RESEARCH NOTE

Performance of Kisan Credit Card Scheme in Tamil Nadu

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ABSTRACT

Kisan Credit Card (KCC) scheme is an important effort of the banking sector for promoting agricultural credit and for achieving financial inclusion. The study evaluates the impact of KCC Scheme on farm economy. The primary data was collected from 120 farmers by personal interview from Krishnagiri district of Tamil Nadu. Farm business analysis, Cobb-Douglas production function, Logit function and Garrett's ranking technique were used to assess the resource use efficiency, constraints faced by the farmers and the impact of KCC scheme on farm economy. It was found that the cost of cultivation and net income per hectare for three major crops (paddy, sugarcane and groundnut) were higher for beneficiary farmers than that of the non beneficiary farmers. The transaction cost of borrowing was observed to be lower for beneficiary farmers which need to be further brought down. The constraints in the use of KCC are lengthy paper work, delay in payment of loan, and non-availability of loan on time, etc.

Keywords: Kisan Credit Card, Cobb-Douglas Production Function, Logit Model, Garrett's Ranking Technique.

JEL: Q14, N5

INTRODUCTION

The performance of agriculture sector has a significant effect on the growth of Indian economy. The agriculture and allied sectors accounting for 14.1 per cent of gross domestic product (GDP at constant price) and 52 per cent of employment (Government of India, 2011-12). In the sustained growth of agriculture sector, credit is essential for the development of agriculture in India. Considering the problems being faced by the farmers in having access to credit, the Government of India launched Kisan Credit Card (KCC) Scheme in 1998-99 to enhance the access to credit by the farmers. The scheme has facilitated the availability of credit in time and simplified the procedure for advancing loan by banks (Nahatkar *et al.,* 2002). The timely availability of crop loan has helped the farmers in realising higher returns from farming (Singh and Sekhon, 2005). The flexibility in operation has resulted in improved loan repayment. The awareness among the farmers regarding the benefits of KCC is quite high (Vedini and Durga, 2007). The factors like age, gender, household size, farm size, education level, etc., positively influence the decision to adopt KCC card (Kumar *et al.,* 2007; Bista *et al.*, 2012). The KCC scheme despite its much desired popularity needs simplification of procedure, lesser paper work, lowering of interest rate, flexibility in instalment payment especially in times of

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hardship/crop failure, and of enhancing the existing credit limits (NABARD, 2009). Wide gap exists between the amount required and that sanctioned for crop production and other activities leading to diversion of loan amount towards purposes other than for which it is taken (Rao and Sahu, 2005). Many banks are observed to be selective in identifying beneficiaries'; they are reluctant to extend card facility in mono cropped areas; and levy costly service charges issuing loan under KCC (Karmarkar, 2008). The present paper has studied the performance of Kisan Credit Card scheme with the following objectives: (i) to analyse the progress and performance of the Kisan Credit Card scheme in India; (ii) to evaluate the impact of Kisan Credit Card scheme on crop productivity, income and employment in Krishnagiri district of Tamil Nadu; and (iii) to identify the determinants and constraints in adoption of Kisan Credit Card scheme in Krishnagiri district of Tamil Nadu and to suggest suitable measures for enhancing its performance.

DATA AND METHODOLOGY

The primary data was collected from 60 beneficiary farmers and 60 non beneficiary farmers from Krishnagiri district of Tamil Nadu. The farm business analysis was used to assess the impact of KCC scheme on farm economy.The Cobb-Douglas production function was fitted to assess the resource use efficiency of paddy crop. The model used was $Y = A + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_7 + b_8 \ln X_8 + D_1 + D_2 + D_3$; where, Y= Output (t/ha), X_1= Seed (Kg), X_2= Fertilizers (NPK in Kg), X_3= Pesticide (liter), X_4= Farm Yard Manure (Kg), X_5= Irrigation (Nos.), X_6= Machine (hours), X_7 = Farm size (Ha), X_8 = Farming experience (Years), D_1 = Kisan Credit Card loan ('1' if yes or else '0'), D_2 = Crop loan ('1' if yes or else '0'), D_3= Jewel loan ('1' if yes or else '0'). The constraints faced by the farmers were ranked using Garrett's ranking technique. The formula for converting ranks into percent is given by: Percent position=100*$(R_{ij}-0.5)/N_j$; where, R_{ij}= Rank given for i-th factor by j-th individual; N_j=number of factors ranked by j-th individual. For each factor, the scores of individual respondents were added together and divided by the total number of the respondents for whom the scores were added. These scores for all the factors were arranged in descending order, ranks were given and most important factors were identified (Subhadra *et al.*, 2009). The factors affecting adoption of KCC scheme were identified by deploying binary logit model. The model used was $Y_i = \ln(P_i/(1-P_i)) = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5$; Where, Y_i = Observed response of the i-th farmer ('1' for adoption and '0' otherwise); X_1= Education (Primary = 1; Secondary = 2; Higher secondary = 3; Graduation and above = 4); X_2= Distance from the bank (Km); X_3= Distance from the market (Km); X_4= Membership ('1' if yes or else '0'); X_5= Family size (Nos).

RESULTS AND DISCUSSION

Progress of KCC Scheme

The KCC scheme was initiated in the year 1998-99 and a total of 7.84 lakhs cards were issued. The scheme was broadened in the year 2004 by introducing term loan financing under its gamut resulting in further increase in issue of cards. A certain component of loans through KCC also covers the consumption needs of the farmers. A total of 1078.30 lakhs of Kisan Credit Cards have been issued with the overall cumulative amount of Rs. 10274.25 billion up to 2011-12 by the banks. The commercial banks with cumulative number of accounts of 547.52 lakhs has the major share of number of cards issued and is followed by that of co-operative banks (398.57 lakhs) and regional rural banks (RRBs) (162.49 lakhs). The share of KCC in the total amount of loan disbursed to agriculture and allied sectors showed a steady increase during the initial few years of its launch. It increased from 31.1 per cent in the year 2000-01 to 41.7 per cent in 2001-02, but after 2001-02, the total share and respective shares of each of the financial institutions declined (Table 1). Two of the institutional agencies RRBs (22.4 per cent) and commercial banks (23.5 per cent) have recorded a

TABLE 1. SHARE OF KCC IN THE TOTAL FLOW OF CREDIT TO AGRICULTURAL SECTOR, 2000-11

(Rs. crores)

Year	Flow of credit to agriculture					Credit flow under KCC			
	Co-operative Banks	Regional Rural Banks	Commercial Banks	Other agencies	Total	Co-operative Banks	Regional Rural Banks	Commercial Banks	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2000-01	20712	4220	27807	82	52827	9412 (45.4)	1400 (33.2)	5615 (22.2)	16427 (31.1)
2001-02	23524	4854	33587	80	62045	15952 (61.8)	2382 (49.1)	7524 (22.4)	25858 (41.7)
2002-03	23636	6070	39774	80	69560	15841 (67)	2955 (48.7)	7481 (18.8)	26277 (37.8)
2003-04	26875	7581	52441	84	86981	9855 (36.7)	2599 (34.3)	9331 (17.8)	21785 (25.1)
2004-05	31231	12404	81481	193	125309	15597 (49.9)	3833 (30.9)	14756 (18.1)	34186 (27.3)
2005-06	39404	15223	125477	382	180486	20339 (51.6)	8583 (56.4)	18780 (14.9)	47702 (26.4)
2006-07	42480	20435	166485	0	229400	13141 (30.9)	7373 (36.1)	19786 (11.9)	40300 (17.6)
2007-08	48258	25312	181088	0	254658	19991 (41.4)	8743 (34.5)	19900 (10.9)	48634 (19.1)
2008-09	45966	26765	228951	226	301908	13172 (29.7)	7632 (28.5)	25865 (11.3)	46669 (15.5)
2009-10	63497	35217	285800	-	384514	7605.8 (11.9)	10131.7 (28.8)	39940.5 (13.9)	57678 (15)
2010-11	70105	43968	332706	-	446779	10719 (15.3)	11468 (26.1)	50438 (15.2)	72625 (16.3)
CAGR (per cent)	13.1	27.8	30.7		25.7	-1.5	22.4	23.5	13.7

