commercial agriculture is defined as the part of agriculture producing output primarily for the market. It includes those farmers whose main source of income is farm production and whose resources are sufficient when efficiently allocated and organized to generate incomes in excess of the socially defined poverty level. Policy for commercial farming is to improve economic performance of the commercial farm industry with decreasing different problem of the country like unemployment, for increasing skilled manpower, increasing export and decreasing import etc.

In Nepal many policies and programs are made for the development of the agriculture sector since 1995. Agriculture Perspective Plan (APP) was run from 1997 in order to bring drastic change in agriculture sector but it has been failed. Somehow it had also changed the agriculture sector little bit but cannot change as is has expected. After the failure of Agriculture Perspective Plan the government has bring next program for 20 years named as Agriculture Development Strategy and current government proclaimed policy of doubling the budget allocation in agriculture reflects the emphasis the government has given on the agricultural sector and its commercialization and industrialization with the target of economic revolution in the country. ADS is being criticized for not being realistic and to have bypassed the consultation of main stakeholders, the farmers.

Table 5: Total (10-year) Cost of the ADS and Yearly Average

Cost	US million	Rs billion	Rs billion/year	percent
Total	\$5,282	501.8	50.2	100percent
Govt/Donors	\$4,683	444.9	44.5	89percent
Private/Community	\$600	57.0	5.7	11percent

Source: ADS, 2014

ADS strategic framework: Food and nutrition security, poverty reduction, agriculture trade competitiveness, higher and more equitable income, farmers' right ensures and strengthens.

Leading Stakeholders (Deliver): Farmer organizations, cooperative organizations and private sector organizations.

Process: Components (Design)

Improved Governance (accountability, participation, predictability, and transparency)

Higher Productivity (effective agricultural research and extension, efficient use of agricultural inputs; efficient and sustainable use of land, water, soils, and forests and increased resilience to climate change and disasters)

Profitable Commercialization (Connecting commercial farming with the local, national, and international markets)

Increased Competitiveness (Founded on a competent, hard-working and efficient work force, quality and unique products for global market and agro based entrepreneurship development)

Therefore, a great deal in this regard remains to be reviewed and accomplished. Different policies are introduced in Nepal for uplifting the agriculture sector such as National Agriculture Policy-2061, Agribusiness Promotion policy-2063 which is for the promotion of National Agriculture products for the expansion of the business of Agriculture sector, Commercial Agriculture Policy-2064 which is about to commercialize the agriculture to change in the national economy and Trade Policy which has assigned a lead role to the private sector for export promotion, limiting the role of the state as a guide, facilitator and regulator, Implement the land use policy 2069to stimulate commercial agriculture, such as on land plotting, land fragmentation, land ceilings, land tenancy, land pooling. The activities related to seed are consistent with Seed Vision 2025,

Agricultural Biodiversity Policy 2005, and Seed Regulation 2069. Promote private and cooperative sector and community-based seed production. This will involve: a. Promoting partnerships with relevant public, private and cooperative organizations, farms and nurseries for production of quality planting materials b. Encouraging private and cooperative sector to slowly take over the commercial production of saplings, seeds, while the role of government is that of facilitator, quality control, policy and regulations formulation, information provider, and monitoring and evaluation.

However, these policies are not enough and not implemented properly though they are in the mutual benefits of Nepal, its neighboring countries and other friendly countries. Therefore, it is strongly felt that it is essential to review the existing policies, strategies and programs and projects related to commercialization and industrialization of agriculture sector and international trade and marketing of agricultural commodities including medicinal herbs and NTFPs. There is need to analyze the policy gaps and develop necessary suggestions that can provide important feedback for planners and policy makers so as to revise the policies and strategies related to commercialization and industrialization of agriculture sector in Nepal and to promote the international trade and trade relations and partnerships.

Table 6: Agriculture Development Programs in Nepal

Plan Periods	Agriculture Development Programs in Nepal
1Plan, 1956-61	<ul style="list-style-type: none"> • Tribhuvan village development program implemented in 150 blocks • Rs 45 million (13.6 percent of total budget) was allocated and benefited to 2.25 million people from 3800 villages
2 Plan, 1962-65	<ul style="list-style-type: none"> • Developed and implemented Land Reform Act 1964
3Plan, 1965-70	<ul style="list-style-type: none"> • Diffusion of improved technology for agriculture development
4Plan, 1970-75	<ul style="list-style-type: none"> • Prepared specific policy for agriculture development
5Plan, 1975-80	<ul style="list-style-type: none"> • Implemented Integrated Rural Development Program (IRDP) • Agriculture development became first priority sector in IRDP
6Plan, 1980-85	<ul style="list-style-type: none"> • Continuation of IRDP • Realized IRDP as strategy for rural development
7Plan, 1985-90	<ul style="list-style-type: none"> • Realized role of women in agriculture development (WID) • Prepared and implemented irrigation policy for agriculture development
8Plan, 1992-97	<ul style="list-style-type: none"> • Mobilized women in agriculture development (WAD) • Mobilized local government in agriculture development process
9Plan, 1997-2002	<ul style="list-style-type: none"> • Promoted local technologies for agriculture development • Realized gender role of women in agriculture development (GAD)
10Plan, 2002-2007	<ul style="list-style-type: none"> • Implemented OBOP for agriculture development • Promoted specialized and commercialized farming system
Interim Plan, 2008-10	<ul style="list-style-type: none"> • Rural Urban Partnership Program • Commercialization of agriculture products
Interim Plan, 2011-13	<ul style="list-style-type: none"> • Focus on agro-tourism development activities • Government offered vocational trainings to >2,00000 youths by mobilizing 16 training institutions
13 Plan, 2013-16	<ul style="list-style-type: none"> • Upgrading country to developing country by 2022 and middle income country by 2030
14 Plan, 2016-18	<ul style="list-style-type: none"> • Designed/implemented PMAMP • Agriculture production in pockets, blocks, zones and super zones • Agriculture as lead sector for economy (now to then and forever)
15 Plan, 2019-21	<ul style="list-style-type: none"> • Continued PMAMP • Priority given to agriculture development strategy (2015-35) • Ensure food security and nutrition through agriculture development

2.4 Empirical Review

Different authors have different perspectives in the development strategies. Regarding to the African countries different authors said that the development strategies of African country must focus on agriculture sector as it is large and important too. Agriculture is the supplier of food, an essential good or that agriculture is the key to reducing poverty and inequality but Stefan and Douglas were much more unconvincing to those lines and said that the resources invested in the agriculture can achieve development objectives more cost effectively than the same resources invested elsewhere in the economy. If growth in agriculture is especially difficult to achieve, then a development strategy concentrated on agricultural investments may lead only to wasteful expenditures of resources. Public investments in agriculture will generate greater improvements in social welfare than investments in other sectors (Dercon & Douglas, 2014).

Agriculture is the key to reduce poverty and inequality. As most of the authors supports agriculture in the Africa is important as it is the large sector of this country. Then the Stefan Dercon and Douglas Gollin put questions that if the growth in agriculture is especially difficult to achieve then why development strategy should focused on the agriculture investments. Agriculture plays an important role in supplying food and export earnings in sub-Saharan as it is the largest sector for earning and providing employment. According to the UN Food and Agriculture Organization 61.4 percent people of sub-Saharan Africa lives in rural areas and most of the Africans were involved in the agriculture sector which is about 57.3percent.

Most of the Africans are doing agriculture in their own land and only few people were employed as the agricultural wage workers. However the most people of sub-Saharan Africa were involved in the agriculture sector, the economies of the Africa is very low. For the development of the agriculture in the Africa (Stefan Dercon, Douglas Gollin , 2014) private sector plays an important role to develop in which the public sector is important to set the conditions for private investment. Public policies are important to respond for the investment of the private sector and changing economic conditions.

A related empirical literature has focused on an “agriculture first” argument due not so much to its impact on growth but rather out of a desire to ask which sector delivers

poverty reduction most effectively. The general theoretical argument has been that stimulating growth in agriculture is key, because of its effects on overall economic growth and because many poor people derive their incomes from agriculture. An indirect effect is that agricultural growth drives reductions in the price of food, with particular benefits for the poor. As a result, the argument holds that agricultural growth has superior impacts on poverty reduction, nutrition, and/or food security, compared to growth in other sectors. This viewpoint embeds some strong and internally consistent arguments, but they still need to be dealt carefully.

