# Agricultural Finance: Opportunities for Banks in Cotton Value Chain

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Though Pakistan's agriculture sector forms the backbone of the economy, yet it faces stagnant yields and declining productivity growth in the past decade. For the improvement of agricultural sector requires investments in modern production technology, access to modern farming techniques and extension services. All this requires flow of financing into the rural economy. Various initiatives in terms of providing enabling environment for flow of credit and enhancing rural branch network have been taken by SBP which resultantly increased agricultural credit disbursement to the farming community. Despite these concerted efforts, there is still a huge supply and demand gap of agricultural credit as banks are meeting around 40 percent of the credit requirements of farmers. High transactions costs, high risk and corporate bias are the mainly quoted reasons that keep banks away from extending financial services to agriculture sector. This necessitates developing a viable business case for banks that agriculture is a viable business proposition for extending financial services. Therefore, present study aims to map and study the opportunities for banks in cotton value chain in Punjab, Pakistan. For this purpose, banks finalised the Bahawalpur district i.e. top cotton producing district of the country; for a baseline study to find out the banks constraints to increase the agricultural credit disbursement in cotton crop. Further, to capitalise upon the banking sector liquidity and keeping in view the constraints faced by banks, the study will help to identify is there any opportunity to develop a hybrid credit delivery model (value chain finance) based on rural banks franchise by introducing innovative partnership with local processors i.e., cotton ginners.

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## 1. INTRODUCTION

Agriculture continue to be a fundamental instrument for sustainable development and poverty reduction [Azeem, *et al*. (2016)]; yet, 'financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders' ability to compete' [World Bank (2008)]. Volatility in agriculture commodity prices have exposed the vulnerability of agricultural production and call for increased investment in agriculture at all levels [Gallai, *et al*. (2009)]. The question is how the right amount of investment can be acquired,

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particularly in a challenging milieu where financial uncertainty causes a reduction in available resources along with increased fear and scrutiny of risk [Irungu (2013)]. An answer to addressing these constraints goes beyond conventional measures since agriculture has always been difficult to finance through formal financial institutions and approaches [Rajan and Zingales (2003)].

The environment for agricultural finance is further influenced by the growing concentration of control in the agricultural sector. Driven by gains from economies of scale and globalisation of the food chain along with access to resources, multinational and other interconnected agribusinesses have a greater impact in a sector that is characterised by increasing vertical and horizontal integration [Henson and Cranfield (2009)]. The consequences of tightening integration are profound, especially for smallholders and others who are outside of the interlinked chains. In short, agriculture is evolving towards a modern, extremely competitive system driven by consumer demand for higher value, more processed products, and consistent quality and safety standards [Kariuki (2016)]. Hence, enhancing smallholders' productivity, competitiveness and their participation in these global value chains have been noted as priorities of the agriculture-for-development agenda [World Bank (2008)].

Understanding value chain finance can improve the overall effectiveness of those providing and requiring agricultural financing. It can improve the quality and efficiency of financing agricultural chains by: (1) identifying financing needs for strengthening the chain; (2) tailoring financial products to fit the needs of the participants in the chain; (3) reducing financial transaction costs through direct discount repayments and delivery of financial services; and (4) using value chain linkages and knowledge of the chain to mitigate risks of the chain and its partners. As agriculture and agribusiness modernise with increased integration and interdependent relationships, the opportunity and the need for value chain finance becomes increasingly relevant [Haq, *et al.* (2013)].