Source: Reserve Bank of India (various issues); Bista *et al.* (2012); and NABARD (various issues).
Note: Figures in parentheses indicate percentage to the total flow of credit.

positive growth rate for the amount sanctioned under KCC. Wide gap between the number of Kisan Credit Cards (KCCs) and the agricultural loan account has been observed. The banks must put in place a system to weed out dormant KCCs and maximise the flow of credit through KCCs (Anonymous, 2011). The poor performance of co-operative societies with respect to KCC scheme demands ground level investigation to decipher its cause.

A number of schemes, viz., Ultra Small Branches, Direct Bank Transfer, One Bank Account for Every Family, Opening of Accounts of Migrant Labourers, Financial Inclusion, Financial Literacy and Credit Counseling Centers (FLCC), Self-Employment Training Institutions, Swabhimann, Loan Eligibility Certificate (LEC), etc., have been enunciated in Tamil Nadu to enhance the access to credit by rural poor (Anonymous, 2013b). The performance of KCC scheme in Tamil Nadu has been very good which is revealed from the impressive growth. The amount advanced per account has increased from Rs. 21551 to Rs. 38505 during the study period of TE 2002 to TE 2012 recording an increase of more than 1.5 times (Table 2). The banks in Tamil Nadu have reached the target under agricultural advances but the share of agricultural loans against gold ornaments is very high in the total crop loans portfolio (Appendix Table 1).

TABLE 2. AGENCY WISE FLOW OF KCC IN TAMIL NADU

(Amount in lakh and amount per account in Rs.)

	TE 2002			TE 2012			CAGR (per cent) (2000-2012)		
States	No. of cards	Amount	Amount/ Account	No. of cards	Amount	Amount/ Account	No. of cards	Amount	Amount/ Account
(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Co-operative banks	117297 (32.5)	31728 (40.8)	27050	574187 (18.1)	221556 (18.2)	38586	7.2	19.8	12.6
Regional Rural Banks	9105 (2.5)	929 (1.2)	10208	227352 (7.2)	32633 (2.7)	14353	20.4	42.3	21.9
Commercial banks	234252 (64.9)	45066 (57.9)	19238	2367919 (74.7)	966261 (79.2)	40806	9.8	35.5	25.7
All agencies	360654	77724	21551	3169457	1220383	38505	8.5	30.9	22.5

Source: Reserve Bank of India (various issues).
Note: Figures in parentheses indicate percentage to the total.

IMPACT OF KCC SCHEME ON FARM ECONOMY OF TAMIL NADU

Transaction Cost of Borrowing Loan

The costs incurred on legal documentation, commission agents and the opportunity cost of time spent in the process of procuring loan from the banks together makes up for the transaction cost of borrowing. The transaction cost of borrowing loan from formal sources of finance is also the important cost borne by the farmers. The transaction cost of borrowing loan from formal institutions was found to be lower for beneficiary farmers than the non-beneficiary farmers. As the KCC card is valid for five years the cost for legal documentation and opportunity cost are incurred once at the time of issue of KCC while for non-beneficiary farmers these

costs are incurred each time they take loan. Further, after issue of cards farmers visit banks on an average twice in a year for borrowing and repayment of the loan but the non-beneficiary farmers on an average make five visits to the banks resulting in higher travel cost. Per annum transaction cost of borrowing for non-beneficiary (Rs. 617) was found to be significantly higher than that for beneficiary farmers (Rs. 345). The transaction cost for beneficiary farmers should be brought down further to make it more attractive to the farmer borrowers. This could be done by minimising the requirement of legal documentation, increasing the direct access of farmers to the banks (Table 3).

TABLE 3. TRANSACTION COST FOR BORROWING LOAN FROM DIFFERENT TYPES OF FINANCIAL INSTITUTIONS

		Co-operatives			RRBs			Commercial banks		
Sl. No.	Particulars	KCC	Jewel loan	SHGs	KCC	Jewel loan	SHGs	KCC	Jewel loan	SHGs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A.	Documentation cost									
1.	Loan agreement with stamp				-	50	-		50	-
2.	Bond paper							180	-	-
3.	Third party surety (for a loan amount above Rs. 50,000)							40	-	-
4.	Title of property (Encumbrance certificate) from register office							200	-	-
5.	Submission of documents (3 sets each)									
a.	F-164: Consent letter from borrower for disclosure of information							20	-	-
b.	D1-Single or joint demand promissory note							20	-	-
c.	D1-Agreement of guarantee							20	-	-
d.	F-172 –Declaration by the borrower-Application for agricultural credit							20	-	-
6.	Membership fee	100	50	-						
7.	Entrance fee	5	5	-						
8.	No due certificate from banks (Pallavan Gramin Banks, Indian Bank, State Bank of India)	300	-	-						
9.	Ration card photocopy	10	20	15	-	30	15		17	25
10.	Adangal certificate (Issued by VAO)	240	-	-				30	-	-
11.	Photo*	50	50	40	-	40	30	30	30	20
12.	Patta -10,1 certificate (Issued by Tehsildar office)	60	80	-	-	90	-	20	60	-
13.	Pass book/ KCC card	10	-	-				10	-	-
	Sub-total	775	205	55	-	210	45	630	157	45
B.	Opportunity Cost									
1.	Visit to bank	640	200	100	-	150	60	520	350	60
2.	Village Administrative Office (VAO)	40	-	-				50	60	-

(Contd.)

TABLE 3. (CONCLD.)

3. Visit to Tehsildar office (patta 10,1 certificate)				-	80	-	45	50	-
4. Visit to other banks for no due certificate	180	-	-				100	-	-
5. Companions for surety	140	-	-				80	-	-
6. Visit to Register office for Encumbrance certificate							300	-	-
Sub-total	1000	200	100	-	230	60	1095	460	60
Total	1775	405	155	-	440	105	1725	617	105
Cost per year	178**	405	155		440	105	345	617	105

Note: Patta is taken in support of land ownership; Adangal is taken in support of crops cultivated.

*Photo-3 nos. for cooperatives; 2 nos. by RRBs and commercial banks; **It is presumed that the members of cooperative society take loan for 10 years after becoming member of the society; ***RRB (Pallavan Grameen Bank) does not issue KCC in Krishnagiri district of Tamil Nadu.