One supporting point is the sheer size of the agricultural sector. Since it is one of the largest sectors, and since it is also a large employer of the poor, growth in agriculture obviously will have positive impacts on those who work in the sector – including many poor people. Furthermore, there are good reasons to believe that agriculture uses labor of the poor intensively, so that much of the gains from growth may well be accruing to the poor. Finally, agriculture is the sector producing food, which comprises a disproportionate share of the consumption basket of the poor. Taken together, these factors suggest that direct impacts of growth in agriculture on national poverty are likely to be substantial and positive (Dercon & Gollin , 2014).

In Africa many individuals and firms are finding very profitable not only in traditional cash crops of coffee, cocoa, rubber, but also in flowers, fruits and vegetables and cereal and dairy production too. If the policy for the agriculture in African countries is made then the economic development of countries can be easy through agriculture and the problem of poverty, unemployment, food insecurity can be easily reduced by the commercialization of the agriculture sector. This can be possible when the political party used to support for this sector.

In the Asia and pacific large number of populations were engaged in agriculture sector in which family farming is popular all over the world and 60 percent of the world population engaged in family farming and 74 percent family were engaged in this type of farming (Jingzhong & Pan, 2016). Family farming is essential for the sustainability of agricultural, forestry and fishery production systems and it is good for managing available resources. It is helpful to achieve food security not only for themselves but also

for increasing number of families that have left the farm sector for employment in other occupations. (Jingzhong and Pan, 2016).

2.5 Conceptual Framework of the Study

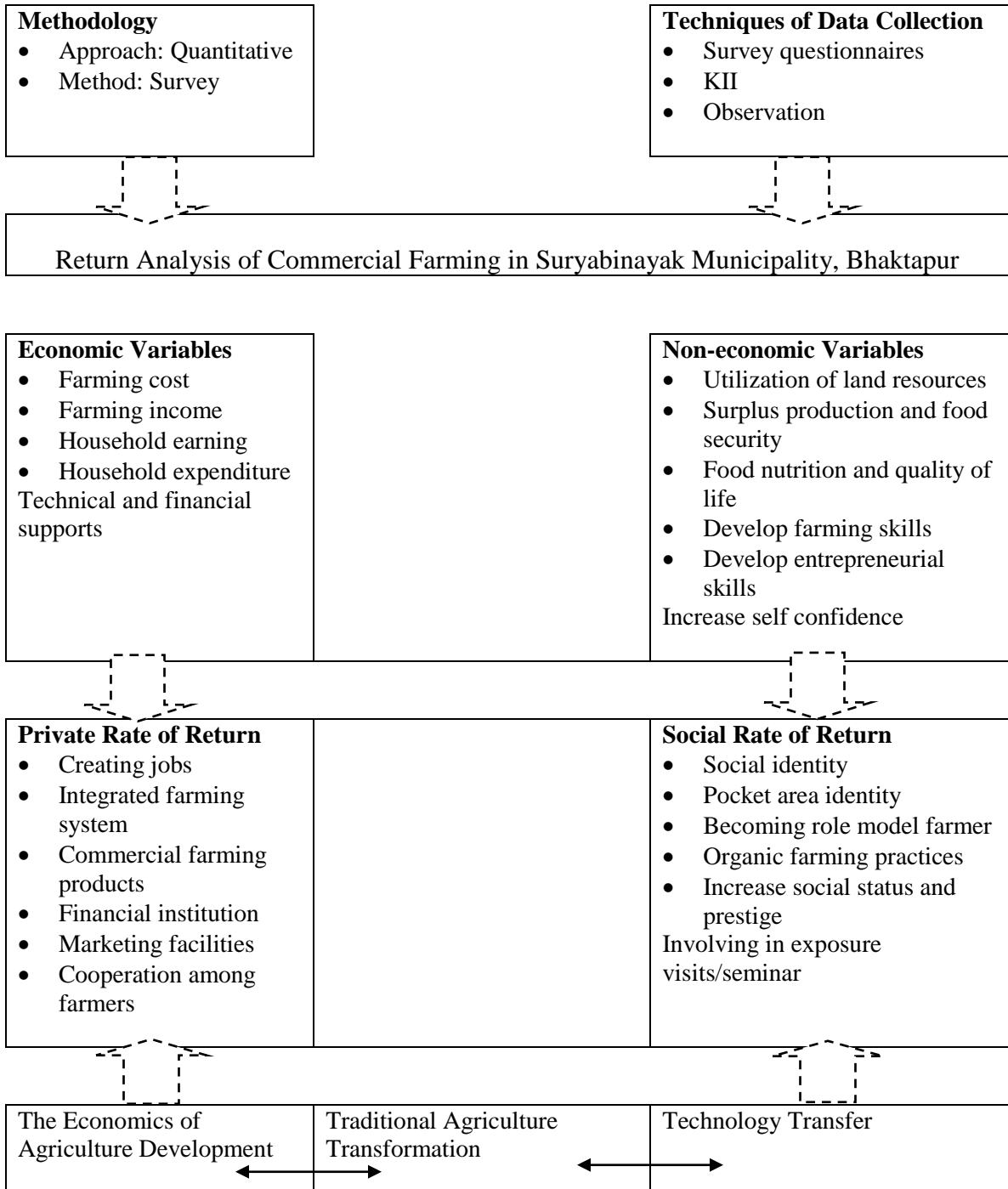


Figure 1: Conceptual Framework of the Study

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

Research design is the way of handling research problem efficiently in a logical way by using different methods and techniques. A research design is the arrangement of conditions for collection and analysis of data manner that aims to combine relevance to the research purpose with economy procedure. Research design is the plan, structure and strategy of investigation of conceived so as to obtain answers to research question and to control variances to achieve of the study, descriptive and analytical research design was used. A research design is the specification of methods and procedure for acquiring the information needed.

Hence, the required information are collected through survey methodology. Survey simply means numerical description of relevant aspects of a study population. It is a method of collecting data in which a specifically defined group of individuals are asked to answer a number of questions (Gupta & Gupta, 2015). More specifically, this study applied household survey method that followed quasi-experimental research design, without controlling and manipulating of the studied variables (Sharma, 2007).

3.2 The Field and Rationale

3.2.1 Bhaktapur District: At a Glance

Bhaktapur district is the smallest district among 77 districts of Nepal which is located in the eastern part of the Kathmandu Valley and also part of Bagmati Province. The headquarters of the Bhaktapur district is Bhaktapur which covers an area of 119 sq.km. According to the census 2011 the population of the Bhaktapur district is 304651 in which male population is 154884 and female population is 149767. There are four municipality in Bhaktapur district named as Madhyapur Thimi municipality, Changunarayan Municipality, Suryabinayak Municipality and Bhaktapur Municipality as well.

Talking about the education of the Bhaktapur district, Bhaktapur district has been making tremendous achievements in education sector. The average literacy rate of

the Bhaktapur district is 81.68 in which male literacy rate is 90.48 percent and female literacy rate is 72.65percent. The governmental schools in Bhaktapur are making remarkable improvement in its educational quality. The government schools have been starting to facilitate students by teaching in both English and Nepali medium. Private schools too are well known for providing quality education. Despite topping other districts in SLC with highest enrollments, the higher studies of the Bhaktapur is not quite satisfactory. There is not enough college in Bhaktapur rendering qualitative services.

Regarding to Tourism sector Bhaktapur district have many such places which attracts the tourist. Changunarayan Temple and Bhaktapur Durbar Square are enlisted in the World Heritage. Fifty-five-window Palace, Datatraya Temple, Nyatapole, Bhairab Temple, Suryabinayak Temple, Doleshwor Mahadev Temple and Nagarkot are the prominent tourist destinations of Bhaktapur. Similarly, the huge Shiva statue of Chittapol, Pancha Mahalaxmi Temple, Saraswotikhel of Duwakot, Baghhiti of Bageshwori, stone-engraving of Tathali, Saraswoti Temple of Sudal, Asapureshwor of Sipadol and Ranikot of Gundu are other popular tourist destinations.

Bhaktapur district covers 11900 hectors of land in which 11106 hectors of land is suitable for the agriculture but 8077 hectors of land has been cultivated. The major crops of this district is wheat, maize, paddy and potato. Without irrigation facility also people are doing agriculture, the agriculture land not having the irrigation facility covers 2186 hectors of land. Similarly, 2,620 hectors of land is irrigated round the year whereas the land that has partial irrigation facility is about 3,271 hectors. Madhyapur Thimi, Bageshwori, Jhaukhel, Duwakot, Sipadol and Around Suryabinayek are considered pocket areas for commercial vegetable production. Nagarkot, Bageshwori, Sudal, Tathali, Nangkhel, Sipadol, Gundu, Around Suryabinayek, Madhyapur Thimi, Jhaukhel and Changunarayan are identified as the core areas for cereal production. Nagarkot, Sudal and Nangkhel have developed their image for organic agriculture.

