
CHAPTER – VII

SUMMARY, CONCLUSIONS AND SUGGESTIONS

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7.1 Summary of Findings

This chapter provides the summary of findings and major conclusions of our study based on the findings. Besides, it suggests policy measures for the improvement of agriculture and rural credit system.

There has been a quiet revolution in economic theory and economic policy during the last two or three decades. The idea of quickly transforming the less developed countries into more developed countries by a process of rapid capital accumulation and industrialization, all through central planning has been abandoned. Now it is being realized that if the plight of the majority of the population, i.e., those living within the rural sector, is to be improved, then agricultural productivity must increase. For this, the full advantage of the potentials of modern technologies must be realized, which means that farmers must have access to credit. The problem of agricultural finance, therefore, is a crucial one. Increasingly, economists, planners and policy-makers have been engaged in the task of developing and organizing a modernized system of agricultural finance. Yet, attempts to provide adequate and timely institutional finance to farmers have met with limited success.

The demand for farm credit is increasing due to accelerated agricultural development activities. If increased production and higher productivity are the fundamental objectives of agricultural development modern inputs such as improved varieties of seeds and fertilizers must be used.

Increase in agricultural production in Nepal is possible mainly through improvement in productivity because most of the cultivable lands have been already brought under cultivation. Therefore, the development of agriculture is possible by adopting modern techniques of farming.

In order to adopt modern methods of farming in Nepal, the farmers are required to invest a huge amount capital in the agricultural sector of Nepal.

The development of the agricultural sector of Nepal largely depends on marginal and small farmers who constitute 92 percent of the total farm population and operate on 68.72 percent of the total cultivable land whereas only 8 percent medium and large farmers operate on 31.28 percent of the total cultivable land area (NCA: 2001).

But the marginal and small farmers who are to sustain the tempo of change in agriculture are resource poor. They have low land base and subsistence nature of farming which yield a low level of income. Therefore, these marginal and small farmers are unable to save out of their production and cannot make investment in agriculture to increase agricultural production. Consequently, they are compelled to depend upon credit to carry on their farming and family operations. Thus, borrowing has become a way of life for many of the marginal and small farmers in Nepal.

The demand for credit of farmers may be responsive to many factors. Among these the main factors are operational size of farm, asset holding position of the farmer, value of purchased inputs, irrigation facilities, cropping intensity, rate of interest, availability of institutional credit, family consumption expenditure and risk aversion behaviour of farmers. An attempt is made in this research work to analyse the influence of these factors on demand for farm credit on the basis of data collected by us through field survey.

Farmers receive credit from institutional or private sources in order to carry out their farming operations and family expenses. However, receiving credit as required is only a part of the problem. The important thing is that farm credit received should be productive and self-liquidating. The productivity of credit depends on how efficiently it is used by the farmer borrowers in their farm operations. If they use credit in an efficient way then it will certainly have positive impact on production and hence, credit is said to be productive.

Farmers who borrow generally invest in various inputs used in agriculture without knowing their marginal productivity. This type of random investment usually debars the farmers to get maximum return from their farms. Farmers are required to invest in those inputs, which have higher marginal value productivities (MVP), which indicates better scope for investment on such inputs even at the higher rate of interest. In the present study we have made an attempt to analyse the productivity of credit used by farmers on the basis of the data collected by us through survey.

The supply aspect of credit is also very important while analysing demand for and productivity of farm credit. The provision of institutional credit for farmers in an effective and efficient manner faces a number of problems now. Despite increasing efforts, institutional credit has not been able to fully cover the poorer section of the farmers. There is still predominance of moneylenders and landlords in the agricultural sector of Nepal. We have also tried to find out the reasons for this problem in this research study.

The study is confined to farmer borrowers selected for study in Morang district of Nepal. Nine VDCs of Morang district representing low developed, moderately developed and developed area are selected at random using stratified random sampling method.

All the sampled 225 farmer borrowers who had received agricultural credit from different sources are classified into marginal, small and medium and large farmers.

(Chapter-I)

Nepal is one of the least developed countries with percapita income of US \$ 244. Its average annual growth of Gross Domestic Product had been 4.3 percent during the period 1990/91-2001/02. Agriculture is the main economic activity in Nepal like in other developing countries. This sector alone employs about 80 percent of the labour force and its share in Gross Domestic Product is about 39 percent. The total contribution of industrial sector to GDP is around 10 percent. The percentage of consumption to total GDP was 85.19 in 1994/95, which increased to 88.18 in 2001/02.

The income distribution of Nepal indicates that top 10 percent of Nepalese people are enjoying 21 times more income than the bottom 10 percent. The Nepal Living Standard Survey (NLSS: 1996) found that poor people's average income was Rs. 8.70 per day while non-poor people's average income was Rs. 21 per day. It indicates that there is extreme mass poverty in Nepal. The survey found that rural people's average income was Rs.19.40 per day and that of urban people's average income was Rs. 44.20 per day.