The following steps to be taken to bring down the transaction cost of borrowing loan:

The steps may be initiated to integrate the State Registration Offices with the Central Registry to facilitate hassle free registration of mortgages (Anonymous, 2012a). Introduction of biometric cards, deployment of banking correspondence (BCs), simplification of procedure, financing through Joint Liability Groups mode, with cyclical credit would enable the farmers to have access to KCC (Samantara, 2010). It is also suggested that the Patadar Pass Book should become the only form of security. The stamp duty for registration of mortgage may be completely done away with. The transaction cost of borrowing loan through SHG is low. This is because the microfinance programme relies mainly on information advantages among group members, rather than on their financial collateral, to mitigate information asymmetry between lender and potential borrower. The groups use self-regulation (peer selection, peer monitoring and peer enforcement of contracts) as key to gaining access to services otherwise available to them. The collective strength, self-confidence, awareness and ability to negotiate formal institutions are necessary pre-conditions for the poor to access institutional credit (Ramchandran, 1995). Therefore, the extremely poor and those who have little land SHG should be the stepping stone towards the arena of institutional credit. Through SHG the poor should first gain strength, acquire the skills to articulate their needs, learn to interact with the personnel of financial institutions, know the various financial products and in the process rightfully place their request to get financial assistance from the financial institutions.

The success of any loan scheme lies in minimising the diversion of loan. This would enable the timely repayment of the loan. Table 4 shows the purpose wise use of loan amount. It is observed that the beneficiary farmers use most of the loan amount for the purchase of inputs like seeds, fertilisers, pesticide, machine and labour. The diversion of loan by beneficiary farmers is for the purposes of education of children, consumption needs, medical treatment, etc. However, only a small

percentage of farmers resort to diversion of loan. While the non-beneficiary farmers reveal a great tendency of diversion of loan. This is due to poor monitoring by the banks of credit utilisation by the farmers. The banks rely more on jewels as collateral and the peer pressure of SHGs for the recovery of loans rather than ensuring productive utilisation of the loan.

TABLE 4. PURPOSE WISE UTILISATION OF LOAN AMOUNT BY THE FARMERS

Sl. No. (1)	Purpose of use (2)	Non-Beneficiary				Beneficiary		
		Jewel loan/SHGs				Crop loans	KCCs	
		RRBs (3)	Co-operatives (4)	Commercial banks (5)	Average (6)	Co-operatives (7)	Commercial Banks (8)	Average (9)
A.	Average amount of loan taken (Rs.)	14000	15000	20000	16333	20548	26500	23524
B.	Purpose of use of loan (Rs.)							
	1. Seeds	700	1000	950	883	750	2100	1425
		(30)	(100)	(50)	(60)	(100)	(80)	(90)
	2. Fertilisers	1500	3000	2850	2450	2925	3250	3087.5
		(35)	(100)	(45)	(60)	(100)	(75)	(87.5)
	3. FYM/ Manure	500	700	1400	867	950	1450	1200
		(10)	(25)	(30)	(22)	(25)	(40)	(32.5)
	4. Machine- Harvester	1400	1500	3625	2175	4800	6756	5778
		(25)	(40)	(45)	(37)	(75)	(50)	(62.5)
	5. Human Labour	1900	2000	3020	2307	4950	5400	5175
		(30)	(50)	(60)	(47)	(80)	(75)	(77.5)
	6. Plant protection chemicals	1860	1050.5	2700	1870.2	2000	4175	3087.5
		(10)	(15)	(20)	(15)	(60)	(65)	(62.5)
	7. Education	2040	1600	2500	2047	1000	1500	1250
		(35)	(30)	(28)	(31)	(15)	(10)	(12.5)
	8. Consumption	1000	1500	1000	1167	450	500	875
		(20)	(20)	(15)	(18)	(8)	(5)	(6.5)
	9. Small implements	200	400	1200	600	750	1000	875
		(12)	(15)	(10)	(12)	(13)	(15)	(15)
	10. Medical Expenses	400	500	800	567	473	0	473
		(18)	(15)	(20)	(18)	(5)		(5)
	11. For settling old debts	2500	2000	500	1667	1500	0	1500
		(30)	(22)	(10)	(21)	(13)		(13)
	12.Savings	0	0	0		0	370	370
							(4)	(4)

Note: Figures in parentheses are per cent of farmers using the loan for the purpose.

Impact of KCC on Cropping Pattern, Input Use and Productivity

The availability of credit in adequate quantity and in proper time enables the farmers to include commercial crops in the cropping pattern which is expected to have a positive impact on the cropping intensity. The cropping intensity of the beneficiary and non-beneficiary farmers is depicted in Table 5. It is observed that the beneficiary farmers have recorded a higher cropping intensity of 223 per cent as against the non-beneficiary farmers who have recorded cropping intensity of only 207 per cent. It is also observed that the beneficiary farmers have allocated more area for

the commercial crops like sugarcane and banana which are a 10 months crop in the area. The findings of the study are corroborated by the results of Singh and Sekhon (2005) who observed that non-KCC farmers recorded lower cropping intensity than that of KCC farmers. The overall improvement in agriculture demands that the farmers switch over from low productive crops to high productive and high income crops. They should allocate part of their land for commercial crops which will fetch them higher income (Anonymous, 2013b).

TABLE 5. CROPPING PATTERN OF THE SAMPLE NON-BENEFICIARY AND
KCC BENEFICIARY FARMERS

(*acres*)

	Non-beneficiary					Beneficiary		
		Jewel loan/SHGs				Crop loan	KCC loan	
Crops/ Seasons	No loan	Co-operatives	RRBs	Commercial banks	Average	Co-operatives	Commercial banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kharif Season								
Rice	15.4	21.5	15.0	11.0	15.7	23.7	26.20	24.90
	(75.6)	(64.4)	(49.2)	(35.4)	(54.5)	(56.0)	(52.6)	(54.1)
Sugarcane**	1.6	2.2	4.5	6.75	3.8	6.9	12.35	9.63
	(7.8)	(6.6)	(14.8)	(21.7)	(13.0)	(16.3)	(24.8)	(20.9)
Banana**	0.7	0.0	0.0	4.24	1.3	3.5	7.00	5.21
	(3.6)	(0.00)	(0.00)	(13.6)	(4.3)	(8.2)	(14.1)	(11.3)
Groundnut	1.4	8.9	9.8	7.25	6.8	7.9	4.25	6.08
	(6.8)	(26.6)	(32.2)	(23.3)	(23.7)	(18.7)	(8.5)	(13.2)
Others*	1.3	0.8	1.2	1.86	1.3	0.4	0.0	0.17
	(6.2)	(2.3)	(3.8)	(6.0)	(4.4)	(0.8)	(0.0)	(0.4)
Sub-total	20.3	33.4	30.5	31.1	28.8	42.4	49.8	45.99
Rabi season								
Rice	13.3	19.5	13.8	10.0	14.1	19.7	23.45	21.53
	(65.2)	(58.3)	(45.1)	(32.2)	(48.0)	(46.3)	(47.1)	(46.8)
Bhendi	0.3	0.5	0.0	0.00	0.2	0.6	0.00	0.27
	(1.3)	(1.6)	(0.0)	(0.0)	(0.7)	(1.3)	(0.0)	(0.6)
Pulses	1.3	2.4	3.0	0.00	1.7	0.8	2.25	1.02
	(6.6)	(7.1)	(9.8)	(0.0)	(5.8)	(1.8)	(4.5)	(2.2)
Groundnut	1.4	4.9	3.3	6.25	3.9	5.9	0.00	2.93
	(6.8)	(14.7)	(10.7)	(20.1)	(13.7)	(14.0)	(0.0)	(6.4)
Others*	1.1	0.7	1.4	0.00	0.8	0.4	2.00	1.19
	(5.2)	(2.2)	(4.6)	(0.0)	(2.7)	(0.9)	(4.0)	(2.6)
Sub-total	17.3	27.9	21.4	16.25	20.7	27.3	27.7	26.94
Gross cropped area	42.3	65.8	60.9	69.33	59.5	90.5	116.2	102.61
Cropped Intensity	208.0	197.1	199.7	222.9	206.6	213.4	233.3	223.1

Note: Figures in parentheses indicate percentage to net cropped area; *others include tomato and brinjal; **Sugarcane and banana are 10 months crops and the area under it is taken three times for computation of cropping intensity.