SBP has taken various for the smooth flow of financial services to the agriculture sector which resultantly increased agri. credit disbursement to the farming community. Despite these concerted efforts, there is still a huge supply and demand gap of agri. credit as banks are meeting around 40 percent of the credit requirements of farmers. High transactions costs, high risk and corporate bias are the mainly quoted reasons that keep banks away from extending financial services to agriculture sector. This necessitates developing a viable business case for banks that agriculture is a viable business proposition for extending financial services. Therefore, present study aims to map and study the opportunities for banks in cotton value chain in Punjab, Pakistan. Further, to capitalise upon the banking sector liquidity and keeping in view the constraints faced by banks, the study will help to identify is there any opportunity to develop a hybrid credit delivery model based on rural banks franchise by introducing innovative partnership with local processors i.e., cotton ginners. The specific objectives of the study were;

- To map the cotton value chain in the study area.
- To calculate the opportunities for banks for agricultural finance in cotton value chain.
- To find out the banks constraints in agricultural finance and to suggest possible solutions to overcome these constraints.

## 2. METHODOLOGY

The methodological foundations of this study lie in a pragmatic research paradigm that incorporates viewpoints of both positivism and constructivism [Badar (2015)]. In management and business sciences, research methodology is likened to a road map, or an overall sketch of the research process employed to deal with the research questions [Jonker and Pennink (2010)]. An appropriate research methodology has its foundations in an underpinning research paradigm that a researcher is implicitly or explicitly pursuing to address the research problem [Blaikie (2009)]. The literature suggests a wide range of research methodologies, such as case studies, surveys, simulations, field experiments and action research [Saunders, *et al.* (2009); Jonker and Pennink (2010)]. Value chain analysis is a multidimensional and complex issue requiring in depth exploration, so case study methodology was considered appropriate for this research in the context of a developing country. Case study methodology was adopted to seek an in-depth understanding of Cotton Value Chain, in terms of its structure and underlying constraints in agricultural finance, to suggest potential improvement measures.

### 2.1.  Case Study Area

The study was conducted in the Bahawalpur district of Punjab, Pakistan. Bahawalpur and cotton crop was chosen after mapping all the districts of Punjab and Sindh. It is the leading cotton producing district of Pakistan with annual production of 1144 thousand bales [Pakistan (2014)]. The survey was conducted from the four tehsils of Bahawalpur i.e. Ahmadpur East, Yazman, Hasilpur and Bahawalpur. These four tehsils were chosen because of the interest of banks in these tehsils.

### 2.2. Sample Size

Unlike quantitative research, exact methods and rules to determine sample size are not clearly defined in qualitative research. According to Patton (2002, p. 243), "There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources." The major reason for attaching lesser importance to sample size is the focus of qualitative inquires on learning true meanings from findings, rather than generalisations [Crouch and McKenzie (2006); Mason (2010)].

### 2.3. Data Collection Techniques

This study is based on primary data collected from case study participants. However, secondary information such as government reports, relevant material available online and information shared by interview subjects was also used to support the findings of primary data analysis. Such triangulation contributes to the internal validity and reliability of research findings [Yin (2009); Wolf (2011)]. This study also employed different data collection techniques. These included focus group discussions, surveys, in-depth interviews, observations and use of documents.

Following were the case study participants included

- Farmer – 100 from four (4) tehsils
- Aarthi – Sixteen (16) four of each tehsil
- Input suppliers – 48 (16 Fertiliser, 16 Pesticide and 16 Seed dealers)
- Commercial Banks – 5 District headquarter branches
- Processors/Ginner – at least sixteen (16) from the district
- Agriculture Extension Department, Govt. of Punjab
- Market Committee department.

## 2.4. Data Analysis

The study employed descriptive statistics and thematic content analysis [Badar (2015)] to generate research findings from the data collected from value chain participants.

## 2.5. Theoretical Framework

The theoretical framework was made keeping in view the SBP's guidelines. These guidelines cover financing to borrowers involved in agri. production both crop and non-crop activities under the explicit guarantee of processors, input suppliers, marketing companies, aggregators, lead firms, traders, exporters, stockiest, etc. and its value addition/processing as per prudential regulations for agri. financing. Banks may adopt these guidelines in the present form or develop product programme aligned to their organisational and operational needs and market characteristics, subject to compliance with SBP Prudential and other Regulations for agricultural financing.

