CHAPTER-VII

Summary, Conclusions and Policy Recommendations

7.1 Introduction:

This study is concentrated around the bell metal industry of Sarthebari, Assam. Bell metal production units can be found in Sarthebari and its nine adjourning villages. This study is a cluster based analysis of the bell metal production units. These units primarily produce bell metal utensils and cymbals from bell metal.

This study is a sample survey of 172 *Garhshalls* situated in Sarthebari and its adjourning villages of Namshala, Gomurah, Karakuchi, Lachima and Amrikhawa. In this study, first we have examined the role played by the bell metal industry of Sarthebari in employment and income generation and its importance in Assam. Secondly, the production techniques of the industry were analysed on the basis of Cobb-Douglas Production Function and the technical efficiency were also estimated using the Stochastic Frontier model. The causes of localisation of the bell metal industry at Sarthebari were also analysed from the point of view of economies of scale. Thirdly, we have analysed the profitability of the industry on the basis of various capital budgeting techniques viz. Payback Period, Internal Rate of Returns and Profitability Index. Fourthly, we have examined the socio economic profile of the bell metal artisans and the traders associated with the marketing of the product. Lastly, we have investigated the problems and prospects of the industry and tried to put forward measures for the development and growth of the industry.

The findings from different chapters of the study are explained below.

7.2 The Summary of the Findings:

The bell metal industry of Sarthebari is one of the most recognizable handicraft industries of Assam. It has international presence due to the demand of some of its products in various countries. Its growth and development is very important for the economy of a state like Assam which experiences very high rate of unemployment and few avenues for generation of income. As Assam is not an industrially developed state, development of handicraft industries like the bell metal industry of Sarthebari can play a very important role

in the development of the state of Assam. The major findings of the study are enumerated below.

1. Among all the products of the industry, *Kahi* is the most popular one with 43.02% of the *Garhshalls* produce it. It is the product with highest demand in the market. In terms of number of *Garhshalls*, *Bati* occupies the second spot with 21.51% of the *Garhshalls* producing *Bati*. *Taal* occupies the third spot with 16.28% *Garhshalls* producing it. The number of *Garhshalls* producing *Lota*, Bell/ Others and *Maihang* are very less indicating that their market demand is comparatively less in relation to the other products of the industry.
2. As a cluster, Sarthebari has the highest concentration of *Garhshalls*. 44.77% of the *Garhshalls* are located in Sarthebari town area. Gomurah occupies the second spot with 20.35% of the *Garhshalls*. Namshala occupies the third spot with 16.28% of the *Garhshalls* concentrating there. Sarthebari also employs the highest number of artisans with 77 (44.77%) *Kohars* and 429 (45.02%) *Aidhas*. Thus Sarthebari employs 44.90% of all the bell metal artisans.
3. The making charge (*Gorhoni*) is different for each product. *Lota* and *Maihang* have the highest *Gorhoni* at Rs.410.00 per kg. These two are also the costliest bell metal products at a market price of Rs.2500.00 and Rs.1600.00 per kg respectively. Again the *Gorhoni* of *Bata* is Rs. 300.00 with a market price of Rs.1600.00 per kg. The most popular product *Kahi* has a *Gorhoni* of Rs.290.00 with a market price of Rs.1150.00 per kg. The difference in *Gorhoni* depends on the difficulty of design of the product.
4. On an average, the production units of bell metal industry generates a gross income of Rs.7,09,790.00 per day from the *Gorhoni* of processing 2412 kilograms of scrap metal each day. The average daily net income generated by the *Garhshalls* is Rs. 506504.00. The average annual gross income generated by the whole bell metal industry stands at Rs. 21,64,85,950.00 and the average annual net income generated by the industry stands at Rs. 15,44,83,720.00. On an average, one *Garhshall* generates average annual gross income of Rs.12,58,639.00

and average annual net income of Rs.8,98,161.00. Thus, the bell metal industry of Sarthebari generates significantly high turnover.