The role of KCC in improving the cropping intensity is now very much evident. The KCC scheme should be promoted for the larger benefit of the rural economy. The access to good quality loan enhances the use of inputs by the farmers. The farmers use good quality inputs and also use it at the right time and in right dosage. The use of inputs by the beneficiary and non-beneficiary farmers is depicted in Table

6. It is observed that the beneficiary farmers are using relatively higher dosage of inputs than that by non-beneficiary farmers. In paddy crop the beneficiary farmers use more of machine labour (28 per cent) and plant protection chemicals (76 per cent) the two most critical inputs. Similarly, in case of sugarcane crop the beneficiary farmers are using higher dosage of all the inputs which ranges from 2 per cent to 36 per cent. The farmers are also using higher dosage of seeds (23 per cent), inorganic fertilisers (19 per cent), irrigation (43 per cent) and plant protection chemicals (70 per cent), etc., in case of groundnut crop.

TABLE 6. INPUT USE BY BENEFICIARY AND NON-BENEFICIARY FARMERS

(Rs./ha)

			Non-beneficiary			Beneficiary			
			Jewel loan/SHGs			Co-operatives	Commercial Banks		
Items	No loan	RRBs	Co-operatives	Commercial banks	Average	Crop loans	KCCs	Average	Per cent increase
(1) (2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
Paddy									
1. Seed (kg.)	31.8	69.4	41.7	65.5	52.1	33.3	70.1	51.7	-0.8
2. Inorganic fertiliser (kg.)	142.4	161.6	223.1	153.8	170.2	230.8	250.0	240.4	41.2
3. Organic fertilisers (tonnes)	1.3	1.5	1.4	1.6	1.5	1.6	1.5	1.5	0.0
4. Irrigation (hours)	70.0	65.0	67.5	57.5	65.0	65.0	72.5	68.8	5.8
5. Machine power/ tractor (hours)	11.6	12.5	10.6	17.1	13.0	16.3	16.9	16.6	27.7
6. Human labour (No.)	10.1	15.1	14.5	15.7	13.8	17.5	18.0	17.8	29.0
7. Plant protection chemicals (litre)	0.1	3.4	2.9	3.6	2.5	4.1	4.6	4.4	76.0
Sugarcane									
1. Seed (kg)	2.7	3.0	2.8	2.7	2.8	2.9	3.0	2.9	3.6
2. Inorganic fertiliser (kg.)	440.4	548.1	442.4	503.8	483.7	500.0	601.6	550.8	13.9
3. Organic fertilisers (tonnes)	2.3	2.8	2.7	2.5	2.6	2.8	2.8	2.8	7.7
4. Irrigation (hours)	157.5	172.1	180.1	189.0	174.7	175.0	182.5	178.8	2.3
5. Machine power/ tractor (hours)	9.6	11.6	11.3	10.9	10.8	12.4	12.6	12.5	15.7
6. Human labour (No.)	23.9	28.3	30.5	24.3	26.8	26.7	31.8	29.3	9.3
7. Plant protection chemicals (litre)	2.1	2.9	3.1	3.1	2.8	3.6	3.9	3.8	35.7
Groundnut									
1. Seed (kg)	71.8	87.0	90.1	87.0	84.0	96.0	111.2	103.6	23.3
2. Inorganic fertiliser (kg.)	94.7	150.1	176.9	150.1	142.9	153.8	186.9	170.4	19.2
3. Organic fertilisers (tonnes)	0.4	0.7	1.0	0.7	0.7	0.8	0.7	0.7	0.0
4. Irrigation (hours)	7.5	11.0	11.0	11.0	10.1	13.1	16.0	14.5	43.6
5. Machine power/ tractor (hours)	3.1	2.4	3.6	2.4	2.9	2.6	3.4	3.0	3.4
6. Human labour (No.)	14.3	13.8	12.7	13.8	13.7	13.2	17.3	15.3	11.7
7. Plant protection chemicals (litre)	0.7	1.3	1.0	1.3	1.0	1.6	1.9	1.7	70.0

The use of good quality inputs and in right dosage and time enabled by access to institutional loans through KCC would effectively result in higher productivity on beneficiary farms (Samantara, 2010). Table 7 depicts the yield of major crops obtained by sample farmers. In *kharif* season the beneficiary farmers have recorded higher yield in groundnut (38 per cent) and is followed by that for paddy (23 per cent) and sugarcane (22 per cent). During *rabi* season higher percentage gain in yield is obtained by the beneficiary farmers over that obtained by the non-beneficiary farmers. Rabi groundnut has shown highest yield gain of 50 per cent by the beneficiary farmers over non-beneficiary farmers.

TABLE 7. YIELD OF DIFFERENT CROPS CULTIVATED BY BENEFICIARY AND
NON-BENEFICIARY FARMERS

(*qtls. /ha*)

			Non-beneficiary				Beneficiary			
			Jewel loan/SHGs				Co-operatives	Commercial Banks		
	Items	No loan	RRBs	Co-operatives	Commercial banks	Average	Crop loans	KCCs	Average	Per cent increase
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Kharif									
1.	Paddy	18	19	20	21	19.5	23	25	24	23.1
2.	Banana	800	970	940	1150	965	1000	1100	1050	8.8
3.	Tomato	60	80	70	65	6.8	70	90	80	16.4
4.	Groundnut	20	22	28	24	23.5	30	35	32.5	38.3
5.	Sugarcane	580	620	690	650	635	750	800	775	22.0
	*Rab*i									
1.	Paddy	18	19	20	21	19.5	23.0	25.0	24	23.1
2.	Bhendi	23	19	24	29	95.0	28.0	30.0	29	22.1
3.	Green gram/ Back gram	12	16	17	20	16.3	21.0	23.0	22	35.0
4.	Groundnut	18	20	27	23	22.0	32.0	34.0	33	50.0

Anonymous (2013b) states that for improvement of agricultural sector, banks should focus on investment credit and on the technology based initiatives like precision farming, drip irrigation, greenhouse cultivation etc. The farmers then will get better productivity and better income. The farmers need to switch over from low productive crops to high productive and high income crops. They should allocate part of their land for commercial crops which will fetch them higher income. The next important factor is value addition to the farm produce. Supporting the agro processing units is very essential and market development for such processed products should also be created side by side. Without proper agro processing centres and adequate market facilities, the high level of production of commercial crops cannot sustain over a long period. The promotion of Kisan Credit Card is a must for the overall development of the agricultural sector. The banks should focus on investment credit and on the technology based initiatives like precision farming, drip irrigation, greenhouse cultivation, etc., while the farmers should allocate part of their land for commercial crop and focus on value addition of farm produce. The banking sector must support agro-processing units and market development to sustain high level of

production of commercial crops in the region (Anonymous, 2013b). Thus banks can play a major role in the development of rural hinterlands through innovative products like KCC.