Lastly, Bhaktapur is mostly famous for the hakupatasi dress of newari culture, Bhadgaule cap, pottery business and juju dhau. Juju Dhau is a superb brand of the nation and is popular in international arena too. Curd from Bhaktapur goes all over the nation with this name. The literal meaning of this word is 'King of Curd'. It is prepared using

high quality milk. This is an unavoidable ingredient in every function and ritual of Newar community. Even pregnant women are given this high-calorie food.

3.2.2 Suryabinayak Municipality: At a Glance

Suryabinayak municipality is one of the municipalities of Bhaktapur district situated at Province no.3. First the Suryabinayak municipality was created in December 2014 through the merger of the Village Development Committee of Katunje, Sipadol, Nankhel and Chitpol. The municipality was named from the Suryabinayak Temple located in this municipality. In March 2017, Under new local level restructuring Suryabinayak Municipality was expanded by the merger of neighboring Anantalingeshwor Municipality and again added the four previous VDC's named as Sirutar, Gundu, Around Suryabinayek and Balkot. Suryabinayak Municipality is surrounded by the Banepa Municipality in the East, Mahalaxmi Municipality in the South-west, Madhyapur, Changunarayan, Bhaktapur Municipality in the North and Panauti Municipality in the South.

The center location of this Municipality seems to be Katunje and the municipality was shifted from Jagati to Katunje. Therefore the present location of Suryabinayak Municipality is Katunje ward no.5. According to the Nepal census 2011, the population of Suryabinayak Municipality is 78490 where male population is 38899 and female population is 39891. Regarding to the tourism sector of Suryabinayak Municipality have many religious places which attract Tourists. Head of the Kedarnath (Doleshwor Mahadev), Ganesh Temple, 108 ft. tall Mahadev etc are famous for the religious tourism where many tourists comes to visit. Similarly, there are such places which are being famous for the tourism destination like Ranikot durbar, Ghyamp danda, Pilot baba meditation centre etc.

Talking about the agriculture sector of Suryabinayak Municipality, Total area of Suryabinayak municipality is 42.45 sq.km in which agriculture land covers 102.40 hectors. Sipadol and Around Suryabinayek are considered pocket areas for commercial vegetable production. Nangkhel, sipadol, Gundu, Around Suryabinayak are identified as the core areas for cereal production. Nangkhel have developed its image for organic agriculture. However, the main crops of this municipality are wheat, paddy, maize and

potato, the trend of the farming system has been changed and vegetable farming like tomato, mushroom, cauliflower and cabbage are increasing day by day.

3.3 Nature and Source of Data Collection

The study is based on both primary and secondary sources of information. In order to fulfill the specific objectives of the study, the analysis is mainly based upon primary data. This primary data has been acquired from field surveys, observations and interviews. The secondary data has been collected from different published and unpublished materials such as research articles, books, journals, seminar papers, occasional papers, case studies, research reports and thesis etc. The methods of the study are basically qualitative and quantitative.

3.4 Sampling and Population

Sample is a small representative proportion of population that will select for observation and analysis of data information (Best & Khan, 2004). Under quantitative approach, this study identified 261 role model farmers or sample populations (Municipal Profile, 2018). Out of that only 180 sample numbers have been selected as respondents (Table 7 and Appendix F) that are generated with 95 percent confidence level and 5 percent marginal error by using sample size determination formula (Krejcie & Morgan¹, 1970). In so doing, this study followed both purposive and quota sampling methods.

Table 7: Selection of the Respondents

Ward	Sample Population	Sample Numbers
1	29	18
2	27	18
3	26	18
4	24	18
5	27	18
6	22	18
7	28	18
8	29	18
9	25	18
10	24	18
Total	261	180

Source: Field Study, 2018

$$^1 \text{ Sample size (n)} = \frac{\chi^2 * N * (1-P)^2}{ME^2(N-1) + (\chi^2 * P * (1-P))}$$

Where,

n = required sample size

χ^2 = Chi square (Value* 3.841 for 5percent confidence level with 1 degree of freedom)

N = Population size

ME = Desired Marginal error (expressed as a proportion)

P = Probability of success (0.5 value for unknown population)

Q= (1-P, i.e. 0.5 value for unknown population)

3.5 Data Collection Techniques and Tools

For collecting a reliable information from field, it is very much essential to use appropriate techniques for the collection of data so that it gives precise and accurate data from field. Therefore, different tools and techniques such as semi-structured interview techniques, household survey questionnaires were used to collect the required information. Thus the following techniques were used for the collection of the data.

3.5.1 Household Survey

For collecting data from field first of all semi structured questionnaire was prepared with the help of related supervisor so that to collect reliable information from the field survey. The questionnaire is prepared to collect the information about my research objectives. The questionnaire is prepared only for those people who involved in the commercial agriculture farming. Mainly the close ended questionnaire was prepared for interview which is the most applied tool to collect primary data from field. All respondents were requested to fill up the answer with close rapport building. Thus, the information generated from tools is quantitative in nature.

3.5.2 Key Informative Interview (KII)

Key Informant Interview (KII) is one of the tools of data collection to gather qualitative information from those people who know what is going on in the community. The purpose of key informant interview is to collect information from a wide range of people including community leaders, professional, or residents who have first-hand knowledge. Before taking interview with key person researcher have prepared the semi structured questionnaire with the coordination of supervisor so that to get the related information of the research topic or to meet the objective of the research. In the survey of the commercial farming, for the information of commercial farming key informant interview was done with the secretary of agriculture cooperative, section head of agriculture and livestock of municipality, and role model farmers as well.

CHAPTER V

DATA PRESENTATION AND ANALYSIS

5.1 Social Demographic Characteristics

5.1.1 Age of the Respondents

The age of the respondents shows which age group of people are being actively participate in the commercial farming and how much they are getting successful in their farming. The age factor is the most important part of the demographic study. Regarding to the age of respondents, the researcher had presented the table of the people engaging in the commercial farming as follows:

Table 8: Age of the Respondents

Age of Respondents	Frequency	Percent
<= 22	2	1.1
23 – 32	59	33.0
33 – 42	51	28.4
43 – 52	33	18.2
53 – 62	27	14.8
73+	8	4.5
Total	180	100

Source: Field Survey, 2018

Observing the above table, it can be concluded that the age group of (23-32) means 33 percent were being more engaged in the commercial farming and the least participated age group are (<=22) which is 33percent. During KII, most of the participants happily shared that local educated youths are also attracting in commercial farming practices.

5.1.2 Caste/ Ethnicity of respondents

Caste/ Ethnicity is also one of the demographic parts of the respondents which represents about the community groups engaging in the commercial farming. The following table is caste and ethnicity of the respondents engaging in the commercial farming:

Table 9: Caste and Ethnicity of respondents

Caste	Frequency	Percent
Bhramin	16	9.1
Chhetri	33	18.2
Janajati	131	72.7
Total	180	100

Source: Field Survey, 2018

From the above field survey report, in the agriculture sector the Janajati group of people were highly engaged in the commercial farming which is about 72.7 percent and the least engaged group were Brahmin which is about 9.1 percent of 100 percent. Similarly, the Chhetri group were in the middle stage to engage in the commercial farming which is about 18.2 percent.

5.1.3 Education status of Respondents

Education is the important factor to determine about the knowledge of the respondents. Education determine all factors and agriculture as well so education is the most important demographic part for determining agriculture improvement as well.

Table 10: Education status of Respondents

Educational Status	Frequency	Percent
Primary	31	17.0
Lower secondary	23	12.5
Secondary	47	26.1
Higher Secondary	45	25.0
Illiterate	35	19.3
Total	180	100

Source: Field Survey, 2018

From the above survey report, mostly the secondary education level people engaged in the commercial farming which is 26.1 percent. Farmers having higher secondary level education also engaged in the agriculture sector which is about 25 percent. Primary education level people were less engaged in the commercial farming. From KII, Secondary level educated farmers are mostly active in receiving agriculture training.

5.1.4 Land Holding Status of Farmers

Land determines the income of the farmers. Land is the one factor that determine the private returns and social returns of the farmers.