**Fig. 1.  Conceptual Framework**
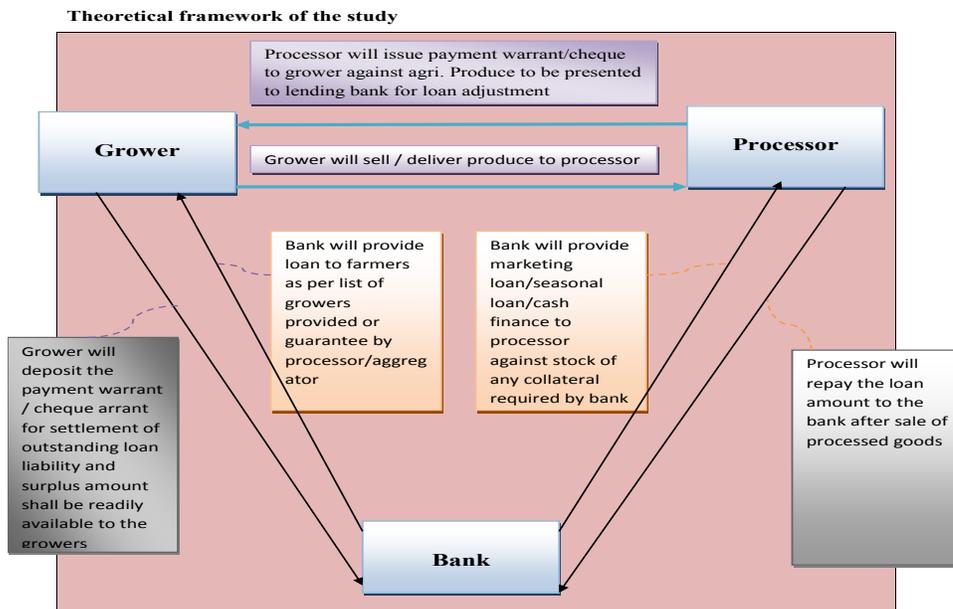


*Source:* Adapted from SBP's guidelines for value chain farmer's financing**.**

## 3. RESULTS AND DISCUSSION

### 3.1. Cotton Value Chain Map

Cotton value chain (CVC) is very long. Raw cotton is converted into cotton lint and seed through ginning. Cotton lint is processed to produce cotton yarn, which is in turn used for the manufacturing of fabrics / cloth, hosiery, apparel, canvas etc. By-products of cotton are cotton seed oil, cottonseed meal (as feed for livestock) and cotton sticks (for fuel and organic matter). The financial relationships between Farmer, Aarthi, Beopari and cotton ginners in cotton value chain are very much interlinked. Main actors in Cotton VC are input suppliers, farmers, private cotton traders, government procurement institutions, processors, exporters.