Cost and Return Analysis of KCC Beneficiary and Non-Beneficiary Farmers of Tamil Nadu

The farm business analysis revealed that cost of cultivation per hectare (Cost 3) for paddy crops was higher for beneficiary farmers (Rs. 31,226) compared to that of non-beneficiary farmers (Rs. 24,223). The beneficiary farmers are using higher amount of purchased inputs leading to higher amount of variable cost (Rs. 22,147) being incurred by them. This higher cost of cultivation for beneficiary farmers is due to application of higher amount of purchased inputs made available with the help of borrowed money (Table 8). The use of good quality inputs and their timely application resulted in realisation of 30 per cent higher gross returns by the beneficiary farmers (Rs. 34875) compared to that by non-beneficiary farmers (Rs. 26,788) (Table 9).

TABLE 8. COST OF CULTIVATION OF PADDY

(Rs./ha)

S. No. (1)	Cost items (2)	No loan (3)	Non-beneficiary				Beneficiary		
			Jewel loan/SHGs				Crop loans	KCCs	
			RRBs (4)	Co-operatives (5)	Commercial banks (6)	Average (7)	Co-operatives (8)	Commercial Banks (9)	Average (10)
1.	Seed	953	2082	1250	1965	1562	1000	2104	1552
2.	Inorganic fertiliser	1851	2101	2900	2000	2213	3000	3251	3125
3.	Organic fertilisers	2200	2561	2450	2756	2492	2644	2551	2597
4.	Irrigation charges	1400	1300	1350	1150	1300	1300	1450	1375
5.	Machine power/tractor	4625	5000	4250	6850	5182	6502	6757	6629
6.	Human labour	3021	4520	4351	4701	4148	5261	5400	5330
7.	Plant protection chemicals	51	1200	1000	1253	876	1451	1625	1538
	Total variable cost	14100	18763	17551	20675	17772	21157	23137	22147
8.	Interest on working capital	156	246	200	186	197	221	325	273
9.	Land revenue and other taxes	70	70	70	70	70	70	70	70
10.	Depreciation of farm assets	100	322	295	300	254	3451	351	1901
	Cost A1	14427	19400	18116	21231	18293	24898	23882	24390
11.	Interest on fixed capital	215	246	280	276	254	300	350	325
	Cost B1	14641	19646	18396	21506	18547	25198	24232	24715
12.	Rental value of land	2046	2046	2046	2046	2046	2046	2046	2046
	Cost B2	16687	21691	20442	23552	20593	27244	26278	26761
13.	Family labour	1651	1801	1401	1400	1563	1603	1603	1603
	Cost C1	15992	21206	19647	23056	19975	26849	25835	26342
	Cost C2	18037	23252	21692	25102	22021	28894	27880	28387
	Cost C3	19841	25577	23861	27612	24223	31784	30668	31226

TABLE 9. RETURN OVER VARIOUS COSTS FROM PADDY

(Rs./ha)

		Non-beneficiary				Beneficiary		
		Jewel loan/SHGs				Crop loans	KCCs	
Particulars	No loan	RRBs	Co-operatives	Commercial banks	Average	Co-operatives	Commercial Banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gross return	23651	28251	26251	29000	26788	34500	35250	34875
Farm business income	9224	8851	8135	7770	8495	9602	11368	10485
Family labour income	6964	6560	5809	5449	6196	7257	8972	8115
Net return over cost C1	7659	7045	6604	5945	6813	7651	9415	8533
Net return over cost C2	5614	4999	4559	399	3893	5606	7370	6488
Net return over cost C3	3810	2674	2389	1389	2566	2717	4582	3649

In sugarcane crop the per hectare cost of cultivation (Cost 3) was observed to be higher for beneficiary farmers (Rs. 54,184) compared to non beneficiary farmers (Rs. 48,314). The beneficiary farmers are using higher amount of inputs resulting in higher variable cost (Rs. 39,601) being incurred by them. This higher cost of cultivation for beneficiary farmers is due to application of higher amount of purchased inputs made available with the help of borrowed money (Table 10). The use of good quality inputs and their timely application resulted in 16 per cent higher gross returns being realised by the beneficiary farmers (Rs.1,31,551) compared to that by non-beneficiary farmers (Rs. 1,13,813) (Table 11).

TABLE 10. COST OF CULTIVATION OF SUGARCANE

(Rs./ha)

			Non-beneficiary				Beneficiary		
			Jewel loan/SHGs				Crop loans	KCCs	
S.No.	Cost items	No loan	RRBs	Co-operatives	Commercial banks	Average	Co-operatives	Commercial Banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Seeds	8000	9100	8500	8200	8450	8600	9000	8800
2.	Inorganic fertiliser	5726	7126	5751	6550	6288	6501	7820	7160
3.	Organic fertilisers	3911	4693	4580	4251	4359	4781	4801	4791
4.	Irrigation charges	3151	3442	3603	3781	3494	3500	3650	3575
5.	Machine power/tractor	3851	4623	4521	4351	4336	4950	5021	4985
6.	Human labour	7161	8501	9150	7301	8028	8021	9550	8785
7.	Plant protection chemicals	831	1150	1250	1250	1120	1450	1560	1505
	Total variable cost	32628	38634	37354	35682	36075	37802	41401	39601
8.	Interest on working capital	1080	1743	1653	1656	1533	1851	1951	1901
9.	Land revenue and other taxes	96	96	96	96	96	96	96	96
10.	Depreciation of farm assets	500	554	591	601	561	620	751	685
	Cost A1	34304	41026	39693	38034	38264	40368	44198	42283
11.	Interest on fixed capital	1125	1051	1451	1450	1269	1650	2150	1900
	Cost B1	35429	42076	41143	39484	39533	42018	46348	44183
12.	Rental value of land	1701	1701	1701	1701	1701	1701	1701	1701
	Cost B2	37129	43777	42844	41184	41234	43718	48049	45883
13.	Family labour	2451	3150	2551	2601	2688	3200	3550	3375
	Cost C1	37879	45226	43694	42085	42221	45218	49898	47558
	Cost C2	39580	46927	45394	43785	43922	46918	51599	49258
	Cost C3	43538	51619	49934	48164	48314	51610	56759	54184

TABLE 11. RETURN OVER VARIOUS COSTS FROM SUGARCANE

(*Rs./ha*)

		Non-beneficiary				Beneficiary		
		Jewel loan/SHGs				Crop loans	KCCs	
Particulars	No loan	RRBs	Co-operative	Commercial banks	Average	Co-operative	Commercial Banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gross return	102651	121000	116351	115251	113813	128101	135000	131551
Farm business income	68347	79974	76658	77217	75549	87733	90803	89268
Family labour income	65521	77223	73507	74066	72579	84382	86952	85667
Net return over cost C1	64771	75774	72657	73166	71592	82883	85102	83993
Net return over cost C2	63071	74073	70956	71465	69891	81182	83402	82292
Net return over cost C3	59113	69381	66417	67087	65499	76491	78242	77366

In groundnut crop the cost of cultivation per hectare (Cost 3) was higher for beneficiary farmers (Rs. 24,664) compared to non-beneficiary farmers (Rs. 21,923). The beneficiary farmers are using higher amount of inputs leading to higher variable cost (Rs. 14,878) being incurred by on cost of cultivation of crops. The application of higher amount of purchased inputs is made available with the help of borrowed money (Table 12). The use of good quality inputs and their timely application resulted in 16 per cent higher gross returns being realised by the beneficiary farmers (Rs. 29,905) compared to that by non-beneficiary farmers (Rs. 25,857) (Table 13).