Table 11: Land Holding Status of Farmers

Land holding status	Frequency	Percent
<10 Ropani	143	79.5
10-14 Ropani	27	14.8
15-19 Ropani	8	4.5
>25 Ropani	2	1.1
Total	180	100.0

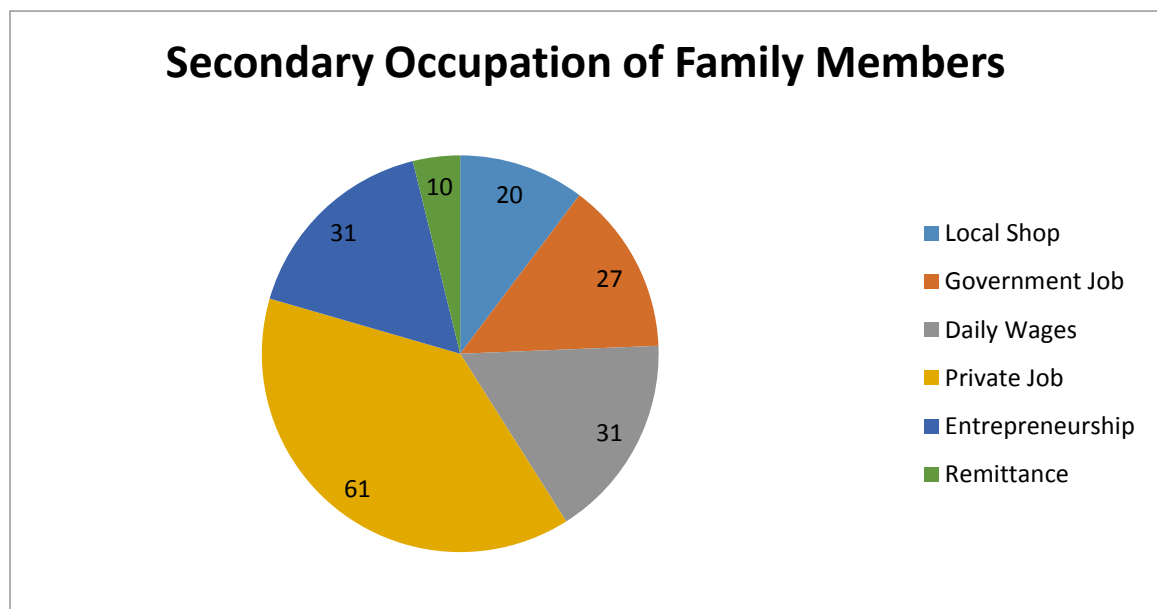
Source: Field Survey, 2018

The above survey report shows 79.5 percent of the farmers were holding less than 10 Ropani land and 14.8 percent farmers were holding 10-14 Ropani land. Similarly, only few farmers 4.5 percent, were doing large commercial farming by holding 15-19 Ropani land and only 1.1 percent farmers were doing commercial farming by holding greater than 25 Ropani land. From the field observation, most of the farmers are not land owner and they are doing agriculture in the contract of land.

5.1.5 Agriculture, Secondary Occupation Status of Family Members

Agriculture is the main occupation of the family and the other occupation of the family members involving are like local shop, government job, daily wages, private job, entrepreneurship and remittance are the secondary occupation of the family members.

Figure 2: Secondary Occupation Status of Family Members



Source: Field Survey, 2018

Above pie chart shows the secondary occupation of the respondent's family members. It can be said that the 30 respondent's family were highly engaged in the secondary occupation and only 3 respondent's family were less engaged in the secondary occupation. One of the KII participants also shared that most of the local youths are working around Kathmandu Valley and not interested to involve in foreign employment.

5.1.6 Annual Income of Respondent Family

Annual income shows the sources the income of the family. It helps to know about the major income source of the family and secondary sources of the family.

Table 12: Annual Income

Income Sources	N	Min	Max	Mean	SD
Agriculture	84	20000	4000000	316238.10	732080.459
Business	3	50000	600000	336666.67	275741.425
Government Job	11	20000	480000	264181.82	145295.436
Private Job	31	20000	2500000	303806.45	426751.873
Daily Wages	11	100000	300000	200000.00	70427.267
Entrepreneurship	12	100000	720000	283333.33	179764.155
Remittance	6	600000	5000000	1333333.33	1796292.478

Source: Field Survey, 2018

5.1.7 Annual Expenditure of Respondents Family into various Sectors

Annual Expenditure shows the source of income expenditure and knows about the expenditure done by the family in the different sector.

Table 13: Annual Expenditure

Expenses Category	N	Min	Max	Mean	SD
Food items	88	10000	2400000	203863.64	418855.561
Clothing	88	5000	500000	27920.45	57360.971
Household accessories	14	10000	50000	27000.00	15276.931
Children education	68	10000	500000	106808.82	111062.072
Visit in pilgrimage	56	1000	70000	19267.86	15361.689
Cultural celebration	88	5000	120000	44284.09	24155.126
Medical treatment	74	1500	60000	10466.22	9609.973
Philanthropy	0				

Source: Field Survey, 2018

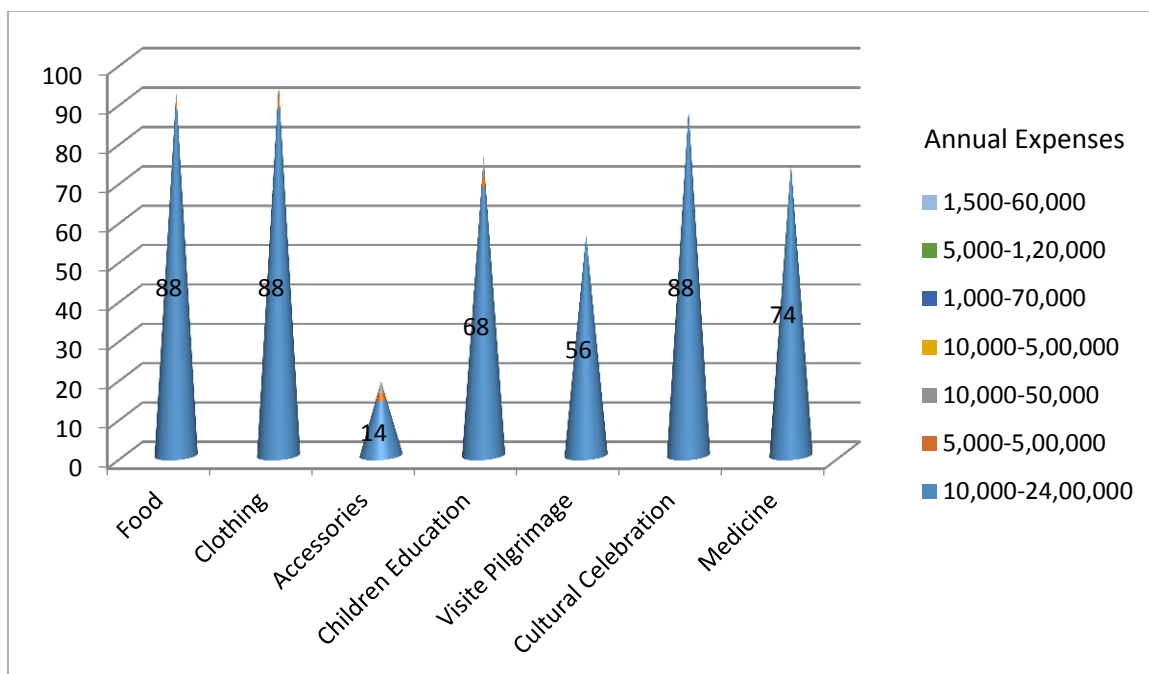


Figure 3: Annual Expenses

5.1.8 Farm Specifications

Table 14: Farm Specifications

Farm Specification	N	Percent
Major crop production	77	42.6percent
Livestock	19	10.4percent
Poultry	9	5.2percent
Fishery	2	0.9percent
Tunnel vegetable farming	38	20.9percent
Mushroom cultivation	5	2.6percent
Integrated farming	31	17.4percent
Total	180	100.00percent

Source: Field Survey, 2018

From the observation of above table, it can be concluded that the major crop production is their main occupation which is 42 percent, tunnel vegetable farming is another farming which is about 20.9 percent. Similarly, integrated farming and poultry farming are 17.4 percent and 10.4 percent respectively. During KII, Tunnel vegetable

farming is increasing as it gives the good return and the major crop production is being increased because the municipality provide seeds for farming.

5.1.9 Years Been Involved with Commercial Farming

Table 15: Involved in Commercial Farming

Farming Years	Frequency	Percent
1 – 10	147	81.8
11 – 20	20	11.4
21 – 30	4	2.3
41 – 50	4	2.3
51+	4	2.3
Total	180	100

Source: Field Survey, 2018

It can be concluded that out of 180 respondents, 147 respondents are involved in the farming line between 1-10 years and similarly, 20 respondents are involved in the farming line from 11-20 years, and only 4 respondents are involved in the farming line from past 51 years. During KII, local peoples are involved in agriculture from last 51 years.