**Fig. 2. Cotton Value Chain Map**
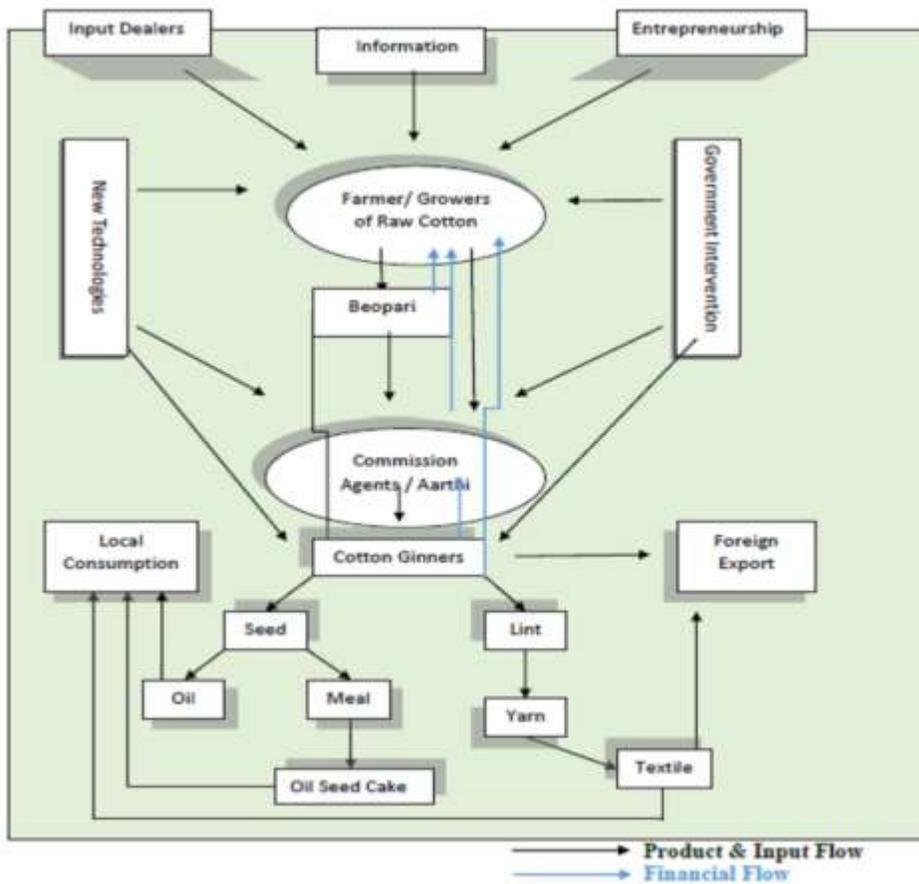


### 3.2. Financial Demand of Farmers

About 89 percent of small, medium and large farmers shown their demand for bank loans and the average loan amount is Rs 0.57, 0.54 and 1.52 million respectively. Agri. land, and gold are the preferred assets used as a collateral to avail bank loans by farmers.

### 3.3. Estimated Market Opportunities for Banks for Farmers Financing

Table 1 revealed that potential portfolio opportunity of Rs 20826 million is available for banks to finance all segments of farmers. This quantification of specific market opportunities enables banks to begin to recognise the potential market for agri. finance.

Table 1

*Market Opportunities for Banks for Farmers Financing (Million Rs)*

| Variables | Small (Less than 12 Acres) | Medium (12-25 Acres) | Large (Above 25 acres) | Total |
|---|---|---|---|---|
| Avg. Number of Acreage under Cotton Crop (acres)[1] | 600000 | 112500 | 37500 | 750000 |
| Avg. Number of Cotton Acreage Provided Credit[2] (a) | 534000 | 100125 | 33375 | 667500 |
| Avg. Loan Amount (Rs/Acre)[3] (b) | 31200 | 31200 | 31200 | – |
| Total Portfolio Opportunity (Million Rs) (c=a*b) | 16661 | 3124 | 1041 | 20826 |

### 3.4. Estimated Market Opportunities for Fertiliser Dealers Finance

The fertiliser use by farmers was mostly on credit and the dealer charge about 500-800 rupees extra on DAP bag and about 400-500 rupees extra on UREA bag. And the farmers must return seasonally on crop harvest. There are 250 operational fertiliser dealers in the district. Our field survey indicates that there are 50 percent fertiliser dealers i.e., 125 showed their interest in bank finance. These dealers are then segmented into small, medium and large categories according to their working capital. After that average loan demand for each segment is estimated. Overall analysis reveals that potential portfolio opportunity of (Rs 225 million) is available for banks to finance all the three segments of fertiliser dealers (Table 2).

Table 2

*Market Opportunities for Banks for Fertiliser Dealers Finance*

| Variables | Small (Less than 1.5 Million Rs) | Medium (1.6-3 Million Rs) | Large (Above 3 Million Rs) | Total |
|---|---|---|---|---|
| Number of Fertiliser Dealers[4] (a) | 63 | 50 | 13 | 125 |
| Avg. Loan Amount [5] (Million Rs) (b) | 1 | 2 | 5 | – |
| Total Portfolio Opportunity (Million Rs) (a*b) | 63 | 100 | 63 | 225 |

[1]On an average, there are 0.75 million acres under cotton crop in district Bahawalpur. Further, Small, Medium and Large Farmers are segmented at the ratio of 80, 15 and 5 percent respectively.