5. Observations of the net income of the *Kohars* reveal that there are significant differences in income generated by the *Kohars* producing different products. It is observed that the annual net income of the *Kohars* producing *Taal* is the highest at Rs. 236680.00 per . While the *Kohars* producing *Kahi* earn an average annual net income of Rs. 225090.00. The *Kohars* producing Bell earns the least annual income of Rs. 72285.00. Thus all the *Kohars* involved in the production of bell metal do not earn the same income. It varies with the type of products. *Taal* and *Kahi* give the highest income among different products, while Bell and *Lota* give the lowest income to the *Kohars*.
6. If we consider individual products, there is difference in income generated by *Garhshalls* of different clusters. In case of *Kahi*, the *Kohars* of the cluster Namshala earns the highest income, whereas those from Gomurah earn the lowest income. Again in case of *Bati*, the *Kohars* of Sarthebari earns the highest income and those from Namshala earn the lowest income. The variations in the income distribution of the *Kohars* are the highest in *Baanbati* at 53.42, whereas variations in income distribution of *Taal* occupy the second spot at 47.49. This discrepancy in income generation in the same product in different clusters, despite same production technology arises because of the expertise of the artisans. The main reason for this discrepancy in income is the production capacity. It was observed that *Kohars* producing *Kahi* of Namshala has the capacity to process highest amount of scrap metal among those producing *Kahi*. The same level of discrepancy can also be seen in case of income of the *Aidhas*. The *Aidhas* engaged in the production of *Kahi* in Namshala earns the highest daily income of Rs. 566.00 whereas those from Gomurah earn the lowest income among them at Rs.224.00. The variations in the income distribution among the *Aidhas* are the highest in *Baanbati,* whereas variations in income distribution in *Kahi* are the lowest.

7. Demand for a product is the most important determinant of the supply of a product. Thus the number of *Garhshalls* producing a particular product is an indication of the level of demand. The number of *Garhshalls* producing *Kahi* is the highest in the study area. This is because *Kahi* is the product with the highest demand among all the bell metal products. The non parametric correlation analysis between income earned by the *Kohars* and number of production units reveal that there is a high degree of positive correlation between the two variables. This shows the correlation between the demand for a particular product and the income earned by the bell metal artisans. If the demand for a product increases, the income earned by the *Kohars* and the *Aidhas* producing that particular commodity will also increase.
8. The average annual income of the *Kohar* is estimated from the sample at Rs. 146019.00. In a census survey (Das. *et al* 2014) of the bell metal industry, the average annual income of the *Kohars* was estimated as Rs. 2, 80,379.00. The *t* test of significance of the income of *Kohars* at the known population mean of Rs. 2, 80,379.00 shows that t = -5.842 at 7 *df.* As this t value is significant, the Null Hypothesis is rejected and we conclude that the sample mean is less than the population mean and there are reasons to believe that due to sampling error and time lag this difference of the sample and population mean may occur.
9. There are 73 business establishments which deal in bell metal products in Sarthebari. Out of them, two are sell points of Assam Bell Metal Utensils Manufacturing Society Ltd. Among the remaining 71, 41 are shops owned by *Mohajons* in the Sarthebari market area and 30 are *Arabdaris* or visiting salesmen. In the 71 business establishments, 243 persons are employed. Employment generation of the bell metal industry through marketing is not limited to Sarthebari town only. One can find at least two to three shops dealing with bell metal product in any town of Assam. This industry is instrumental in generating direct employment through the shops selling bell

metal product in entire Assam. Thus, the actual number of persons engaged in the trade of bell metal products of Sarthebari is much higher in Assam.