5.2 Private Returns (Economic & Non-economic Sectors)

5.2.1 Private Return from economic sectors

Farmers got the economically help from the commercial farming and they got the good returns from the commercial farming as well.

Table 16: Average Monthly Income from Commercial Farming

Average monthly income	Frequency	Percent
<= 50000	37	20.5
50001 – 100000	33	18.2
100001 – 150000	33	18.2
150001 – 200000	10	5.7
200001 – 250000	27	14.8
250001 – 300000	8	4.5
350001 – 400000	4	2.3
400001 – 450000	4	2.3
550001 – 600000	2	1.1
700001 – 750000	8	4.5
950001 – 1000000	2	1.1
1750001 – 1800000	4	2.3
5950001+	8	4.5
Total	180	100.0

Source: Field Survey, 2018

By the observation of above table Out of 180 respondents 37 respondents have below 50000 monthly income, 33 respondents have 50000-100000 monthly income by doing commercial farming and next 33 respondents earn 100000-150000 in monthly basis through commercial farming. Similarly, only 8 respondents earn high amount in monthly income which is 595000-above. During KII, only those farmers earn high amount who have good linkage with the market and government.

Table 17: Source of Investment

Source of Investment	Responses	
	N	Percent
Personal Savings	127	70.5 percent
Borrowed from relatives	17	9.5 percent
Cooperative loan	34	19.0 percent
Bank Loan	2	1.0 percent
Total	180	100.0 percent

Source: Field Survey, 2018

From the observation of the above table, it can be said that the most of the respondents have started their commercial farming with the investment of their own saving which is 70.5 percent and similarly, 34 respondents take loan from cooperative to start commercial farming which is 19 percent and 17 respondents borrowed loan from relatives to start their farming. During KII, Most of the farmers thinks of doing from small to big so that they starts with the small and its enough from personal saving to start.

5.2.2 Private Returns from Non-economic Sectors

Family having varieties of nutrient foods shows the private returns of farmers in non-economic sector. It shows indirectly earning of the farmers and family status as well. So the table below shows that how much they are agree to use having nutrient food:

Table 18: Family Members having Variety of Nutrient Food

Response	Frequency	Percent
Strongly agree	96	53.4
Agree	72	39.8
Neutral	12	6.8
Total	180	100

Source: Field Survey, 2018

From the observation of the table 53.4 percent of respondents were strongly agree to eat nutrient food, 39.8 percent of respondents were agree to eat nutrient food and 6.8 percent were neutral to eat nutrient food as well. During KII, farmers are working for to survive so they are focused on their nutrient food.

Table 19: Quality Life of Family Members

Quality life	Frequency	Percent
Strongly agree	45	25.0
Agree	133	73.9
Neutral	2	1.1
Total	180	100.0

Source: Field Survey, 2018

From the above table, 25 percent of people were strongly agree about quality of life of family members were increased while engaging in commercial farming, 73.9 percent people were agreed about quality of life of family members were increased while engaging in the commercial farming and only 1.1 percent respondents were neutral to say that above statement. During KII with the farmers, most of the farmers accepted in increasing the quality of life by involving in the commercial farming.

Table 20: Farming Skills Increased due to Practical Knowledge

Farming skills	Frequency	Percent
Strongly agree	78	43.2
Agree	96	53.4
Neutral	6	3.4
Total	180	100.0

Source: Field Survey, 2018

From the above survey report, 53.4 percent respondents were agreed about farming skills increased due to engaging in commercial farming, 43.2 percent respondents were strongly agree to increase knowledge while doing commercial farming and only 3.4 percent respondents were neutral to say about their increased faming skills.

Table 21: *Entrepreneurship skills also has been increased*

Entrepreneurship	Frequency	Percent
Strongly agree	25	13.6
Agree	151	84.1
Neutral	2	1.1
Disagree	2	1.1
Total	180	100.0

Source: Field Survey, 2018

Above table shows that 13.6 percent people were strongly agree about increasing entrepreneurship skill when involving in the commercial farming, 84.1 percent people were agree about increasing entrepreneurship skills and 1.1 percent were neutral as well as disagree too.

Table 22: *Self-confidence Level has been increased*

Self confidence level	Frequency	Percent
Strongly agree	25	13.6
Agree	153	85.2
Disagree	2	1.1
Total	180	100.0

Source: Field Survey, 2018

The above survey report shows that 13.6 percent people were strongly agree about self confidence level has been increased doing commercial farming, 85.2 percent were agree about the self confidence level and 1.1 percent of respondents self confidence level has not been increased while doing commercial farming. During KII, most of the farmers increased their idea of doing commercial farming.

5.3 Social Return (Economic and Non-economic sectors)

5.3.1 Social Return from economic sectors

Social return is a method to measure the extra financial value such as environmental or social value not currently reflected or involved in the conventional financial accounts. It can be used to evaluate the stakeholders.

Table 23: Females Involved in Commercial Farming

Females involved	Frequency	Percent
1-2 workers	115	63.6
3-4 workers	43	23.9
>5 workers	23	12.5
Total	180	100.0

Source: Field Survey, 2018

The above table is about the females involved in the commercial farming in which 63.6 percent (1-2) female workers are involved in the commercial farming, 23.9 percent (3-4) female workers are involved in the commercial farming. During KII, women are giving their time for commercial farming instead of being only housewife.

Table 24: Males involved in commercial farming

Male involved	Frequency	Percent
1-2 workers	68	37.8
3-4 workers	22	12.2
>5 workers	90	50.0
Total	180	100

Source: Field Survey, 2018

The above table is about to show the male workers involved in the commercial farming in which 37.8 percent (1-2) male workers are involved in the commercial farming and 12.2 percent (3-4) male workers are involved in the commercial farming. Status of employee in farmland shows the situation of the employee after involving in the commercial farming. It shows that which sex is actively participated in the farming with full time.

Table 25: Female full-time worker in farmland

female full time worker	Frequency	Percent
1-2 workers	137	76.1
3-4 workers	25	13.6
No female workers	18	10.2
Total	180	100.0

Source: Field Survey, 2018

From the above table, it can be say that from each respondents (1-2) female workers are giving their full time for their commercial farming out of 137 respondents which is 76.1 percent, (3-4) female workers were giving their full time for their commercial farming out of 25 respondents which is 13.6 percent and regarding to 18 respondents none of female workers are engaged in their farming which is 10.2 percent.

Table 26: Male full-time worker

Male full time worker	Frequency	Percent
1-2 workers	117	64.8
3-4 workers	23	12.5
None of male workers	41	22.7
Total	180	100.0

Source: Field Survey, 2018

From the above table, it can be say that from each respondents (1-2) male workers were giving their full time for their commercial farming out of 117 respondents which is 64.8 percent, (3-4) male workers were giving their full time for their commercial farming out of 23 respondents which is 12.5 percent and regarding to 41 respondents none of male workers were engaged in their farming which is 22.7 percent.

Table 27: Sales of Compost Manure

sales of compost manure	Frequency	Percent
Yes	55	14.8
not yet	125	85.2
Total	180	100.0

Source: Field Survey, 2018

The above table is about the sales of compost manure in which out of 180 respondents 55 respondents' i.e 14.8 percent make compost manure for selling purpose after they use and out remaining 225 respondents 85.2 percent make a compost manure. During KII, farmers do not sell compost manure as they use by themselves.

Table 28: Trend of Commercial Farming

Increasing commercial farming	Frequency	Percent
Strongly agree	57	31.8
Agree	61	34.1
Neutral	18	10.2
Disagree	43	23.9
Total	180	100.0

Source: Field Survey, 2018

The 31.8 percent people were strongly agree about the increasing trend of commercial farming while 34.1 percent were only agree about the increasing trend of commercial farming. Similarly, 10.2 percent were neutral of saying that and 23.9 percent were disagree to say that trend of commercial farming has not been increased.

Table 29: Membership got from Community base Institutions

Membership with CBOs			
membership in sectors	Responses		Percent of Cases
	N	Percent	
membership you got from farmer group	20	20.8percent	39.2 percent
membership you got from cooperatives	49	51.0percent	96.1 percent
membership you got from guthi	26	27.1percent	51.0 percent
membership you got from consumer groups	1	1.0percent	2.0 percent
Total	96	100.0percent	188.2 percent

Source: Field Survey, 2018

From the above table it can be concluded that most of the farmers and their family are membership in the cooperatives which is 51.0 percent. Similarly, 27.1 percent are membership in the guthi and 20.8 percent are membership in the farmer group and 2 percent are in the consumers group. During KII, most of the farmers are involved in the cooperative as they support in the loan process and market for selling.