There is an increasing growth trend of foreign trade of Nepal over successive years leaving a huge amount of trade deficit. The trade deficit was 34.22 percent in 1974/75, which increased to 56.06 percent in 1994/95 and it was still 35.04 in the

year 2000/01. This shows that Nepal has not been able to reduce the gap and still depends on other countries for various goods and services. It shows the poor performance of the export sector of Nepal.

The salient features of the Nepalese economy are: i) Unfavourable physical factors, ii) low income per capita, iii) dominance of agricultural sector, iv) highly unequal income distribution, v) extreme mass poverty, vi) unfavourable foreign trade, viii) low tax-revenue and high foreign aid and ix) high population growth rate.

The country's sustained efforts towards agricultural development have begun since the First Plan came into existence. In the First Plan (1956-61), especially in the field of agriculture, emphasis was laid on the dissemination of improved varieties of seeds, seedlings, cattle, and introduction of new plant protection activities, dairy industries, research and on the basic training of extension workers. The first plan achievements were nominal due to the lack of experience in formulation and implementing the plan.

The Three-Year Second Plan (1962/63-1964/65) recognized the importance of agriculture and aimed at improving the economic conditions of farmers. During this plan, 1,035 hectares of area were brought under irrigation, 3 livestock centres and 22 veterinary hospitals were established.

During the Third Plan (1965/66-1969/70), agricultural production increased annually by 2.9 percent, area under improved seeds increased by 13 percent and the use of chemical fertilizers increased by 17 percent. Irrigation facilities were provided to an additional command area of 5,860 hectares.

During the Fourth Plan (1970/71-1974/75) the agricultural production increased annually by 1.5 percent only. Additional 54,424 hectares of cultivable area was brought under irrigation and agricultural loan worth Rs. 227.2 million was distributed.

During the Fifth Plan (1975/76-1979/80) high fluctuations in inter-year productions were experienced and an overall decline by 1.1 percent per annum was the net result. Additional 95,425 hectares of the command area was provided with irrigational facilities. Agricultural credit of Rs.978.6 million and 84,133 metric tons of chemical fertilizers were distributed.

During the Sixth Plan (1980/81-1984/85) agricultural and non-agricultural production increased by 5.1 and 4 percent respectively. Food grains production

increased by 6.2 percent whereas cash crops increased by 4.3 percent. During the plan period, 140,191 hectares of command area was brought under irrigation, and 172,056 metric tons of chemical fertilizers and 21,804 metric tons of improved seeds were distributed.

During the Seventh Plan period (1985/86-1989/90) annual growth rate of agriculture sector was 5.7 percent. An additional command area of 179,337 hectares was reported to be under irrigation during this plan period. During this plan period, food grain production increased at an annual rate of 2.1 percent. This increase was due mainly to the expansion of area instead of increase in productivity.

During the Eighth Plan (1992/93-1997/98) the agricultural production increased annually by 3 percent only. During the plan period additional 206,401 hectares of land were provided irrigation facilities. During the plan period food grains increased by 3.20 percent annually against the target of 5.4 percent and cash crops increased by 4.62 percent against the target of 9.0. During the Ninth Plan (1998/99-2002/03) agricultural sector grew by 3.3 percent annually against the target of 4.0 percent.

Current land reform programme was initiated by the enactment of Lands Act in the year 1964. Main features of the programme are ceiling on land holdings, guaranteeing tenure rights to the cultivators and mobilization of rural savings. It was believed that it is through the reform in ownership and structure of land holding that agricultural productivity could be increased. However, this programme has not been successful to solve the problems of the tenants and other related issues in the agricultural sector. The programme failed to mobilize rural savings. Tenancy legislation added to dual ownership. The new measure initiated neither has solved the problems of inequitable distribution of land holding nor helped to raise productivity. **(Chapter-II)**

Agriculture has been the main occupation of the Nepalese people. More than 80 percent employment opportunities are provided through this sector. Contribution of the agricultural sector in total GDP is about 39 percent. About 18 percent of the total area of the country is under cultivation per capita holding area is only 0.15 hectare. Every holder has about 3.3 plots of land holding and average size of each plot is 0.24 hectare.

The National Census of Agriculture of Nepal (NCA: 2001/02) found average area per holding as 0.789 hectare and the average number of parcels per holding as 3.3. Terai has the biggest total area of holdings of 1.4 million hectares, which is approximately 52.6 percent of the total area of agricultural holdings in the country. Thus, Terai as an ecological belt plays a major role in the development of agriculture in Nepal.