10. The bell metal industry of Sarthebari has given significant contribution towards the income and employment generation in Sarthebari as well as in the district of Barpeta. This industry is able to generate income for the *Kohars* and the *Aidhas* which are significantly higher than the State per Capita GDP at current price. The Per capita GSD of Assam at current price for the year 2017-18 is determined as Rs 82203.00 whereas the average annual income of the *Kohar* is estimated at Rs. 146095.00. Due to the problem of scarcity of raw materials, the *Garhshalls* have to be closed down for 30 to 35 days in a year. If they were able to run without interference then the industry will be able to generate more income.
11. The bell metal industry of Sarthebari is localized in Sarthebari because it enjoys several economies of scale. It enjoys the purchasing economies of scale. As the *Kohars* can easily have accessed to raw materials like scrap metal and charcoal in Sarthebari itself, it is beneficial for them to localize in Sarthebari. Traders of charcoal supplies it from Meghalaya to Sarthebari, hence the *Kohars* can easily collect charcoal. This is not possible for a unitary bell metal production unit situated elsewhere. The *Kohars* of Sarthebari also have easy supply of scrap metal which is supplied by the *Mohajons* and the cooperative. The *Kohars* also enjoy other economies of scale viz. financial economies of scale, marketing economies of scale, technical economies of scale, managerial economies of scale, specialization economies of scale and risk bearing economies of scale. Collectively, the bell metal production units of Sarthebari enjoys these economies because it is easy for them to arrange finances requires for maintaining daily production because the *Kohars* get pre-order of the products from the *Mohajons* and the cooperative and they are paid their *Gorhoni* at the spot after delivery of their products. As they do not have to buy the scrap metal, the *Kohars* can enjoy financial economies of scale. As the whole bell metal industry is concentrated in and around Sarthebari, the *Kohars* do not have

to worry about the marketing of their products. Whatever products they produce, the *Mohajons* and the cooperative absorb all of them. Thus they enjoy marketing economies of scale.

12. The bell metal industry of Sarthebari also enjoys external economies of scale like skilled labour. Due to the concentration of more than 300 production units, the bell metal industry also enjoys external economies of scale like skilled labour, as skilled labour required for production of bell metal is easily available in all the clusters including Sarthebari. The industry also enjoys transportation economy as the traders from different parts of Assam collects the products from the source itself. Again the raw materials can be procured in bulk which reduces the cost of transportation. The bell metal products have attained a brand value in Assam. Due to this the industry has started getting attention from the Government and other research institutes.
13. The bell metal industry of Sarthebari has another distinction. It has been observed that there is micro level localisation of products within the industry itself. All the producers of *Taal* are concentrated in Sarthebari. Likewise the 79.73% of the *Garhshalls* producing *Kahi* are concentrated in Sarthebari, Namshala and Karakuchi. Again 78.38% of the *Garhshalls* producing *Bati* are concentrated in Gomurah. Thus it was observed that there is localisation of the products within the industry. When localisation of firms take place, the average cost comes down. But it was observed that the localized firms in a cluster did not enjoy low average cost of production. Although most of the *Garhshalls* producing *Bati* are concentrated in Gomurah, the cost of production of *Bati* in Sarthebari and Amrikhawa is lower than that of Gomurah. Again production of *Kahi* is concentrated in Sarthebari and Namshala, but the average cost of production of *Kahi* is higher than most of the clusters. Thus it is observed that the localisation of different bell metal products in different clusters takes place not because of economic reasons but because of non economic factors. The artisans of a cluster are traditionally producing one product for

generations, and they do not want to deviate from that product. Again because of these, the artisans required for production of one particular product is easily available in one area. Hence, tradition and availability of artisans play a very important role in the localisation of a product in a particular cluster.

14. It has been observed that despite using the same production technology, *Garhshalls* producing different products have different levels of average productivity. This means that all the *Garhshalls* are not equally efficient. *Garhshalls* producing *Kahi* has the highest average productivity at 17.5 kg per day. *Taal* has the second highest average productivity at 16.57 kg per day. Again the *Garhshalls* in different clusters producing the same product has different average productivity. It was observed that the production unit producing of *Kahi* of Namshala is most efficient with a daily average of 20.73 kg followed by Amrikhawa at 19.88 kg, whereas those of Sarthebari are least efficient at 15 kg per unit. This difference in efficiency is because of difference in experience and expertise of the *Kohars*. The market value of total products of all the *Garhshalls* producing *Kahi* stands at Rs. 14,59,350.00 with a value of average productivity at Rs. 20,125.00 per *Garhshall*. But the value of average productivity of *Taal* is the highest at Rs.23,198.00 per *Garhshall*. On the other hand, the value of average productivity of *Baanbati* is the lowest at Rs.9025.00. The deviations in the value of average productivity of *Garhshalls* producing different bell metal products are very high. This is because of the difference in the average productivity and difference in the market price of the products.
15. In the study, we have estimated the Cob Douglas production function of the bell metal industry, which shows that the bell metal industry is subject to decreasing returns to scale. This model also shows that the bell metal industry is a labour intensive one. Thus it will be beneficial for the firm to increase the amount of Labour. We have also studied the production function of different bell metal products separately. The production of *Kahi* is also found to be labour intensive and subject to decreasing returns to