Table 30: Economic Well-being of Farmers

Economic status increased	Frequency	Percent
Strongly agree	43	23.9
Agree	110	61.4
Neutral	27	14.8
Total	180	100.0

Source: Field Survey, 2018

The above table can be concluded as 23.9 percent respondents were strongly agree to say that economic status has been increased from the farming, 61.4 percent respondents were agree of being increased in economic status from farming, 14.8 percent are neutral to say that. During KII, only few farmers were neutral in economic well-being in farming as they are doing small farming and cannot compete in the market.

5.3.2 Social Return from Non-economic Sectors

Table 31: Mutual Relationship among Local Farmers

Mutual relationship among local farming	Frequency	Percent
Strongly agree	20	11.4
Agree	143	79.5
Neutral	16	9.1
Total	180	100.0

Source: Field Survey, 2018

Observing the above table, 11.4 percent respondents have the good relationship among the local farmers and they were strongly agree having mutual relationship among local farmers, 79.4 percent respondents have a normal relationship among local farmers and 9.1 percent were neutral being mutual relationship among local farmers. During KII, most of the farmers increase their relationship with the local farming as they also need support from them.

Table 32: Categorization of Profession

Categorization of profession	Frequency	Percent
Small farmer	158	87.5
Commercial farmer	20	11.4
Local farmer	2	1.1
Total	180	100.0

Source: Field Survey, 2018

From the above observation table, out of 180 respondents 158 respondents considered them as small farmers which is 87.5 percent 20 respondents are considered as commercial farming farmers which is 11.4 percent and only 2 respondent considered him as a local farmer which is only 1.1 percent. During KII, most of the farmers starts from the small assets so they feel themselves as small farmers.

Table 33: Farmers Popularity among Local Farmers

Popular farmer among others	Frequency	Percent
Not yet	33	18.2
Yes	133	73.9
Willing to become popular	14	8.0
Total	180	100.0

Source: Field Survey, 2018

The above survey table shows that 73.9 percent farmers are popular among local farmers which is 133 respondents out of 180 respondents, 18.2 percent are involving in farming profession but they are not popular among local farmers and 8 percent farmers are trying to be popular among local farmers.

Table 34: Level of Farming Practices

Level of farming practice	Frequency	Percent
Inorganic	78	43.2
organic red	6	3.4
organic green	96	53.4
Total	180	100.0

Source: Field Survey, 2018

By the verification of the above table, 53.4 percent of farmers are practicing pure organic farming as they are conscious about the health, 43.2 percent of farmers are practicing inorganic farming for increasing production and only 3.4 percent are practicing partially organic farming. During KII, most farmers agree to use chemical fertilizers as without using the chemical fertilizer farming cannot be made profit.

CHAPTER VI

DISCUSSION OF FINDINGS, CONCLUSIONS AND IMPLICATIONS

6.1 Discussions of Findings

6.1.1 Social Demographic Characteristics

- With respect to this objective, the findings shows that which age group of people are actively engaged in the agriculture sector of commercial farming. Therefore, the mostly the active age group are of 23-32 which is 33 percent. Similarly, the age group of 33-42 are secondly active group to engaged in the commercial farming which is 28.4 percent and the 73+ age group of people are less in the commercial farming about 4.5 percent as they are of old age and physically weakness as well.
- Regarding to the Caste/Ethnicity, result shows that the highest engagement in the commercial farming is of Janajati group which is 72.7 percent. Similarly, Chhetri are also engaged in the farming but less than the Janajati group which is 18.2 percent and Brahmin are also engaged in the commercial farming but participation is very low which is 9.1 percent.
- However, the all-age group of people are engaged in the commercial farming, some of them are educated and some of them are uneducated. From the results of above field report, it can be said that people having secondary level education are highly involved in the commercial farming which is of 26.1 percent. Similarly, people having higher secondary level education are also involved in the commercial farming which is 25 percent and the people having lower secondary education level are least in the involvement in the commercial farming which is 12.5 percent.
- Regarding to these objectives, most of the farmers holds less than 10 Ropani land for commercial farming which is 79.5 percent and similarly, the farmers that holds the 10-14 Ropani land is about 14.8 percent for the commercial farming and only few farmers are doing farming in the large scale who holds >25 Ropani land which is 1.1 percent.

6.1.2 Private Returns of Commercial Farming

- From the above field report, it can be said that the family income is highly earned from the remittance in which minimum annual income is Rs. 600000 and maximum

annual income is Rs. 5000000, similarly the minimum annual income of family from farming is Rs. 20000 and the maximum annual income is Rs. 4000000, from the private job minimum family income is Rs. 20000 to maximum Rs. 2500000, from Entrepreneurship annual income of family is Rs. 100000 to Rs. 720000 and the least family annual income is from daily wages which is Rs. 100000 to Rs. 300000.

- From the results of the above field report, it can be concluded that expenses of the family are maximum in food which is Rs. 2400000 per year, maximum expenses in clothing and children education is Rs. 500000 per year, minimum expenses in cultural celebration is Rs. 5000 and maximum expenses in cultural celebration is Rs. 120000 and least expenses in the accessories whose minimum expenses is Rs. 10000 and maximum expenses is Rs. 50000 per year.
- Regarding to this objective, mostly the farmers used to grow major crops like wheat, paddy potato etc. which is 42.6 percent, tunnel vegetable is doing as commercial farming which is 20.9 percent, integrated farming also found which is 17.4 percent, livestock is 10.4 percent and least farming is fish farming which is 0.9 percent.
- The maximum monthly income of the commercial farmers are Rs. 850000+ and the minimum monthly income of the commercial farmers are below Rs. 50000.
- For the initial start of the commercial farming, most of the farmers take loan or their source of investment comes from their personal saving and if the personal saving is not enough then their source are loan from the cooperative, from relative and at last bank.
- From the commercial farming all farmers are not getting satisfy as their income are less than 50 thousand and some farmers earn more than 50 lakhs per year.
- Most of the farmers are strongly agree to eat nutrient food after the commercial farming and only few respondents are neutral to have a variety of nutrient food.
- From the commercial farming, maximum respondents agree in increasing in the quality of life and 45 respondents are strongly agree in increasing quality of life.
- 78 respondents agree about farming skills increased due to practical knowledge and 96 respondents are strongly agree about farming skills increased due to practical knowledge.
- By engaging in commercial farming 151 respondents are agreed in increasing entrepreneurship skills, 25 respondents are strongly agreed.
- From the engagement in the commercial farming 153 respondents agree to increase in self confidence level due to engagement in commercial farming and 25 respondents are agree to increase in the self confidence level.

6.1.3 Social Returns of Commercial Farming

- Regarding to the relationships among the local farmers, only 11.4 percent are strongly agree having good relationships among the local farmers and 79.5 percent are just agree about having good relationships among the local farmers.

- In the case of being popular farmers among the farmers, 73.9 percent of respondents are being popular among the farmers and 18.2 percent farmers are not being popular yet and 8 percent of respondents are willing to be a popular farmers.
- Farmers are being conscious about the organic farming and 53.4 percent of respondents are doing pure organic farming, 43.2 percent of farmers are doing inorganic farming and only 3.4 percent of respondents are doing partially organic farming.

6.2 Theoretical Reflections

Table 35. Theoretical Outcomes of the Study

Theory	Outcomes
Agriculture transformation	<ul style="list-style-type: none"> ○ Practicing commercial and modern farming practices ○ Farming related knowledge and skills of the farmers have been increased ○ Using modern farming inputs ○ Farmers have minimum access of financial support and incentives ○ Productivity of the farmers have been increased ○ Domestic demand for agriculture outputs have been increased ○ Lack of price policy and weak marketing facilities to the farmers
Technology transfer	<ul style="list-style-type: none"> ○ Farmers are applying modern agriculture technologies ○ Farmers are applying new methodological Knowles and skills ○ Both input and harvesting technologies have been applied ○ Technologies are not yet accessible to all the farmers ○ Majorities of the farmers are applying tunnel farming ○ Innovation center are not yet established in local level ○ There is no institutional mechanism to evaluate applied technologies

Source: Developed by the Researcher, 2019

6.3 Conclusions

With the study of the return analysis of commercial farming of Suryabinayak Municipality it can be conclude that active age group involved in the commercial farming in this area are of 20-40 years of people. From the findings of the study shows that the majority involvement in the commercial farming are of janajati group. Many farmers are benefitted from the commercial farming socially as well as economically. Most of the farmers get the good social returns economically as well as non-economically and private returns economically as well as non-economically from the commercial farming. From

the social returns most of the people are satisfied with their farming as they get good prestige in the community and named as a good farmers and some tried to be the popular in the community. As a social return they have a good relationship with other local farmers. They also conscious about the health and so that they are doing pure organic farming and only few people are doing inorganic farming.