Among districts, Morang has the highest number of holdings, largest total area of all holdings as well as the average area per holding. The total number of holdings in Morang district is 115,162 and the average area per holding is 1.01. Second in rank and importance both in area and the number of holdings is the district of Jhapa. Both of these districts belong to the Eastern Terai (NCA: 2001/02).

The characteristics of Nepalese agriculture can be presented point wise as follows:

- a) The distribution of holdings by size class is decreasing and there is predominance of small size of landholdings.
- b) The proportion of marginal and small farmers is higher than medium and large farmers.
- c) Agriculture in Nepal is of subsistence nature.
- d) Agriculture heavily depends on monsoon.
- e) There is excessive pressure of population on cultivable land.
- f) Agricultural productivity is very low.
- g) There is predominance of informal sources of credit in the rural credit market
- h) There is preponderance of food crops in the cropping pattern of Nepal. Paddy is the most important crop in Nepal. It is also true for Morang district.

The study of cropping pattern in the sampled area on the basis of the data collected by us reveals that the area covered by paddy is greater than the area covered by other crops grown by all type of farmers in all the areas. In the lands where irrigation facilities are not available summer paddy is grown as a wet season crop and is followed by lentil, mustard or wheat. In the lands where irrigation facilities are available all the year round, the best cropping pattern is early paddy followed by late paddy in the wet season and winter crop of wheat in the dry season. This pattern has given the highest yields of all the crops in the sampled area.

It is found that there are no irrigation facilities in the low developed area of the district. In the moderately developed area groundwater sources are used for irrigation. In the developed area river and canals are the main sources of irrigation. It is found out that cropping intensity has been influenced by availability of irrigation facilities and bullock labour.

It is found that cropping intensity is the highest in the developed area where there are irrigation facilities available all the year round. Cropping intensity is higher for the small farmers in the moderately developed area compared to marginal and medium and large farmers because most of the small farmers are tenants (In our sample) and they have to pay rent for the use of the land from the production of the year. Marginal farmers lack their own bullock labour and cash expenses required for cultivation. Medium and large farmers are found to be content with what they are producing. So, most of them have not adopted multiple cropping pattern. Although they can produce more output than what they are producing.

By comparing the average value of total assets of the three classes of farmers in the three areas it is found that the average value of total assets of all classes is increasing when we move from low developed area to developed area. The reason for the differences in the average value of assets is due to the differences in the prevailing prices of land during the survey period in the three areas. It is noticed that the economic status of the same class of farmers is also different according to the level of development. This difference in the value of farm assets affects the borrowing capacity and the credit-worthiness of the farmers.

The annual average income of the marginal farmers is found to be increasing when we move from low developed area to developed area. It is found that this difference in income is due to the difference in the cropping intensity of land. In the low developed area, generally the farmers grow crop once a year whereas in the moderately developed area they grow crop twice a year. Similarly, in the developed area they grow crop three times a year. But it is also found that the marginal farmers who have owned a pair of bullock labour have grown crop more than once. Therefore, it is important to note that the ownership of the bullock labour also has also affected the cropping intensity of the farmers.

The study has found that the non-farm income is relatively more important among the marginal farmers. It is because their size of land is very small and they have to

depend on outside income, mainly wage income, for their livelihood. The proportion of farm income to total income is 65.49 and 84.82 for small and medium and large farmers respectively. The average proportion of farm income of marginal farmers is found to be 47.14 percent. As the medium and large cultivators have relatively larger size of cultivated holdings, they earn higher proportion of total income from their farm business (**Chapter-III**).

Although the informal and semi-formal sources of credit have been successful in reaching the poor, they do not in general cater to the needs of the agricultural sector. Therefore, to solve the financial problems of the agricultural sector, there is greater need of expansion of credit institutions in the agricultural sector of Nepal.

While studying the operational performance of the rural credit institutions of Nepal, it is found that, ADB/N and other commercial banks have been expanding their network in different parts of the country.

The recovery performance of ADB/N against the target was 90 percent on an average during the period 1997/98-2001/02. On the other hand, the average growth rate of overdue was 15.5 percent during the same period. The share of overdue in the outstanding loan was over 40 percent during the period 1999 to 2001. In relation to the increasing loan overdue, however, the recovery rates are yet low and need attention of the bank. The loan recovery performance of commercial banks deteriorated especially after 1990/91. The recovery rate, which was recorded at 56.5 percent in 1987/88, declined to 45.9 percent in 2001/02. The declining recovery performance was due, among others, to reasons such as the trade impasse with India, political situation, and, above all, inadequate efforts for collection made by branches.

While analysing the financial performance of the banks it is found that the credit-deposit ratios of commercial banks and ADB/N have been decreasing. The ratio of interest payout of deposits to interest income from loans and advances was found to be increasing for all the banks.