scale. The production of *Bati* was also found to be labour intensive, but subject to increasing returns to scale. Production of *Taal* is subject to constant returns to scale and labour intensive. Again production of *Bata* is subject to decreasing returns to scale and it is labour intensive. As there was not enough cross sectional data available to analyse the production functions of *Maihang*, *Lota* and Bell, the production functions of the same were not analysed individually. The output elasticities of labour of different products have been found quite high at 1.002, 1.0, 0.994 and 0.920 for *Kahi, Taal, Bata and Bati* respectively. This shows that to increase productivity the amount of labour must be increased in the industry. Increasing capital alone cannot develop the bell metal industry of Sarthebari. For this, proper training should be provided to the budding bell metal artisans. It has also been observed that due to the physical nature of the job, youths are becoming reluctant to join the industry. They must be inspired to join the industry.

16. It is important to analyse the profitability of the bell metal industry so that proper justification can be given for development of the industry. In the study, capital budgeting methods of Payback period, Profitability Index and Internal Rate of Returns are used to assess the profitability of the bell metal production Units. It has been observed from the capital budgeting analysis that the bell metal industry of Sarthebari is highly profitable and gives a very high rate of return to the *Kohars*.
17. The Payback Period analysis of the bell metal industry concludes the *Kohar* is able to recover his investment in One year Three Months and eight days. The P-B Period analysis of different products reveals that *Kahi* has the least payback period at One year and Twenty Two days. While Bell has the highest payback period at Three years Two months and Six days. This is very encouraging, because the *Kohars* do not have to spend long years to recover his cost. Due to this short Payback Period, his financial liabilities also declined. For starting a *Garhshall,* the *Kohars* do not have to

take long term loans. Again no big investments have to be made to set up a *Garhshall*.

18. Profitability Index gives us the relative profitability of a project per unit cost. The Profitability Index of the bell metal Industry, assuming five years lifespan of *Garhshall* is calculated as 3.06. This means that in bell metal industry a new project returns Rs.3.06 per unit of Rupee invested by the *Kohar* in the first 5 years. This shows that bell metal industry is a highly profitable occupation because a *Kohar* can triple his investments in just three years. The Profitability Index analyses of different bell metal products reveal that *Kahi* has the highest Profitability Index of 3.71. *Taal* also has a very high Profitability Index of 3.09. Among all the bell metal products Bell has the lowest profitability Index of 1.41. Since the Profitability Index of all the bell metal products are more than one, we can conclude that each product is profitable and there is little scope of the *Kohars* to incur loss. *Kahi* is the most profitable product as established by both the capital budgeting criteria of Payback period and Profitability Index.

19. Internal Rate of Return (IRR) method of Capital Budgeting gives the expected rate of returns (r) on which the present value of expected cash inflows are equal with the present value of the cash outflows. The trial and error method was applied to find the value of 'r'. The Internal Rate of Returns for the whole bell metal industry is calculated as 319.775%. This means that the bell metal industry gives an annual return of 319.775% to the *Kohar* for his investment. Among all the products, *Kahi* has the highest IRR at 15.142 and Bell has the lowest IRR at 0.27087. This shows that *Kahi* gives a return of 1514.2% and Bell gives a return of 27.087% to a *Kohar* for his investment. This criterion of Project Evaluation also concludes that the bell metal industry of Sarthebari is a highly profitable one and the *Kohars* can earn a very high return from their investment.
20. A comparison of the results of our analysis of the different criteria of profitability of the *Garhshalls* reveals that all three methods yield similar results. All three methods of project evaluation that we have applied

concludes that *Kahi* is the most profitable bell metal product and Bell is the least profitable one. Thus we can say that if a bell metal artisan wants to set up a new *Garhshall*, the best choice for him would be *Kahi*. As this is highly profitable industry, there is scope of expanding the bell metal industry by setting up new *Garhshalls*. But for this no corporate or outsiders can play a major role. As we have discussed earlier, the bell metal utensils manufacturing is a highly skilled occupation which requires years of experience, skill and expertise it is not easy to set up a *Garhshall* by any unskilled person. For expansion of this industry, proper planning should be undertaken first to identify and train the *Aidhas* so that they can become *Kohar*, and then help them to set up new *Garhshalls*. By this way the industry can be expanded keeping its identity intact.