Regarding with the private returns, farmers are dependent on that occupation and running their livelihood. Quality of life of the commercial farmers are also being improved in comparison with their previous days. Not only the quality of life increase but also increase their skills and knowledge about the commercial farming through their experience in the farming. However the most of the commercial farmers are satisfied with their work and some of the farmers are not satisfied, it may be because not having the supportive family as well as government.

6.4 Implications

6. 4.1 For Knowledge Level

- Readers can acquire information about Suryabinayak Municipality of Bhaktapur.
- They can understand socio-economic status of the local farmers.
- They can assess investment and income scenario of the commercial farmers.
- They can understand how the local farmers are practicing commercial farming activities.
- They can also obtain knowledge about private and social rate of returns.
- Readers can acquire knowledge on economic and non-economic indicators of private as well as social rate of return.
- The research issues raised in this study are analyzed through the viewpoints of agriculture transformation and technology transfer theories that can be academic references to the researchers.

6. 4.2 For Practice and Policy Level

- Awarding appreciation letters to the role model farmers creating employments to the villagers and migrated family members.
- Better to offer food processing and entrepreneurship development related capacity and skill development trainings to the role model farmers by the local government.

- Soft loan facilities must be provided to the farmers for agro based entrepreneurship development.
- Better to establish technology innovation center around municipal office.
- Municipal office can facilities for formulating and implementing price policy.
- The role of mediators must be controlled. For that purpose local government can make effective and efficient marketing channels.
- Better to prepare agriculture development plan by the municipal office that can be interlinked with agro-tourism, agro-based entrepreneurship and marketing mechanism.

6.5 Future Direction

This study has assessed return analysis of commercial farming practices. In doing so the survey study methodology has been applied. The required data are collected from 180 respondents (role model farmers). First of all, this study has failed to collect data from marginal farmers and local consumers. Second, this study has applied descriptive statistics method for analyzing collected data and unable to apply to inferential statistics method. Third, impact of climate change on agriculture production activities, local product supply mechanism during global pandemic and cost and benefit analysis of commercial farming can be a contemporary research issues for the study area. Hence, the triple issues highlighted above can be a future direction to the other researchers.

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APPENDICES

RETURN ANALYSIS OF COMMERCIAL FARMING: A SURVEY STUDY OF SURYA BINAYAK MUNICIPALITY, BHAKTAPUR

Appendix A: Permission Letter to the Local Institutions

Date.....

To The Chair Person.....

Address:

Dear Sir

Re: Permission to conduct research work in your institution

I would like to state that I am a Master Degree Candidate of Central Department of Rural Development, Tribhuvan University, Faculty of Humanities and Social Science. Currently, I am preparing to write my thesis entitled “Return Analysis of Commercial Farming: A Survey Study of Suryabinayak Municipality, Bhaktapur”. The purpose of the study is to analyse livelihood impact of commercial farming from rural development perspectives. In this regard, I am excited about the possibility of kind and supportive researching environment from your institution.

The study is designed under survey study methodology in which household survey questionnaires, key informant interview and observation techniques are applying for collecting reliable data from the duty bearers, entrepreneurs and local farmers. Finally, researcher values for the commitment of time, energy, and institutional efforts.

Regards,
Nimesh Bakhunchhe (The Researcher)
Cell Number: 9843577287
Email: mailbakunchhe@gmail.com

Appendix B: Study Variables

Dependent Variable	Independent Variables (IV)		
	Indicators (IV:I)	Attributes (IV:II)	Item Variables (IV:III)
Returns of commercial farming	Private return economic	Recurring cost Annual variable cost of farming Annual earnings from farming Annual household earning Annual household expenditure Technical and financial supports	<i>Develop two to three item variables of questions to each attributes</i>
	Private return non-economic	Utilization of land resources Surplus production and food security Food nutrition and quality of life Develop farming skills Develop entrepreneurial skills Increase self confidence	<i>Develop two to three item variables of questions to each attributes</i>
	Social return economic	Creating jobs to the others Integrated farming system Commercial farming practices Financial institutions Marketing facilities Cooperation/unity among farmers	<i>Develop two to three item variables of questions to each attributes</i>
	Social return non-economic	Social identity Pocket area identity Becoming role model farmer Organic farming practices Increase social status and prestige Involving in exposure visits/seminar	<i>Develop two to three item variables of questions to each attributes</i>

Appendix C: Household Survey Questionnaires

First Name:	Middle Name:	Last Name:
Cell Number:	Code Number:	Date:

Dear respondent,
 I would like to share that this is completely a dissertation work and it does not carry any official record. You are requested to answer the question friendly and honestly. The importance of this study depends on your valuable answer. Your privacy will always be secured and information you provide does not effect on it. So, please answer the following questions on your knowledge and practice as far as possible.

Code number of the respondent:.....

Address:

Cell Number:

S. No.	Social & Demographic Characteristics	Response category	Response
1	How old are you (age)?		
2.	Caste/ethnicity?	Bhramin Chhetri Janjati (Tamang, Newar) Dalits Madhesi Other	1 2 3 4 5 6
3.	What is your formal educational status?	Primary Lower secondary Secondary Higher education Illiterate	1 2 3 4 5
4	What is your subject specification in higher education?	Management Education Arts Natural sciences Health Engineering JT/JTA Agriculture Forestry and animal science	1 2 3 4 5 6 7 8 9
5	Have you participated in any capacity and skill development trainings?	Yes Not yet On plan	1 2 3

6	What types of farming related training you have completed then?	Tunnel vegetal farming Integrated pest management Goat farming Bhakaró sudhar Mushroom cultivation Bee keeping Floriculture More than three trainings	1 2 3 4 5 6 7 8																
7.	How many members are there in your family?	<table border="1"> <thead> <tr> <th>Female</th> <th>Male:</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Female	Male:	Total														
Female	Male:	Total																	
8	Number of school going children?	<table border="1"> <thead> <tr> <th>Girls:</th> <th>Boys:</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Girls:	Boys:															
Girls:	Boys:																		
9.	If yes, in which school/college you are enrolling your children?	In public or community In private	1 2																
10	Subject specification of your children studying in higher education?	Management Education Arts Natural sciences Health Engineering JT/JTA Agriculture Forestry and animal science	1 2 3 4 5 6 7 8 9																
11.	What is the land holding status of your family?	<10 Ropani 10-14 Ropani 15-19 Ropani 20-24 Ropani >25 Ropani	1 2 3 4 5																
12	Along with agriculture, what are the diversified occupational statuses of your family members?	Local shop Government job Private job Daily wages Entrepreneurship Remittance	1 2 3 4 5 6																
13.	Annual income of your family	<table border="1"> <thead> <tr> <th>Sector</th> <th>Rs</th> </tr> </thead> <tbody> <tr> <td>Agriculture</td> <td></td> </tr> <tr> <td>Business</td> <td></td> </tr> <tr> <td>Government job</td> <td></td> </tr> <tr> <td>Private job</td> <td></td> </tr> <tr> <td>Daily wage</td> <td></td> </tr> <tr> <td>Entrepreneurship</td> <td></td> </tr> <tr> <td>Remittance</td> <td></td> </tr> </tbody> </table>	Sector	Rs	Agriculture		Business		Government job		Private job		Daily wage		Entrepreneurship		Remittance		
Sector	Rs																		
Agriculture																			
Business																			
Government job																			
Private job																			
Daily wage																			
Entrepreneurship																			
Remittance																			

14	Annual expenditure of your family?	Particulars	Rs	
		Fooding		
		Clothing		
		Accessories/gold		
		Child education		
		Visit/pilgrimage		
		Cultural celebration		
		Medicine		
		Philanthropy		
15	When did you involve in commercial farming?	Year	Month	
16	What is your farming specification?	Major crop production	1	
		Livestock (meat purpose)	2	
		Poultry/duck	3	
		Fishery	4	
		Tunnel vegetable farming	5	
		Mushroom cultivation	6	
		Floriculture	7	
		Sheri culture (bee keeping)	8	
		Integrated farming	9	