Our main findings on different aspects of operational and financial activities of the three institutions, namely, RBB, NBL and ADB/N show that the performance of these banks is unsatisfactory. Therefore, it is inevitable that the profitability of these institutions would suffer, as is the situation.

An attempt is also made in this research work to find out the problems encountered by the farmer borrowers in receiving credit from the formal institutions and the problems faced by the rural branches in delivering credit to farmers. The analysis is based on the data collected by us through field survey.

It is found that supply of farm input in adequate quantities and in time is an essential requirement of the farmer borrowers. It is seen that a majority of the farmers have not received the farm inputs timely and in adequate quantities.

An inter-area comparison shows that the proportion of farmers who have not received farm inputs timely and adequately is decreases from low developed area (LDA) to developed area (DA). It indicates that there has been less concentration of the input supplying agencies in the low developed area of Morang district.

The farmer borrowers have reported that they require credit before the beginning of agricultural season. This helps them to complete the cycle of production. It is found that about 56 percent of total farmer borrowers have not received credit from formal institutions in time and in adequate amount. The supply has fallen short of their requirements. On the other hand, only 32 percent of the total farmer borrowers agreed to have received credit in time and in adequate amount. During the survey it was reported that majority of the medium and large farmers were able to receive credit in time and in adequate quantity. Majority of the marginal farmers were not able to get the formal credit timely and adequately due to the lack of security to offer to get loans.

With regard to the difficulties faced in receiving credit, 52 (i.e., 23.11 %) farmer borrowers out of total conceded to have received credit after visiting bank offices several times.

The marginal and small farmer borrowers reported that the rate of interest charged by the banks was cheap. But majority of the medium and large farmers borrowed from the banks and they gave the view that bank rate was neither cheap nor moderate. During the survey marginal and small farmers reported that many medium and large farmers borrowed from the banks for undertaking agricultural operations, but they had lent the borrowed money to the marginal and small farmers at a higher rate of interest than they were charged by the banks.

While investing into the factors accounting for poor repayment by farmers it could be found that 9.78 percent farmer borrowers could not repay the loan due to drought

condition, 17 percent due to low production, 48 percent reported that they had used the loan for in another purpose and 19.56 percent did not repay loans with the expectation that the government would exempt them from repaying past dues.

This study also found out that one of the major problems faced by the farmers is marketing of produce. Majority of the farmer borrowers pointed out that they have faced difficulties in marketing the products produced by them. Lack of roads, absence of transport and communication network, distance to urban markets, payment of various commissions and charges in outside markets, and dearth of finance etc, are some of the factors preventing marketing scope in rural areas. It could also be found out that in low developed areas of Morang district governmental interventions in development works are nominal.

It was also observed during field survey that sufficient attention was not paid to storage facilities. This compelled the farmers to sell their produce at the time of harvesting when the price remains too low. They could not store the produce even for their consumption purposes due to lack of storage facilities.

The bank officials working in bank branches were also interviewed to understand their problems at the grass-root level. Our study reveals that the percentage of total amount recovered by banks from marginal and small farmers are 32.97 percent and 40 percent respectively. Recovery from medium and large farmers is 27.47 percent. Bank wise there is no significant difference in the recovery rate of all the bank branches. It is reported that the repayment rate of small farmers is higher than that of marginal and medium and large farmers. It is also reported that recovery rate from medium and large farmers is poorer than the recovery rate from small and marginal farmers.

At the time of field investigation, the sampled bank branches were found to be handicapped by non-availability of competent staff, particularly the field staff. The bank officials agreed that inadequacy of competent staff and lack of co-ordination among the existing staff were the other two major problems. **(Chapter- IV)**

Agriculture in Nepal is financed through different sources. These can be broadly classified into:

- a. Institutional sources, and
- b. Non-Institutional sources.

The share of institutional agencies in the total agricultural credit was 18 percent in 1972 and 36 percent in 2001/02. Thus the share of the non-institutional agencies was 82 per cent in 1972 and 64 percent in 2001/02. Among the private agencies, share of moneylenders was the highest, about 44 per cent in 1972, which came down to 28 percent in 1991-92, followed by friends and relatives.

The Mid-Western and Far-Western regions, which are relatively backward in socio-economic terms, received only 10 percent and 7.5 percent institutional credit in 1995/96 and 5.07 percent and 4.5 percent respectively in 2002/03. The main factors responsible for the skewed distribution of credit in different regions are the absence of infrastructures such as roads, irrigation, school etc. and non-availability of support services in agriculture and inadequate intervention efforts by credit institutions in Mid-Western and Far Western regions.

It is found that the industrial sector has been the largest recipient of credit from the commercial banking system, followed by the commercial sector. On the other hand, agriculture has received a relatively small amount of credit from the commercial banks.