TABLE 12. COST OF CULTIVATION OF GROUNDNUT

(*Rs./ha*)

			Non-beneficiary				Beneficiary		
			Jewel loan/SHGs				Crop loan	KCCs	
S.No.	Cost items	No loan	RRBs	Co-operatives	Commercial banks	Average	Co-operatives	Commercial Banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Seeds	3591	4350	4503	4350	4198	4800	5561	5180
2.	Inorganic fertiliser	1231	1951	2300	1951	1858	2000	2430	2215
3.	Organic fertilisers	701	1251	1750	1251	1238	1351	1151	1251
4.	Irrigation charges	150	220	220	220	203	261	321	291
5.	Machine power/tractor	1241	960	1451	960	1153	1030	1360	1193
6.	Human labour	4300	4150	3821	4150	4105	3950	5200	4575
7.	Plant protection chemicals	70	125	99	125	105	155	190	173
	Total variable cost	11283	13007	14144	13007	12860	13543	16213	14878
8.	Interest on working capital	321	365	495	481	416	400	520	460
9.	Land revenue and other taxes	23	23	23	23	23	23	23	23
10.	Depreciation of farm assets	353	511	325	510	425	495	621	558
	Cost A1	11979	13905	14987	14020	13723	14460	17376	15918
11.	Interest on fixed capital	801	781	691	986	815	918	1010	964
	Cost B1	12780	14686	15677	15006	14537	15378	18386	16882
12.	Rental value of land	3989	3590	3590	3989	3790	3989	3989	3989
	Cost B2	16769	18276	19268	18995	18327	19367	22375	20871
13.	Family labour	1800	1251	1787	1573	1603	1451	1651	1551
	Cost C1	14580	15937	17464	16579	16140	16829	20037	18433
	Cost C2	18569	19527	21055	20568	19930	20818	24026	22422
	Cost C3	20426	21479	23160	22624	21923	22900	26428	24664

TABLE 13. RETURN OVER VARIOUS COSTS FROM CULTIVATION OF GROUNDNUT

(Rs./ha)

Particulars	No loan	Non-beneficiary				Beneficiary		
		Jewel loan/SHGs				Crop loans	KCCs	
		RRBs	Co-operatives	Commercial banks	Average	Co-operatives	Commercial Banks	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gross return	23890	27150	25981	26406	25857	28560	31250	29905
Farm business income	11912	13245	10994	12385	12134	14100	13874	13987
Family labour income	7121	8874	6713	7411	7530	9193	8875	9034
Net return over cost C1	9310	11214	8516	9827	9717	11731	11214	11472
Net return over cost C2	5321	7624	4926	5838	5927	7742	7225	7483
Net return over cost C3	3464	5671	2821	3781	3934	5661	4822	5241

Estimates of Input Coefficients for Paddy Crop

The coefficients of different inputs of Cobb-Douglas production function for paddy crop are presented in Table 14. The inputs like seed, fertiliser, irrigation and use of machine were found to have positive impact on productivity. The impact of quality of loan was assessed through the dummy variables namely KCC card, crop loan, jewel loan as against no loan. The KCC loan is perceived to be of best quality because of various inbuilt features leading to reduction in transaction cost, being valid for five years, etc. The crop loan offered by the co-operative banks is also similar to KCC loan. The crop loan taken from co-operative banks the farmer has to first take membership of the bank by submitting a number of document but in later periods involves lesser paper work for taking loans. Thus it is very similar in its features to KCC loan. The jewel loan on the other hand is considered to be least preferred loan as the rate of interest applicable on them is much higher and many of the features of KCC are not present in it.

TABLE 14. ESTIMATES OF COEFFICIENTS OF INPUTS FOR PADDY CROP

Inputs (1)	Coefficients of inputs (2)	Std. Error (3)
Constant	-3.276***	0.533
Seed (in kg.)	0.263**	0.106
Fertilisers (in kg.)	0.203**	0.082
Pesticide (in litre)	0.001	0.078
Farm yard manure (in kg.)	-0.022	0.038
Irrigation number	0.424**	0.157
Machine (hours)	0.395***	0.124
Farm size	0.084	0.133
Farming experience	0.181*	0.094
Kisan credit loan (If yes=1 or else 0)	0.263**	0.116
Crop loan (If yes=1 or else 0)	0.337***	0.116
Jewel loan (If yes=1 or else 0)	0.129	0.091
R^2	0.91	

Note: ***, ** and * Significant at 1, 5 and 10 per cent level of significance.

The regression results presented in Table 14 reveals that the coefficient of crop loan is positive and significant and thus has highest impact on productivity. The crop loan which is issued by the co-operatives has kind component for items like seeds and fertilisers. This ensures that the beneficiary farmers at least purchase and use these critical inputs and prevent the incidence of diversion of loan. These features of crop loan make it a very good quality of loan. This means that if the performance of KCC is to be improved then strategies must be devised to ensure that the diversion of loan is minimised.

The coefficient of jewel loan has turned out to be insignificant and hence is unable to have any impact on the productivity. The jewel loans bear higher interest rate and are usually taken by the farmers to meet exigencies. So the farmers most often desist from taking it for investment purposes rather to meet very emergent consumption need. The nature of collateral offered gives little incentive for the banks to monitor the end use of the loan. This has little impact on productivity and hence should be discouraged by the banking sector.

Constraints to Adoption of KCC

A number of constraints are faced by the farmers in use of the Kisan Credit Card. The response of beneficiary farmers was ranked using Garrett's ranking technique (Table 15).The major problem faced by the beneficiary farmers from cooperative societies was untimely payment of loan and insufficient credit limit. It is mandatory for the beneficiaries to become members of the society and also to contribute to share capital to the tune of 10 per cent of the loan amount. Besides, availability of loan in cash or kind, longer time to sanction and disbursal of loan amount, preference for jewel loan by the banks for offering crop loans on account of security and non-issue of KCC passbook were also reported as the major obstacles by the beneficiary farmers (Table 15). Many of the small holders do not have accesses even to the co-operative societies. The co-operative society of the state should take bold steps and come forward to help the poor farmers the way Orissa State Co-operative Bank (OSCB) has achieved. The OSCB has taken number of steps to popularise KCC scheme like: introduction of upgraded versions of KCC Scheme, viz., Kalinga Kisan Gold Card Scheme (KKGC) and Kalinga Kisan Silver Card scheme (KKSC); hastened up the computerisation programme and established connectivity with DCCBs and has used common software connecting OSCB and DCCB; hold's annual KCC holders meet; offering cheque facility to farmers to avail cash and kind component of credit, etc. (Rao and Sahu, 2005).

The constraints faced by the beneficiaries of RRBs are that they do not issue KCC loans. The banks on the other hand prefer to offer the jewel loan and the SHG loans in order to avoid build-up of non-performing assets (NPAs). These types of loans are also preferred as the interest rate applicable on these loans is quite high and would lead to greater earning for the banks. However, these banks are located very close to

the people and are also farmer friendly institutions they must advance KCC loans so that the benefits of the scheme reaches to the large number of poor farmers (Table 15).