S.No.	Private Returns both Economic and Non-economic	Response Category		Response
17	How much was your recurring cost for different purpose?	Particulars	Rs.	
		Land		
		Lease hold land		
		Housing		
		Gold		
18	How much was your initial investment to start commercial farming?	Rs		
19	What were the sources of that investment?	Personal saving Borrowed from relatives Cooperative loan Bank loan		
20	How much is your institutional credit capital?	Institutions	Rs.	
		Cooperative		
		Private bank		
		Govt. bank		

21.	How much is your average annual variable cost for commercial farming?	Particulars	Rs	
		Inputs/seeds		
		Vitamin		
		Fertilizer		
		Pesticides		
		Labor cost		
		Transportation		
		Fee for experts		
22.	How much is your average monthly earning from commercial farming	Rs		
23.	What types of technical support you got from government and non government institutions?	Training opportunity		1
		Exposure visit opportunity		2
		Appreciation letter		3
		Farming tools		4
		All of above		5
24.	What types of financial supports you got from government and non government institutions?	Subsidy		1
		Soft loan		2
		Daily allowances		3
		hard cash prize		4
25.	How much barren land you have?	<5 Ropani		1
		5-10 Ropani		2
		>10 Ropani		3
		No barren land		4
26.	How much lease hold land you have?	<5 Ropani		1
		5-10 Ropani		2
		>10 Ropani		3
		No leasehold land		4
27.	What is the status of family food sufficiency?	3-6 months		1
		6-9 months		2
		9-12 months		3
		Biological surplus		4
28	Family members are having varieties of nutrient food after commercial farming practices.	Strongly agree		1
		Agree		2
		Neutral		3
		Disagree		4
		Strongly disagree		5
29.	Quality of life of the family members have been improved due to commercial farming	Strongly agree		1
		Agree		2
		Neutral		3
		Disagree		4
		Strongly disagree		5
30.	Farming skills of the farmers have been increasing due to practical knowledge	Strongly agree		1
		Agree		2
		Neutral		3
		Disagree		4
		Strongly disagree		5

31.	Entrepreneurship skill also have been increasing due to involve in marketing	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5												
32.	Self confidence level of the farmers also have been increased due to commercial farming	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5												
S. No.	Social Return both Economic and Non-economic	Response Category	Response												
33.	How many family members are involving in commercial farming?	<table border="1"> <thead> <tr> <th>Female</th> <th>Male</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Female	Male	Total										
Female	Male	Total													
34.	How full time employees are working in your farmland?	<table border="1"> <thead> <tr> <th>Female</th> <th>Male</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Female	Male	Total										
Female	Male	Total													
35.	How many seasonal employees are working in your farmland?	<table border="1"> <thead> <tr> <th>Female</th> <th>Male</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Female	Male	Total				1 2						
Female	Male	Total													
36.	Do you prepare compost fertilizer with farming purpose?	Yes Not yet On plan	1 2 3												
37.	Do you sale some portion of compost fertilizer to the other farmers practicing organic farming?	Yes Not yet On plan	1 2 3												
38.	How many student and farmers visited your farm till date?	<table border="1"> <thead> <tr> <th>Students</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Local farmers</td> <td></td> </tr> <tr> <td>Outsider farmers</td> <td></td> </tr> <tr> <td>Researcher</td> <td></td> </tr> <tr> <td>Bureaucrats</td> <td></td> </tr> </tbody> </table>	Students	Total	Local farmers		Outsider farmers		Researcher		Bureaucrats		1 2		
Students	Total														
Local farmers															
Outsider farmers															
Researcher															
Bureaucrats															
39.	The trend of commercial farming is increasing annually around this municipality	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5												
40.	There is mutual relationships among local farmers	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5												
41.	How many memberships you got form community based institutions?	<table border="1"> <thead> <tr> <th>Institutions</th> <th>Member</th> </tr> </thead> <tbody> <tr> <td>Farmer group</td> <td></td> </tr> <tr> <td>Cooperatives</td> <td></td> </tr> <tr> <td>Guthi</td> <td></td> </tr> <tr> <td>Schools</td> <td></td> </tr> <tr> <td>Consumer group</td> <td></td> </tr> </tbody> </table>	Institutions	Member	Farmer group		Cooperatives		Guthi		Schools		Consumer group		
Institutions	Member														
Farmer group															
Cooperatives															
Guthi															
Schools															
Consumer group															

42.	Is there any agriculture collection center around your locality?	Yes On plan	1 2
43.	Farmers are satisfied with price policy of the local products.	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5
44.	There is a good networking of marketing system for supplying local products.	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5
45.	How do you categorize your profession?	Small farmer Commercial farmer Role model farmer Leader of the farmers	1 2 3 4
46.	Do you think that you are popular among the local farmers?	Yes Not yet Willing to become popular	1 2 3
47.	What is the pocket identity of your village?	Cow milk Goat meat Green peas Carrot Cabbage Potato Local paddy Mustard	1 2 3 4 5 6 7 8
48.	What is the level of your farming practice?	Inorganic Organic red Organic yellow Organic green	1 2 3 4
49.	Social status and prestige have been increased after involving in commercial farming	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5
50.	Economic well being of the family members have been increased after involving in commercial farming	Strongly agree Agree Neutral Disagree Strongly disagree	1 2 3 4 5

Thank you for your better cooperation!

Appendix D: Key Informant Interview Guideline

- 1) What are the major crop/vegetable products of this municipality?
- 2) What is the status of organic farming around this municipality?
- 3) What is the status of traditional farming around this municipality?
- 4) What is the status of commercial farming in this municipality?
- 5) Does, commercial farming helped to increase family earning of the farmers?
- 6) Does commercial farming helped to increase rural economy of the municipality?
- 7) What is the status of marketing network for supplying local product?
- 8) What is the availability status of modern seeds and inputs in the hinterlands?
- 9) Is there accessibility of financial institutions to the local farmers?
- 10) Does local government establish agriculture collection centers in strategic locations?
- 11) Does local government arrange capacity/skill development training to the farmers?
- 12) Does non-government agency arrange exposure visits to the role model farmers?
- 13) Does local government implemented irrigation projects for agriculture development?
- 14) What are the prospects of commercial farming from rural development perspectives?
- 15) What are the challenges for fostering commercial farming in the municipality?

Appendix E: Observation Checklist

Date:

Time:

Venue:

Ward Number:

- **Infrastructures and service delivery mechanism**
 - ✓ Road networking
 - ✓ Irrigation facilities
 - ✓ Rural electrification
 - ✓ Educational institutions
 - ✓ Health institutions
 - ✓ Local cooperatives
 - ✓ Induced and indigenous organizations
- **Socio-cultural development activities**
 - ✓ Social relationships among the farmers
 - ✓ Cooperation among the local institutions
 - ✓ Cultural integration
 - ✓ Cultural reproduction and production practices
 - ✓ Role of elected government on commercial farming
 - ✓ Application of indigenous knowledge and skills for agriculture development
- **Economic development activities**
 - ✓ Diversified livelihood activities of the local people
 - ✓ Household earning and family sufficiency
 - ✓ Commercial farming practices
 - ✓ Rural enterprises and craft development activities
- **Environmental development activities**
 - ✓ Status of organic farming practices
 - ✓ Land use plan and practices
 - ✓ Implementation of local environmental management framework
 - ✓ Biodiversity conservation and environment friendly projects
- Descriptive note:
- Reflective note:
- Thematic note

Appendix F: Sampling Determination Table

Required Sample Size				
Confidence =		95.0 percent		3.84
Populati on Size	Degree of Accuracy/Margin of Error			
	0.05	0.04	0.025	0.01
10	10	10	10	10
20	19	20	20	20
30	28	29	29	30
50	44	47	48	50
75	63	69	72	74
100	80	89	94	99
150	108	126	137	148
200	132	160	177	196
250	152	190	215	244
300	170	217	251	291
400	196	265	318	384
500	217	306	377	475
600	234	340	432	565
700	248	370	481	653
800	260	396	526	739
900	269	419	568	823
1,000	278	440	606	906
1,200	291	474	674	1067

The recommended sample size for a given population size, level of confidence, and margin of error appears in the body of the table.

For example, the recommended sample size for a population of 1,000, a confidence level of 95 percent, and a margin of error (degree of accuracy) of 5 percent would be 278.

Change these values to select different levels of confidence.

Change these values to select different maximum margins of error.

Change these values to select different (e.g., more precise)

Appendix G: Glimpses of Field Study