An attempt is made to estimate the total demand for credit in Nepal for the period 2004/05 to 2013/14. The basic data for this exercise is taken from the cost of production data collected from a sample of households at the time of the rural credit survey (1991/92) conducted by Nepal Rastra Bank.

Incremental financial requirements for improved seeds and fertilizers are worked out for each year for the period 2004/05 to 2013/14. The requirements of improved seeds is projected to increase by 58 percent in 2013/14 over 2004/05, and the requirements of fertilizer is projected to increase by 51.55 percent in 2013/14. The total incremental financial requirements for crop production are expected to increase by 61.58 percent in 2013/14 over the year 2004/05.

The analysis based on demand and supply of institutional credit projections indicates that the institutional supply would fall short of the credit demand in the agricultural credit market in coming years.

An attempt is made in this research work to estimate the demand function for farm credit for the farmers on the basis of field level data collected by us through survey.

The results obtained for the marginal farmers show that the regression coefficient (here after coefficient only) of value of purchased inputs is positive and significant in all the sampled areas including for all the marginal farmers in the district. The coefficient of family consumption expenditure of marginal and small farmers is found to be positive and significant in all the areas and in the district as a whole. The coefficient of value of farm assets of marginal farmers is found positive and significant only in the moderately developed area and the percentage of irrigated area to total cropped area is found to be positive and significant for all the marginal farmers in the district as a whole.

It is found that the coefficient of cropping intensity of small farmers is positive and significant in moderately developed area and developed area. The coefficient of value of farm assets is positive and significant only in the developed area. The percentage of institutional credit of small farmers is found to be positive and significant in moderately developed and developed areas. The coefficient of percentage of irrigated area to total cropped area is positive and significant in the moderately developed area.

It is found that the coefficient of family consumption expenditure of medium and large farmers is positive and significant only in the low developed area. The coefficient of value of farm assets of medium and large farmers is found to be positive and significant only in the moderately developed area. The coefficient of value of purchased inputs of medium and large farmers is positive and significant in all the areas including the district except in the low developed area. The coefficient of cropping intensity of medium and large farmers is found to be positive and significant only in the moderately developed area. The coefficients of percentage of institutional credit and percentage of irrigated area to total cropped area are significant only in the moderately developed area. The coefficient of institutional credit is positive and the percentage of irrigated area is negative.

It is found that the sign of all the coefficients of all the farmers in Morang district are positive. All the coefficients are significant except the three, namely, operational area, cropping intensity and percentage of irrigated area.

In this research work we have tried to identify the relationship between demand for farm credit and the rate of interest for all the farmers in all the areas.

It is found that the sign of regression coefficients of rate of interest is positive but insignificant for the marginal farmers in all the areas. The sign of the coefficient of rate of interest of the small farmers is positive in the low developed area and it is negative in other areas but only the coefficient in moderately developed area is found to be significant. The sign of the coefficient of rate of interest in all the areas estimated for medium and large farmers is found to be negative but insignificant.

The analysis related to the risk aversion behaviour of farmers is based on the chi-square test. The hypothesis tested was that the class size of farmers is independent to the risk aversion behaviour of farmers in the district. The hypothesis is accepted and it is concluded that all farmers are risk averse in the sampled area of Morang district. **(Chapter-V)**

In order to analyse the productivity of farm credit, data on cost of production collected by us during the survey were utilized. A log linear Cobb-Douglas production function was fitted for paddy and wheat in all the areas. The estimated coefficients are the elasticities of production with respect to the factors of production showing on the average, the percentage change in the value of output resulting from a given percentage change in the given input. The variables used in the model were gross value of output in rupees per hectare (Y), human labour in man-days, per hectare (X_1), bullock labour pair-days per hectare (X_2), if bullock labour was not used, tractor service in Rs. per hectare was used, value of manures, fertilizer and pesticides in Rs. per hectare (X_3) and irrigation in Rs. per hectare (X_4).

It is found that the regression coefficient (hereafter coefficient only) of bullock labour is positive and significant for marginal paddy farmers in low developed and moderately developed areas of Morang district. The coefficient of tractor service is positive and significant for marginal wheat farmers in moderately developed and developed areas. The coefficient of human labour is insignificant in all the areas. The coefficient of seeds is negative but significant for the marginal paddy farmers in the low developed area whereas it is positive and significant for marginal wheat farmers and all marginal wheat farmers combined in the district. The coefficient of manures is positive and significant for marginal paddy farmers in all the cases and it is found to be positive and significant for marginal wheat farmers only in the moderately

developed area. The coefficient of irrigation is found to be positive and significant for all sampled marginal paddy farmers.