21. This study also analysed the socio-economic status of the bell metal artisans from the point of view of demographic profile, education, income and standard of living and access to the health facilities. The bell metal industry is dominated by members of the Assamese Hindu community. All the *Kohars* belong to the Hindu religion, out of which 97% belong to the General Caste and only 3% belonged to the OBC category. Again all the artisans involved in the industry are males with no direct involvement of any women. The majority of the *Kohars* (39.5%) belong to the age group of 30-40. Again age of the 82.6% of the *Kohars* is below 60 and there is only one *Kohar* whose age is above 70. This implies that the *Kohars* retire early from their job. Because of the physical nature of the job, the *Kohars* are not able to continue with the art of bell metal product making for long. Whenever their son or one of the *Aidhas* becomes capable of handling the *Garhshall*, they pass the mantle and retire.
22. The demographic profile of the traders reveals that, all the traders belong to the Hindu Assamese community and also all of them belong to the General Caste. 80% of the traders are below the age of 50 and none are above the age of 60. Again only 7% of the traders are below the age of 30. This shows that, it is not easy to become a trader of bell metal. For that the

person must know the industry from within and must also have some experience. That is why most of the traders are above the age of 30.

23. Education is one of the most important components of any index which measures the level of economic or social development of a country. The *Kohars* of Sarthebari are not highly educated. None of the *Kohars* have a Masters Degree or Degree in Technical Education. Only three *Kohars* are graduates (B.A.) out of them two are from Sarthebari and the remaining one is from Gomurah. There are 10 *Kohars* who are illiterates. It has been observed that, majority of the *Kohars* leave their study during the secondary or senior secondary level. This is because of the fact that, the youth of Sarthebari, particularly the children of the bell metal artisans join the *Garhshall* once they reach the age of 18/19. Usually it is seen that, most of the children of bell metal artisans who are weak in studies leave their studies midway to join the *Garhshall*s as *Jogali*. This is because of the fact that they realize that as they are weak in studies and there is little chance that they will get a Government job after attaining graduation. As their family is involved in the bell metal production for generation, this has proven to be the safest profession that they can choose. In comparison to the *Kohars*, the traders of bell metal in Sarthebari are more educated. Two traders have attained the Post Graduate Degree and seven are Graduates. All the traders have attended at least secondary level of schooling.
24. In this study, we have also analysed the living standard of the *Kohars* by analyzing the six dimensions of standard of living viz. *viz.* electricity, sanitation, drinking water, flooring, cooking fuel and assets. It has been observed that that almost all the *Kohars* own a mobile phone (98.26%) (98.26%) or a bicycle (96.51%). More than half (63.95%) of the *Kohars* own TV sets at home whereas only 10 *Kohars* have a music system at home. It was also observed that one out of five *Kohars* (19.77%) own a bike. Though Bicycles are primary mode of individual transport among the *Kohars*, the younger ones prefer bikes. Only four *Kohars* own cars at home

and three own laptop computers at home. This shows that the *Kohars* still think that computer is a luxury item rather than a necessity.