TABLE 15. CONSTRAINTS IN ADOPTION AND USE OF KCC

S.No. (1)	Constraints (2)	Percentage of farmers (3)	Rank (4)
	Cooperative banks		
1.	Untimely payment of loan	75.2	1
2.	Inadequate loan amount	73.5	2
3.	Membership of the society and compulsory contribution to share capital (10 per cent of loan amount)	70.2	3
4.	Loan amount available in cash (60 per cent) and kind (40 per cent)	68.5	4
5.	Banks are unapproachable by small holders	63.4	5
6.	longer time to sanction and disbursal of loan amount	50.0	6
7.	Jewel loan is preferred by banks	45.0	7
8.	The kind component of pesticide is not distributed and its amount is not disbursed	40.1	8
9.	KCC pass book is not issued	30.2	9
	Regional Rural Banks		
1.	KCC loans are not issued	85.0	1
2.	Jewel loan is preferred on account of security	80.0	2
3.	SHGs loans are preferred	78.2	3
	Commercial banks		
1.	Documentation procedures are too much	80.0	1
2.	Bank is located at distant place	75.2	2
3.	Insufficient amount of loan	72.3	3
4.	Withdrawal from other banks and branches not permitted	65.6	4
5.	Untimely payment of loan	60.0	5
6.	Third party surety is sought	45.0	6
7.	Jewel loan is preferred on account of security	35.5	7

The major problem as perceived by the beneficiary farmers of commercial banks was lengthy and involved tedious paper work. Agnet (2004) also observed that the complex mechanism of commercial banking is least understood by the small scale farmers and thus limits their access. The credit limit is also not sufficient for the farmers to meet their crop production requirement. Besides, non-availability of loan on time, surety from other farmers is also an issue and the jewel loan is preferred by the banks for offering crop loans on account of security. Lack of facility to withdraw credit limit from any branch of the concerned bank is another constraint. It is difficult to permit access from any branch unless all the transactions were electronically recorded and transmitted across the bank branches (Singh and Sekhon, 2005).

The problems faced by the beneficiary farmers call for reduction in the legal procedures involving lengthy paper work. The application of computers in the bank branches would enhance the capacity of staff and help to reduce the lengthy paper work. The existing credit limit under kisan credit card scheme needs to be reviewed and should be increased to meet their credit need for production purpose. The banks should discourage issue of jewel loans to farmers instead provide KCC loan. The

banks should provide ATM facility and offer flexibility in the use of bank branches to attract farmers towards the scheme (BIRD, 2000). The KCC gives a feeling to the farmers that there is an underlying guarantee of getting loan from the bank as long as the earlier loan is repaid (Rao and Sahu, 2005). This psychological feeling of the poor farmers needs to be given a boost by engaging NGOs to link the farmers with the financial institutions by enabling them to get the KCC cards made. This could be easily done by using the mechanism followed by NABARD of offering service charges to the NGOs for forming and linking the SHGs with the financial institutions.

Factors Influencing the Adoption of KCC Scheme

The KCC scheme has become a popular loan product to meet the short term credit needs of the farmers. The binary logit model was used to assess the factors affecting adoption of KCC. The results revealed that education has positive influence on the decision of the farmers regarding the adoption of KCC, while the factors like distance from the bank and distance from the market have negative relationship (Table 16). As indicated by the Exp (β) values, a value less than 1 would indicate the opposite relationship between adoption and factors influencing it. Thus as the odds of education increases by one unit, that of actual adoption of KCC increases by more than 3 times. A similar explanation pertains to the distance from banks and market in which a decrease by one unit leads to increase in actual adoption of KCC by about 1 time.

TABLE 16. ESTIMATES OF FACTORS INFLUENCING ADOPTION USING BINARY LOGISTIC REGRESSION FUNCTION

(1)	B (2)	S.E. (3)	Wald (4)	Df (5)	Sig. (6)	Exp (B) (7)
Constant	2.97	2.17	1.86	1	0.17	19.42
Education(Primary-1; secondary -2, Higher education-3, Graduation and above-4)	1.18	0.42	7.77	1	0.01	3.24
Distance from the bank (km)	-0.4	0.22	3.24	1	0.07	0.67
Distance from the market (km)	-0.40	0.21	3.84	1	0.05	0.67
Membership (If Yes-1 or else 0)	0.59	0.60	0.99	1	0.32	1.82
Family size (Nos.)	-0.31	0.34	0.84	1	0.36	0.73

This reveals the fact that the farmers need to be educated. The educated farmers can better understand the complexities involved in such schemes and get benefited. Secondly, more and more bank facilities needs to be created so as to enhance the access of credit facility by the farmers. The quick way to do the same would be to open more of ATM facilities, making the bank correspondent scheme effective, etc. Thirdly, the market facilities need to be created and the existing facilities need to be improved so that the farmers could sell their produce and realize higher price. This indirectly helps in adoption of KCC scheme as the improved market facilities would

enable the farmers to diversify towards higher value crops which are capital intensive and would create demand for credit by the farmers. The findings of the study are consistent with that of Chauke *et al*. (2013), Hussien (2007), and Datta and Biswas (2012) who affirmed that farm households are discouraged to borrow when credit sources are located further away from their farm operations. Anonymous (2013b) stated that for the improvement of agriculture the value addition to farm produce is essential. Therefore, supporting the agro processing units is very essential and market development for such processed products should also be created side by side. Such an effort would have the demand side effect on promotion of KCC scheme.

CONCLUSIONS AND POLICY IMPLICATIONS

The KCC scheme has played a significant role in farm operations and income of the farmers. The timely availability of crop loan has helped to realise higher per ha gross return for KCC beneficiary. The loan amount credited to the beneficiaries account was withdrawn in a phased manner (more than two times) by only 25 per cent of the beneficiaries. The phased withdrawal has implication on the savings in terms of interest rate charges for the period and in minimising the diversion of loan amount. The farmers need to be sensitised about the positive features of the KCC scheme. The transaction cost for beneficiary farmers was lower compared to non-beneficiary farmers. The transaction cost for opening KCC accounts need to be lowered. This can be achieved by minimising the legal documentation procedure, increasing the direct access of farmers to the banks, etc. Market infrastructure need to be improved so that the access to good quality inputs like seed, fertiliser, pesticide, use of machines, etc. would enhance the end use of the KCC scheme. The improved market infrastructure would enable them to dispose off their produce efficiently and effectively. The realisation of better price for their produce would have demand side effect on the KCC scheme.

The cost and return analysis of beneficiary and non-beneficiary farmers revealed that cost of cultivation per ha for the major crops were higher for beneficiary farmers compared to non-beneficiary farmers. However gross return per ha for all the crops for beneficiary farmers was much higher than non-beneficiary famers thus reaping higher profit. The timely availability of crop loan through KCC has positive impact on cropping pattern, input use, productivity and returns for KCC beneficiary. Therefore, the KCC scheme needs to be promoted. The binary Logit model analysis revealed that the education has positive influence on the adoption of KCC scheme. While the factors like distance from the bank and distance from the market have negative relationship. There is need to increase more branches in rural areas. The constraints faced by the beneficiary farmers should be addressed through reduction of paper work, increasing credit limit of crop loan, provision of ATM flexibility in the use of bank branches and number of withdrawals and repayment are some useful ways to improve the KCC scheme. The difficulty in opening bank accounts, easy

availability of loan from informal sources and availability of jewel loan are some of the reasons stated which hinder the farmers from adopting the KCC scheme. This can be mitigated by organising campaigns for issuance of KCC and appraising the benefits of the scheme. This will help overcome the fear among the farmers of becoming defaulter. Government should develop policy to discourage the jewel loan scheme as it suffers from many disadvantages in terms of higher interest charges, investment for consumption needs and involves lesser monitoring. SHG loans should be encouraged to include people to participate in institutional credit market. Once the farmers acquire the desired skill set they could be brought under the fold of KCC. NABARD should formulate a scheme to engage NGOs to facilitate opening of KCC account by the farmers and linking them to banks.