[2]Our estimates show that about 89 percent of small, medium and large farmers have shown their demand for banking finance so accordingly average number of cotton acreage needed for finance are calculated.

[3]Average credit limit for cotton crop is Rs 39000/acre. The assumption is made that 20 percent expenditure farmers meets through its own resources and remaining 80 percent (Rs 31200) through credit.

[4]The percentage categorisation of dealers into small, medium and large is 50, 40 and 10 percent respectively.

[5]Average loan amount is calculated by taking into account future loan demand.

### 3.5. Estimated Market Opportunities for Banks for Farmers Financing through Fertiliser Dealers

Table 3 reveals that potential portfolio opportunity of Rs 5464 million is available for banks to finance all segments of farmers through fertiliser dealers. This quantification of specific market opportunities enables banks to begin to recognise the potential market for agricultural finance.

Table 3

*Market Opportunities for Banks for Farmers Financing*

| Variables | Small (Less than 12 Acres) | Medium (12-25 Acres) | Large (Above 25 Acres) | Total |
|---|---|---|---|---|
| Avg. Number of Farmers Fertiliser Dealer Deals[6](a) | 220 | 41 | 14 | 275 |
| Total Number of Farmers Taking Fertiliser on Credit from Dealers[7] b=(a*175) | 38500 | 7219 | 2406 | 48125 |
| Avg. Number of Cotton Acreage Provided Credit[8] c=(a*b*6,12,25) | 231000 | 86625 | 60156 | 288750 |
| Avg. Loan Amount[9] (Rs/Acre) (d) | 14463 | 14463 | 14463 | - |
| Total Portfolio Opportunity (Million Rs) e=c*d | 3341 | 1253 | 870 | 5464 |

### 3.6. Estimated Market Opportunities for Pesticide Dealers Finance

Pesticide market in the district is very competitive constituting national and multinational companies. It was also seen that some area specific pesticide companies are also working in the district Bahawalpur. These companies have linkages with pesticide dealers who were placed in the grain market specially designed for agriculture produce. There are about 1100 operational pesticide dealers in the district. Our field survey indicates that there are 50 percent pesticide dealers i.e., 550 showed their interest in bank finance. These dealers are then segmented into small, medium and large categories per their working capital. After that average loan demand for each segment is estimated. Overall analysis revealed that potential portfolio opportunity of (Rs 1155 million) is available for banks to finance all the three segments of pesticide dealers (Table 4).

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[6]On an average, a fertiliser dealer deals with 275 farmers to provide seed on credit (80, 15 and 5 percent respectively Small, Medium and Large Farmers).

[7]There are 250 operational fertiliser dealers in the district and out of these 70 percent (i.e., 175) provide fertilisers on credit to farmers.

[8]On an average credit is provided on 6, 12, and 25 acres for small, medium and large farmers.

[9] Average loan amount is Rs 14463/acre. This means 2.25 bags of UREA @ Rs 1850/bag; 2 bags of DAP@ Rs 3750/bag; and 1bag of Potash @ Rs 2800/bag.

Table 4

*Market Opportunities for Banks for Pesticide Dealers Finance*

| Variables | Small (Less than 1 Million Rs) | Medium (1-2 Million Rs.) | Large (Above2 Million Rs) | Total |
|---|---|---|---|---|
| No. of Pesticide Dealers (a) | 385 | 110 | 55 | 550 |
| Ave Loan Amount (b) | 2 | 2 | 3 | – |
| Total Portfolio Opportunity (Million Rs)(a*b) | 770 | 220 | 165 | 1155 |

## 3.7. Estimated Market Opportunities for Banks for Farmers Financing through Pesticide Dealers

Table 5 revealed that potential portfolio opportunity of Rs 4382 million is available for banks to finance all segments of farmers through pesticide dealers. This quantification of specific market opportunities enables banks to begin to recognise the potential market for agri. finance. The gap between the potential loan portfolio and the actual amount of loan provided by the banks is filled by the commission agents same as in the fertiliser case.