It is found that the coefficient of human labour is negative but significant for the small wheat farmers in the developed area of Morang district. The coefficient of bullock labour is found to be negative but insignificant for small paddy farmers in all the areas and the coefficient of tractor service for small wheat farmers is found to be negative but significant in developed area and positive and significant for all small wheat farmers in the district. The coefficient of seeds is found to be positive and significant for small paddy farmers in moderately developed area and for all small paddy farmers in the district. The coefficient of seeds is positive and significant for small wheat farmers only in the developed area of Morang district. It is found that the coefficient of manures is positive and significant in all the areas of Morang district for small paddy farmers and small wheat farmers in all the cases.

The coefficient of seeds for all medium and large paddy farmers (combined) is found to be negative and significant. The coefficient of manures is found to be positive and significant for all medium and large paddy and wheat farmers. The coefficient of irrigation is found to be positive and significant for all medium and large farmers in the district.

All the farmers are found to be experiencing diminishing returns to scale except the marginal wheat farmers in the moderately developed area and all small wheat farmers (combined) in the district.

The marginal productivities of inputs used in the production were calculated for only those inputs whose regression coefficients are statistically significant in the production function.

For marginal wheat farmers in the moderately developed area the MVP of tractor service is higher than the MVP of other resources. It is negative in the developed area indicating over utilization of this resource. The MVP of seeds is positive in developed area and also for all the marginal paddy farmers indicating that more output can be realized by increasing the additional use of this input.

The MVP of manures is positive for all the small paddy farmers in all the areas. The MVP of manures is higher in the moderately developed area than the MVP of manures in low developed area, moderately developed area and for all small paddy farmers. The MVP for tractor service input is higher among the small wheat farmers.

The high marginal value product of tractor input among the small paddy farmers can also be attributed to the high production elasticity of this resource among them and the low level at which it was used.

The MVP of seeds and manures for all medium and large paddy farmers is negative indicating over utilization of these inputs. The MVP of irrigation is positive which indicates that more output can be realized by increasing the expenditure on irrigation facilities. Only the coefficient of manures for medium and large farmers is significant. The MVP of manures among all the marginal paddy and wheat farmers is positive which indicated that substantial output of wheat can be increased by utilizing more units of this resource.

The marginal returns to opportunity cost ratios (MROCR) were calculated to measure the efficiency of resource use prevailing on an average throughout the sample. It is computed as the ratio of the marginal value product to marginal input cost given as the opportunity of the respective resource.

The results reveal that the MROCRs are greater than unity for all factors except seeds in the low developed area. These ratios indicate that too little of the respective resource inputs, that is, bullock labour, manures and irrigation were being used in relation to the prevailing market conditions. The negative ratio of seeds indicates that there is excess utilization of seeds in the low developed area by marginal paddy farmers. Hence the farmers were allocatively inefficient in the use of the available factors of production.

The overall functional analysis brought out that the marginal farmers were rational in making investments (which included more than 44 percent of borrowed amount).

An attempt is made to compare the average yield of crops of paddy and wheat grown by sampled farmers before and after credit used by sampled marginal, small and medium and large farmers in low developed, moderately developed and developed area of Morang District. In order to study the impact of credit on production, paired-t test was used for the samples of size $n < 30$ and Z-test was used for the samples of size $n > 30$. The calculated test statistics are compared with tabulated values of the test statistic and conclusions are drawn on the basis of whether the calculated values are less than or greater than the tabulated values.

All the t-statistics and Z-statistics calculated are significant for all sampled farmers and in all areas. These results suggested that there was positive impact of credit on productivity of crops.

In order to examine the optimal utilization of credit by sampled farmers an attempt has been made to compare the per hectare requirements of inputs for production as recommended by the technicians and expected output which could be realized if the farmers had followed the recommendations.

The result indicated that if the farmers had used the inputs as recommended, production of crops would have increased substantially.

It is found that the marginal farmers in the low developed, moderately developed and developed areas were not using all the credit in their farm operations. Only 58.44 percent of the total credit borrowed was used by marginal farmers for production of paddy and the input-output ratio for paddy was slightly greater than one. All other ratios except paddy were less than one implying lower levels of inputs used in the production. The similar trend was observed for small and medium and large farmers in all the areas. The small farmers and medium and large farmers were using 67 and 68 percent of total loan borrowed respectively. **(Chapter-VI)**

7.2 Conclusions

The analysis of the general economic situation of Nepal reveals that Nepal is still one of the least developing countries with a very low per capita income where 38 percent of the total population lives below poverty line. About 85 percent of the total population depends on agriculture for their livelihood. The contribution of agricultural sector alone to total GDP is about 39 percent and the contribution of other individual sectors to total GDP is very low. Nepal's foreign trade has been characterized by a large trade deficit every year. The annual population growth rate is also very high. The government revenue as a percentage of GDP is about 11 percent, which reveals heavy dependence on foreign aid and loan. On the basis of the analysis presented above we can make the conclusion that the only way to develop the Nepalese economy is to develop the agricultural sector of the country.