NOTE

The Kisan Credit Card scheme entails a farmer beneficiary for five years thereby reducing the cost of borrowing loans. The scheme also offers flexibility in operation of the facility in terms of number of withdrawals and repayment of loans. Certain new features, such as personal insurance for all the card holders ranging from Rs. 25000 to Rs. 50000 against permanent disability or accidental death, an effective measure for the risk mitigation, were also incorporated in the scheme.

REFERENCES

Agnet (2004), Making Farm Credit Work for the Small-Scale Farmers, <<http://www.agnet.org/library/ nc/145b/>> Accessed on August 16, 2013.

Anonymous (2011), Minutes of the 176th Meeting of State Level Banker's Committee of Andhra Pradesh, Convenor: Andhra Bank, held on Dec 12, 2011 at Hyderabad. http://www.slbcap.nic.in/pages/SLBC%20Meetings/176TH%20 SLBC%20Minutes.pdf.

Anonymous (2012a), Minutes of the 131st State Level Bankers Committee Meeting of Tamil Nadu, Convenor: Indian Overseas Bank, held on Sept 27, 2012 at Chennai, Accessed on 22.08.2013 from http://www.slbctn.com/Minutes.aspx.

Anonymous (2012b), Minutes of the 132nd State Level Bankers Committee Meeting of Tamil Nadu, Convenor: Indian Overseas Bank, held on December 28, 2012 at Chennai, Accessed on 22.08.2013 from http://www.slbctn.com/Minutes.aspx.

Anonymous (2013a), Minutes of the 133rd State Level Banker's Committee Meeting of Tamil Nadu, Convenor: Indian Overseas Bank, held on 26.03.2013 at Chennai, Accessed on 22.08.2013 from http://www.slbctn.com/Minutes.aspx.

Anonymous (2013b), Minutes of the 134th State Level Banker's Committee Meeting of Tamil Nadu, Convenor: Indian Overseas Bank, held on 18.06.2013 at Chennai, Accessed on 22.08.2013 from http://www.slbctn.com/Minutes.aspx.

BIRD (2000), *Support from the Banking System: A Case Study of Kisan Credit Card*, Bankers Institute of Rural Development (BIRD), Lucknow. http://planning commission.nic.in/reports/sereport/ser/ stdy_kcc.pdf.

Bista, D.R., Pramod Kumar and V.C. Mathur (2012), "Progress and performance of Kisan Credit Card Scheme with a Case Study of Bihar", *Agricultural Economics Research Review*, Vol.25, No.1, pp.125-135.

Chauke, P.K., M.L. Motlhatlhana, T.K. Pfumayaramba and F.D.K. Anim (2013), "Factors Influencing Access to Credit: A Case Study of Smallholder Farmers in the Capricorn District of South Africa",

African Journal of Agricultural Research, Vol.8, No.7, pp.582-585, 28 February, 2013. Accessed on 22.08.2013 from http://www.academicjournals.org/AJAR

Datta, S.K. and Subho Biswas (2012), "An Empirical Analysis of the Sources and Use of Small Farmer Credit in India-Assessing Impact of Borrower Household and Village Attributes on Rural Credit Portfolio", *International Journal of Multidisciplinary Research,* Vol.2, No.7, July 2012, ISSN 2231 5780. http://zenithresearch.org.in/images/stories/pdf/2012/AUG/ZIJMR/1_ZIJMR_VOL2_ISSUE8 _ AUG2012.pdf

Government of India, (2011-12), *Agricultural Statistics at a Glance*, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi. India.

Hussien, H. (2007), Farm Household Economic Behavior in Imperfect Financial Markets, Doctoral Thesis, Swedish University of Agricultural Sciences, Uppsala.http://pub.epsilon.slu.se/1563/1/HHK fin0.pdf.

Karmakar, K.G. (2008), "Trend in Rural Finance", *Indian Journal of Agricultural Economics*, Vol.63, No.1, January-March, pp.5-18.

Kumar, A., D.K. Singh and P. Kumar (2007), "Performance of Rural Credit and Factors Affecting the Choice of Credit Sources", *Indian Journal of Agricultural Economics*, Vol.62, No.3, July-September, pp.297-313.

Nahatkar, S.B., P.K. Mishra, N.K. Raghuvanshi and B.B. Beohar (2002), "An Evaluation of Kisan Credit Card Scheme: A Case Study of Patan Tehsil of Jabalpur District of Madhya Pradesh", *Indian Research Journal of Extension Education*, Vol.9, No.1, pp.4749.

National Bank for Agriculture and Rural Development (NABARD) (2009), *Report on the Doubling of Agriculture Credit Programme (2004-05 to 2006-07): A Study Report*, Department of Economic Analysis and Research, Mumbai.

Ramachandran, V. (1995), *Engendering Development: Lessons from Some Efforts to Address Gender Concerns in Mainstream Programmes and Institutions in India*; Educational Resource Unit, New Delhi

Rao, K.R.P. and S. Sahu (2005), Study of the Kisan Cerdit Card Scheme and its Initiative of Orissa State Cooperative Bank, College of Agricultural Banking, Reserve Bank of India, Pune. http://cab.org.in/Lists/Knowledge%20Bank /Attachments/3/kcc%20report.pdf

Reserve Bank of India (RBI), *Trends and Progress of Banking in India*, New Delhi, India (various issues).

Samantara, S. (2010), *Kisan Credit Card: A Study*, Occasional Paper-52, National Bank for Agriculture and Rural Development (NABARD, Mumbai, India.

Singh, H. and S.K. Sekhon (2005), "Cash in Benefits of the Kisan Credit Card Scheme: Onus is Upon the Farmers", *Indian Journal of Agricultural Economics*, Vol.60, No.3, July-September, pp.319-334.

Subhadra, M.R., K.A. Suresh and P.R. George (2009), "Constraint Analysis of Farmers Operating in Mixed Farming in Kerala", *Agricultural Science Digest*, Vol.29, No.1, pp.48-50.

Vedini, K.H. and P.K. Durga (2007), "Evaluation of Kisan Credit Card Scheme in the State of Andhra Pradesh", *Indian Journal of Agricultural Economics*, Vol.60, No.1, January-March, pp.365.

APPENDIX TABLE 1. PERFORMANCE OF BANKS IN TAMIL NADU

(*Rs. lacs*)

Sl. No.	Name of the Bank	Crop Loans		Term Loan		Total	
		No.	Amount	No.	Amount	No.	Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A.	KCC loan (2011-12)*						
	1. Nationalised banks	647488	740376	74902	62908	722390	803284
		(89.6)	(92.2)	(10.4)	(7.8)	(100.0)	(100.0)
	2. Private sector banks	921238	265448	80474	262357	1001712	527806
		(92.0)	(50.3)	(8.0)	(49.7)	(100.0)	(100.0)
	3. Regional rural banks	84190	30743	14668	21898	98858	52640
		(85.2)	(58.4)	(19.8)	(41.6)	(100.0)	(100.0)
	Total	1652916	1036567	170044	347163	1822960	1383730
		(90.7)	(74.9)	(9.3)	(25.1)	(27.4)	(28.6)
B.	Direct finance to agriculture (2010-11) **						
	1. Scheduled commercial banks					6647116	4835970.0

Sources: *Anonymous (2012a,b) and ** Reserve Bank of India (various issues);

Note: Figures in parentheses are per cent to the total; Figures in bold are per cent to the total of scheduled commercial banks which is taken as proxy for total advances by financial institutions.