25. When we observe the housing pattern of the *Kohars,* we observe that most of them do not have the basic minimum housing facilities. Only, 58.14% of the *Kohars* have proper toilet facilities at home, whereas 38.37% of them still use *Kutcha* Latrines. Out of the 172 houses under study, only three houses are of RCC type. Out of the remaining houses, 101 (58.72%) are Assam Type houses, 68 (39.53%) of the houses are *Kutcha*. Again 107 (62.21%) houses have mud floor. All the other houses (37.79%) have concrete floor. Nearly half of the houses (43.02%) do not have a separate kitchen. Again 26.74 % of the houses do not have separate bathroom facilities. Study about the drinking water facilities of the *Kohars* reveal that 91.28% of the *Kohars* use tube well for drinking water, while 6.98% depend on ring wells for that. Only three households have accessed to running water. It was also observed that only 88% percent of the families of *Kohar*s have electricity connection which is well below the national average. Use of clean energy is also not satisfactory among the *Kohars*. 133 out of the 172 families (77.33%) have an LPG connection but all of them do not use LPG as the primary source of fuel. Only 46 (27.33%) families use LPG exclusively, the remaining 86 families use LPG along with fuels like firewood Thus we can say that a large number of bell metal artisans do not get the minimum housing facilities and also does not have access to a high standard of living.
26. In comparison to the *Kohars*, the traders of bell metal enjoy a higher standard of living. It is observed that 100% of the traders own a mobile phone and a television set, while 85.92% of them own a bicycle and bike. 16.9% traders own cars at home and 15.49% own laptop computers at home. Against 58.14% *Kohars*, almost all of the traders (94.37%) use sanitary toilets. In case of housing also, traders are better placed than the *Kohars.* 87.32% houses of the traders are Assam Type houses, whereas only four (5.63%) houses of traders are *Kutcha* and five houses (7.04%) are

of RCC type. 88.73% houses of the traders have concrete floor. Almost all the houses (94.37%) of the Traders have separate kitchens while 98.59% of the houses have separate Bathrooms. Study of drinking water facilities of the households of traders reveal that 88.73% use tube well for drinking water, while 10 households (14.08%) have the running water facilities. All the households of the Traders have an LPG connection and 56 (78.87%) of them use LPG exclusively. Thus we can say that the traders have better ownership of assets, better housing facilities, better access to clean cooking fuel and better drinking water facilities. Thus the overall standard of living of the traders is much better than that of the *Kohars*.

27. The nature of the work of the bell metal artisans are physically demanding and on the top of that, they have to work for 10 to 12 hours a day in conditions of extreme heat and dust. This obviously has a toll in the physical conditions of the *Kohars*. As a result, majority of the *Kohars* (62.21%) suffer from at least one chronic health problems. The most common is eye problem, from which half of the *Kohars* (49.42 %) suffer. Because of the day long use of hammers and lifting heavy weight, one out of four *Kohars* suffer from chronic pain. On the other hand, the percentage of *Kohars* suffering from problems like heart problems, respiratory diseases and dermatological problem is very less at 9.14, 1.74 and 2.91 respectively. The *Kohars* are conscious about vaccination of the children, 91.28 % has done vaccination of their children of the house. In case of medical emergency, most of the *Kohars* (95.35%) visit Government Hospitals while 6.4% visit private medical practitioners. Thus we can say that the health consciousness among the *Kohars* is good. Again the Government health facility in Sarthebari is able to cater to the need of the local people. The bell metal traders of Sarthebari have better access to health facilities as compared to the *Kohars.* All the traders visit government hospitals in case of medical emergency, while 91% also accessed private medical practitioners also.

28. The bell metal industry of Sarthebari suffers from a number of problems like any other handicraft industry in India. The problems faced by the bell metal industry of Sarthebari can be broadly divided into two groups- economic and non economic problems. The economic problems faced by the bell metal industry which we have discussed in the study are- lack of raw materials, lack of product diversification, marketing problems, challenge from imitation products, challenges from substitute products, primitive techniques of production, transportation problems, financial problems and working conditions of the *Garhshalls*. Non economic problems faced by the industry, which we have discussed are- level of education of the *Kohars*, health problems and pride of the *Kohars*. It should be noted that some common problems faced by the MSME sector in India are absent in the bell metal industry of Sarthebari. Problems like lack of demand, non availability of skilled labour and labour dispute are not present in the bell metal industry of Sarthebari.
29. The greatest problem faced by the *Kohars* is lack of raw materials. Due to this reason only, the *Garhshalls* have to be closed down for 30-35 days each year resulting in huge loss of productivity and potential and potential to earn more by the artisans. 97.67% of the *Kohars* agree that this is the greatest problem faced by them. Because of shortage of raw materials, the industry fails to meet the market demand regularly. The two main raw materials, charcoal (*Bogorir Angar*) and scrapped bell metal have to be outsourced from other places. The former is sourced from Meghalaya and the later is from different places of India and abroad.
30. Most of the *Kohars* of Sarthebari are not ready to introduce new products. Only 4.64% of the *Kohars* are ready for introducing new products, whereas the other 95.36% *Kohars* are happy with their existing product profile. It was observed from the field survey that five *Kohars* from Sarthebari and three from Namshala have started introducing new products made from brass metal like decorative pieces, wall hangings, images of Gods and Goddesses, statues etc. But most of the *Kohars* due to their pride will never