Table 5

*Market Opportunities for Banks for Farmers Financing*

| Variables | Small (Less than Acres) | Medium (12-25 Acres) | Large (Above 25 Acres) | Total |
|---|---|---|---|---|
| Avg. Number of Farmers Pesticide Dealer Deals[10](a) | 100 | 19 | 6 | 125 |
| Total Number of Farmers Taking Pesticide on Credit from Dealers[11] b=(a*770) | 77000 | 14438 | 4813 | 96250 |
| Avg. Number of Cotton Acreage Provided Credit[12] c=(a*b*6,12,25) | 462000 | 173250 | 120313 | 577500 |
| Avg. Loan Amount[13] (Rs/Acre) (d) | 5800 | 5800 | 5800 | – |
| Total Portfolio Opportunity (Million Rs) e=c*d | 2680 | 1005 | 698 | 4382 |

[10]On an average a pesticide dealer deals with 125 farmers to provide seed on credit (80, 15 and 5 percent respectively Small, Medium and Large Farmers).

[11]There are 1100 operational pesticide dealers in the district and out of these 70 percent (i.e., 770) provide pesticide on credit to farmers.

[12]On an average credit is provided on 6, 12, and 25 acres for small, medium and large farmers.

[13] Average loan amount is Rs 5800/acre. This means 6 Pesticide Sprays @ Rs 800/spray; 1 Weedicide Spray @ Rs 1000/spray.

### 3.8. Estimated Market Opportunities for Banks for Farmers Financing through Ginners

Results in Table 6 revealed that potential portfolio opportunity of Rs 256 million is available for banks to finance all segments of farmers through ginners. This quantification of specific market opportunities enables banks to begin to recognise the potential market for agri. finance.

Table 6

*Market Opportunities for Banks for Farmers Financing through Ginners*

| Variables | Small (Less than Acres) | Medium (12-25 Acres) | Large (Above 25 Acres) | Total |
|---|---|---|---|---|
| Number of Farmers[14](a) | 28 | 5 | 2 | 35 |
| Total Number of Farmers Ginners Deals[15] b=(a*50) | 1400 | 250 | 100 | 1750 |
| Avg. Number of Cotton Acreage provided Credit[16] c= (a*b*Ave. farm size) | 8400 | 3000 | 2500 | 13900 |
| Avg. Loan Amount[17] (Rs/Acre) (d) | 18450 | 18450 | 18450 | – |
| Total Portfolio Opportunity (Million Rs) e=c*d | 155 | 55 | 46 | 256 |

### 3.9. Willingness to Work as Banking Agent

About 93 percent ginners shown their willingness to work as banking agent for onward lending to farmers; 57 percent shown that they will work only in the capacity of referral of farmers to banks while 43 percent shown that they will do referral and initial documentation as well. Average interest rate ginners expect from banks for these services varies from 4-5 percent. Further, 93 percent ginners revealed that they would like to enter binding crop purchase relationships with farmers financed through banks.

About 40 percent ginners were of the view that main attraction for them to enter in agent banking model is that it will expand their business; 27 percent were of the view that this will help to increase their income; 20 percent were of the view that it will increase their prestige in the area; and 13 percent were of the view that they want to support farmers through agent banking model.

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[14]On an average ginner deals with 35 farmers to provide input on credit (80, 15 and 5 percent respectively Small, Medium and Large Farmers).

[15]There are 100 operational ginners in the district and out of these 50 percent (i.e., 50) provides input on credit to farmers.

[16]On an average credit is provided on 6, 12, and 25 acres for small, medium and large farmers.

[17] Average loan amount is Rs 18450/acre. This includes 2 bags each Urea, DAP; 1 bag SOP; 1 weedicide and 6 pesticide sprays respectively.