The analysis of the performance of the agricultural sector of Nepal during different plan periods shows very poor performance. The average rate of growth of

agricultural sector was 2.9 percent during the third plan and it was 3.3 percent during the ninth plan. The rate of growth of the agricultural sector over the nine periodic plans comes out to be only 3.01 percent, which shows negligible improvement over the time span of 46 years (from 1956 to 2001). Although there were impressive progress in the average rate of growth in the agricultural sector during sixth and seventh plans, the statistics show that the increases were not due to increase in agricultural productivity but they were due to expansion in the area of cultivation. On the basis of the analysis presented above we come to the conclusion that the performance of the agricultural sector over the nine periodic plans is not satisfactory.

The poor performance in the agricultural sector is conspicuous by low productivity and low production. Wide fluctuations in the rate of growth of agriculture from plan to plan indicate the decisive role of unpredictable weather in agricultural production. Besides, the existing extension services are generally inaccessible to farmers. Agricultural input supply is inadequate. Despite considerable efforts in the expansion of rural credit institutions, credit supply is still outreach of majority of marginal and small farmers. The current land reform measure has also been unsuccessful in solving the problems of tenants and other related issues prevailing in the agricultural sector.

On the basis of the statistics presented for the study of the agro-economic situation of the sampled area we come to the conclusion that cropping intensity of the farms is dependent on the availability of irrigation facilities and resources available with the farmers. This conclusion is justified on the ground that even in the developed area majority of the marginal farmers were found to be growing two crops during the year. They reported that they lacked their own bullock labour and during the peak period of cultivation bullock labour was not available for hiring. Similarly in the low developed area the sampled farmers were growing crop once a year due to the lack of irrigation facilities.

The data relating to the value of farm assets leads us to the conclusion that the economic status of the same class of farmer depends on the development stage of the area where he/she lives.

A large segment of the farmers still continue to depend on the private sources for meeting its credit needs, despite high interest rates charged by them. The semi-formal and informal institutions are profit oriented and they do not address the actual

needs of the farmers. The institutional sources of credit have been out of their reach due to the cumbersome and time consuming lending procedures and improper delivery mechanism of the rural credit institutions. This leads us to the conclusion that rural farmers prefer to borrow from the informal sources rather than from the formal sources despite high interest rates charged by them.

The performance of loan operations, both disbursement and recovery of the rural credit institutions under study as a whole has been found below the expected level. The overdues have been showing increasing trend. The rural branches are found to have suffered also due to reasons such as low repayment and lack of trained staff and overstaffing.

Examining the financial performance of the major rural credit institutions, it is found that the credit-deposit ratios of all the banks are found to be decreasing. The ratio of interest paid on deposits to interest income from loans and advances is found to be increasing over the successive years. On the basis of the analysis presented we come to the conclusion that the operational as well as financial performance of the rural credit institutions in Nepal is not satisfactory.

The projected institutional demand and supply figures indicate that the institutional credit supply falls short of credit demand and the gap is likely to increase overtime. The performance of the rural credit institutions indicates that the rural credit market as it exists today is unsustainable and, to a larger measure, inefficient. Because of high rate of repayment defaults, the formal financial institutions as they function today cannot remain viable for long. The analysis reveals that there is likely to be a great shortage of rural credit supply from formal credit institutions in coming years, which may hamper the development of agriculture.

On the basis of the analysis made to examine the factors determining demand for farm credit, the following conclusions have been made.

The value of purchased inputs has a positive and significant role in determining the demand for farm credit of marginal and medium and large farmers in the sampled area.

The family consumption expenditure has a positive and significant role in determining the demand for credit of marginal and small farmers in the sampled area of Morang district.

The rate of interest is positively related to the demand for farm credit of marginal farmers and negatively related to the demand for farm credit of medium and large farmers. The insignificant regression coefficients of all the regression equations lead us to the conclusion that the demand for farm credit in the sampled area and for the district as a whole is inelastic.

The risk aversion behaviour of the farmers in Morang district is independent of the class size of farmers. This leads us to the conclusion that all types of farmers in Morang district are risk averse.

On the basis of the analysis made to examine the productivity of credit the following conclusions are made:

Marginal farmers can increase output of paddy by increasing the units of bullock labour and manures and reducing the expenditure on seeds. The expenditure on bullock labour and seeds is justified even by borrowing. They can also increase the production of wheat by increasing the expenditure on seeds.

Small farmers can increase production of paddy by increasing the amount of expenditure on manures, seeds and tractor service.

All the medium and large farmers (combined) can increase production of output of paddy by increasing the expenditure on irrigation. They can obtain more output of wheat by applying more units of manures.

On the basis of the findings regarding the impact of credit on production, we have arrived at the conclusion that credit has positive impact on production. Credit will be productive if it is used in a proper way.