touch brass metal as they consider it undignified. Tastes and preference of the new generation are rapidly changing. As of now it seems that the bell metal products of Sarthebari have a very high demand and there is no need of worry. But in the long run if the industry cannot adjust itself to the changing pattern of consumer′s demand, it can lose out from the race.

31. It has been observed that only six (3.49%) *Kohars* are concerned about marketing their products. Actually marketing has never been a problem for an individual *Kohar*. They produce whatever pre order they get from the *Mohajons* or the cooperative. Therefore, there is no question of inventories for a *Kohar*. But as an industry, it faces some problems in the marketing sector. It is observed from the field survey that all the 71 traders sell the products locally. Two *Mohajons* supply their products to traders outside Assam, while three *Mohajons* supply bell metal products to traders outside India. These traders come from Bhutan. Traders from other places of Assam collect bell metal from local *Mohajons* and the cooperatives. There is no direct link between a trader from outside of Sarthebari and a *Kohar*. In other words, the *Mohajons* operate as middlemen in the whole bell metal trade. The only exception is *Pachang Taal* and *Daffla Kahi* which is bought by the *Bhutiya Beparis* from the *Kohars* directly. When there is a middlemen involved, there is always a scope of exploitation. As the *Mohajons* are an integral part of the whole structure of the industry, it is nearly impossible to remove the middlemen from the bell metal industry of Sarthebari.
32. The bell metal industry of Sarthebari faces challenges from imitation and substitute products. Usually two kinds of imitation or dummy products can be seen in shops dealing with bell metal products- one machine made bell metal products which come from outside Assam and brass metal products which look similar but cheaper in price and quality. Many bell metal industries are established in states like West Bengal and Uttar Pradesh in recent years, which make bell metal products, mainly *Kahi* and *Bati* using machines. An unsuspecting consumer cannot differentiate between the

original and the imitation product and hence duped easily. These types of imitation products can be found in case of *Kahi* and *Bati* only. There is no such problem in case of *Taal*, as it cannot be made from brass metal as the resonating sound will not be there. Again products like *Baanbati*, *Bata* and *Maihang* cannot be made using machines in a profitable way because the demand for these is not very high and it is not possible to make them in machines for its unique demand. However, brass metal variants of these products can be found in the markets which are sold in the name of bell metal products.

33. In recent years, we can see that numerous products have flooded the market which is close substitutes of bell metal utensils. Due to the change in tastes and preferences of the new generation, overflow of information and spread of online shopping, different substitute products of bell metal utensils are easily available in the market. These are more affordable, better looking and easy to maintain also. Products made from materials like stainless steel, Bone China, steel copper, various kinds of bronze, melamine, glass, opalware, plastic etc are threatening the very market of bell metal products. One of the prime reasons is the difference of costs. These products are much cheaper then bell metal products. *Taal* is the only product which is not affected by this problem, because there can be no close substitute of cymbals made from bell metal.
34. The bell metal industry of Sarthebari use century old production techniques with little or no modification in the production techniques. Except the addition of the roller mills, no significant innovation was introduced in the production technique in recent years. Improvement of the production technique is very important to deal with the challenges posed by machine made products and imitation products. It was observed from the field survey that 64.53% *Kohars* want to introduce automation in their *Garhshalls*. They want it to be done in such a way that the basic character of the industry and its products does not change even after automation. Technologies like Power Hammer, Propane Forges, and Grinders may be

introduced in the industry which will reduce the workload of the *Kohars* save time, and increase productivity, but at the same time the human touch of the industry remains intact.