### 3.10. Estimated Market Opportunities for Aarthi's Finance

As there are about 400 operational Aarthi's in the district. Our field survey indicates that 40 percent of these Aarthi's showed their interestfor bank finance. These Aarthi's are then segmented into small, medium and large categories according to their working capital. After that average loan demand for each segment is estimated. Overall analysis reveals that potential portfolio opportunity of (Rs 992 million) is available for banks to finance all the three segments of Aarthi's in the district (Table 7).

Table 7

*Market Opportunities for Banks for Aarthi's Finance*

| Variables | Small (Less than Million Rs) | Medium (5-7 Million Rs) | Large (Above 7 Million Rs) | Total |
|---|---|---|---|---|
| Number of Aarthi's Shown Demand for Bank Finance[18] (a) | 32 | 96 | 32 | 160 |
| Avg. Loan Amount [19](Million Rs) (b) | 3 | 6 | 10 | 19 |
| Total Portfolio Opportunity (Million Rs) (a*b) | 96 | 576 | 320 | 992 |

### 3.11.  Estimated Market Opportunities for Banks for Farmers Financing through Aarthi's

Table 8 reveals that potential portfolio opportunity of Rs 8552 million is available for banks to finance all segments of farmers through Aarthi's. This quantification of specific market opportunities enables banks to begin to recognise the potential market for agricultural finance.

Table 8

*Market Opportunities for Banks for Farmers Financing*

| Variables | Small (Less than Acres) | Medium (12-25 Acres) | Large (Above 25 Acres) | Total |
|---|---|---|---|---|
| Avg. Number of Farmers Aarthi Deals[20](a) | 200 | 38 | 13 | 250 |
| Total Number of Farmers Taking Advance from Aarthi's[21] b=(a*50) | 56000 | 7500 | 1500 | 65000 |
| Avg. Number of Cotton Acreage Provided Credit[22] c=(a*b*6,12,25) | 336000 | 90000 | 37500 | 463500 |
| Avg. Loan Amount[23] (Rs/Acre) (d) | 18450 | 18450 | 18450 | – |
| Total Portfolio Opportunity (Million Rs) e=c*d | 6199 | 1661 | 692 | 8552 |

[18]The percentage categorisation of Aarthi's into small, medium and large is 20, 60 and 20 percent respectively.

[19]Average loan amount is calculated by taking into account current loan amount and future loan demand.

[20]On an average, an Aarthi deals with 250 farmers to provide input on credit (80, 15 and 5 percent respectively Small, Medium and Large Farmers).

[21]There are 400 operational Aarthi's in the district and nearly all provides input on credit to farmers. Further. We assume that 70, 50 and 30 percent of small, medium and large farmers get credit from Aarthi.

[22]On an average credit is provided on 6, 12, and 25 acres for small, medium and large farmers.

[23]Average loan amount is Rs 18450/acre. This includes 2 bags each Urea, DAP; 1 bag SOP; 1 weedicide and 6 pesticide sprays respectively.

### 3.12. Business Constraints and Suggestions

It was observed that less branch power, collateral, customer behavior, small land holdings are the main constraints banks face in agri. financing. One of the quoted reasons for farmers not approaching banks is that they have strong social ties with Aarthi. The possible measures to increase agri. financing: there should be appreciation for higher portfolio, advisory services for farmers, minimum documentation, and crop insurance.

## 4. CONCLUSIONS

Based on above results, it was seen that all cotton value chain is governed by the commission agents. He is playing a very critical role. One cannot neglect or exclude his role either it seems costly for farmers. So, it is recommended that there is potential market for agri. finance in the cotton value chain and banks should come forward with specific financial products per the needs and requirement of all value chain actors. Further, ginners have shown their willing to work as banking agent for onward lending to farmers. So, it is recommended that banks should come forward to develop a hybrid credit delivery model based on rural banks franchise by introducing innovative partnership with local processors i.e., cotton ginners.

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