The analysis made to study whether farmers were utilizing credit optimally or not in their farm operations, we have reached the conclusion that all size class of farmers were not using credit optimally in their farm operations.

The farmers were found not to be utilizing the entire amount of the borrowed money in their farm operations. They used some portion of money for other purposes. This leads us to the conclusion that the total money borrowed is used for production and consumption purposes by marginal and small farmers but medium and large farmers used it for production and interest earning purposes.

7.3 Suggestions

In order to promote agriculture on a Sustainable basis and to improve the activities of rural credit institutions in Nepal the following measures are suggested:

Since there are no more lands available for cultivation in Nepal, emphasis should be on increasing the agricultural productivity by intensive cultivation. Programmes for introducing modern technologies—organic as well as chemical fertilizers, improved high yielding seeds, development of irrigation facilities and efficient cropping techniques are to be extended to the marginal and small farms. Focus should be given to the areas, which belong to the low developed category.

Due to the massive unemployment, underemployment and disguised unemployment in the agricultural sector, attention must be given to create employment opportunities in the rural areas. Labour intensive programmes are to be given high priority mainly in the low developed areas.

Non-agricultural activities such as cottage industries, animal husbandry and forestry should be encouraged and aided to supplement rural farm income and to provide employment during slack seasons.

If high production and productivity of the larger number of marginal and small farmers are the basic aims of the agricultural development, the best policy and programme should be to organize a sound and suitable organizational set-up both at the grass-root and national level. The efforts of the policy makers and planners will not produce fruitful results unless a sound and coordinated organizational set up is established.

To provide an alternative to the role played by the private sources, i.e. moneylenders, landlords, traders, etc., the need for setting up sound institutional credit system is obvious. The cooperative societies, which were the first institutional sources of supplying credit to farmers, have almost failed to play their role they were intended to. The co-operative societies have been recognized as the most appropriate agencies for rural financing, if managed properly. As such, the present structural and financing system of the co-operatives should be reorganised.

In Nepal commercial banks hardly come into rural picture. These banks, as they do not finance agriculture substantially, would not be viable in rural areas. Therefore, it is suggested that Agricultural Development Bank should also act as

commercial bank in the rural areas. Similarly, in places where there is no branch of ADB/N, but a commercial bank branch exists, the latter should also function as an agent of the former.

In order to provide various types of facilities including credit to marginal and small farmers, the districts should first of all be classified into different strata on the basis of the stages of development. The stage of development to be measured mainly on the basis of availability of roads, irrigation and marketing facilities. Secondly, farmers living in different strata should be classified on the basis of the size of land that they possess. It is suggested that the rural credit institutions and other input supplying institutions should focus their activities in the low developed areas.

The rural credit institutions at the grass-root level should grant consumption credit only to the marginal farmers in low developed, moderately developed and developed areas. The small and medium and large farmers should be granted consumption credit only in the low developed area.

However, this type of credit should be tied with the production credit in order to increase the repaying capacity. The consumption credit should be granted on the basis of the estimated total value of gross produce minus outstanding production loan for a given crop.

The existing loan application form of banks is too long and contains too many details which requires the farmers to provide irrelevant details as well. The application form should be simplified and should contain only the necessary information so that an ordinary farmer can understand and easily apply for loan.

The projected figures for demand and supply of rural credit indicate that the gap is likely to increase overtime. The gap has to be bridged through appropriate rural credit reforms.

The managers and loan staff of the branches should be provided with adequate training so that they could identify right borrowers and right projects and ensure correct project appraisal.

The problem of mounting overdues is also due to the defective repayment plan fixed during the disbursement of a loan. Thus it is recommended that the due date of crop loan repayment should be fixed commensurate with the sales time of the produce concerned.

The farmers have been often found victims of distress sales at very low price due to their compulsion to meet consumption needs even though they have to buy them at higher prices later. Thus, it is suggested that pledge loan be given to the borrowers who want to pledge their produce in the cooperatives or in common store of group of farmers up to 25 percent of the pledged produce. The repayment date of the previous loan should be extended till the sale of the pledged produce. This system will help promote timely repayment of loans as well as enhancement of income to the borrower.

The lending agencies should follow credit policy aiming at providing adequate amount of credit to the needy farmers for purchasing inputs which have high MVPs. They should also educate the farmers to invest the borrowed funds in the recommended resources with high MVPs only.

The farmers should be encouraged to use the inputs at the levels recommended by the agricultural technicians. They should be encouraged to use the entire of amount of loan in the approved project to obtain more output and minimize the risk.

While the risk assumed by banks in financing agriculture is covered by credit Guarantee Corporation to a large extent, the risks that the farmer take when they go in for improved techniques in farming are not covered. It is suggested that HMG/N may explore the possibility of implementing crop insurance programmes.