35. Sarthebari is a town which has no air, rail or national highway connectivity. Even the nearest State highway is 15 kilometer away. The nearest big railway station is at Barpeta Road which is 42 kilometers away from Sarthebari. Sarthebari is connected to Barpeta, the district headquarter by a PWD road. Thus the bell metal industry of Sarthebari suffers from the transportation bottleneck regarding supply of raw materials and sending the finished products to the markets. As the scrap metal has to be brought by road either from Barpeta Road or from Guwahati, the transportation cost increases. Similarly, the cost of transportation of charcoal also increases as it has to be brought through the Brahmaputra river by boat and then by road from Bahari. Due to this transportation bottleneck, the cost of supplying finished products to other places also increase many fold.
36. As a cluster industry, the bell metal industry of Sarthebari enjoys some sort of financial economies of scale. But individual *Kohars* face various kinds of financial bottlenecks. As the artisans involved in the industry are not very educated, they fail to access various financial benefits from the organized sector. It is observed from the field survey 51.6% of the *Garhshalls* depend on the savings generated by the *Kohar*. The second most important source of credit is the village money lenders on which 20.35% of the *Kohars* depend. The penetration of institutional finance among the *Kohars* is very low. Only 16.27% *Kohars* take loans from banks. It has been observed that only 27.9% of the *Kohars* have accessed to institutional finance, whereas 72.1% depend on the non institutional sources of credit. This low penetration of institutional finance is a major bottleneck of the industry.
37. Their nature of the work in a *Garhshall* is physically demanding, on the top of that they do not get a very comfortable working environment. They have to work for an average of 10.39 hours each day in extreme heat of the

Bhatti and dust. This has created many health problems among the artisans. All the *Garhshalls* have facilities of refreshments, but none have the facility of a restroom. Only 56.4% of the *Garhshall* have lighting facilities and in only 33.72% of the *Garhshalls,* there is facility of electric fans. Again there is no system of lunch break in most of the *Garhshalls*. The artisans have to work nonstop, but can take intermittent breaks. Thus the working conditions ultimately takes toll on the health conditions of the artisans. Hence, we can seldom see a senior citizen as a bell metal artisan.

38. The industry also suffers from a number of non economic problems. The most important among them are health and low level of education. Health problems like, ophthalmologic problems, chronic pain and cardiological problems are fairly common among the *Kohars*. This is primarily because of the working conditions of the *Garhshalls*. Most of the *Kohars* are not highly educated. This always creates a problem of lack of information and adoption of modern technology. Thus the bell metal artisans are deprived of various government schemes.
39. No *Kohar,* except one from Gomurah took part in local level trade fairs. No one has ever take part in any kind of exhibition or trade fairs. The *Kohars* are not even interested to know that there are benefits of taking part in exhibitions, like advertisement of products, national or international exposure etc. Hence they remain uninterested for taking part in these kind of exercises. The Assam Cooperative Bell Metal Utensils Manufacturing Society Ltd. also does not play a proactive role in this regard.

40. Another non economic problem which is unique to the industry is the pride of the *Kohars* and their reluctance to change. Bell metal craft is the primary occupation of all the *Kohars* and they are highly satisfied with their jobs and take immense pride in it. Because of this, they are reluctant to change. They want to continue with the same technique and product profile. The *Kohars* do not want to deal with brass metal as they consider it an inferior metal and consider the brass metal craft as undignified. This refusal to

change by the *Kohars* has proven to be a major deterrent in the expansion of the industry.

7.3 Recommendations:

Based on the major findings of the study, we would like to forward the following recommendations for the development and growth of the bell metal industry of Assam.

1 Despite the constraints the bell metal industry has a great potential to expand and develop. One of the biggest constraints faced by the industry is scarcity of scrap metal. If this problem can be solved by ensuring uninterrupted supply of scrap metal, then two major problems of the industry can be solved. The first if there is uninterrupted supply of raw materials then the *Garhshalls* can operate for another 30 to 35 days in a year. This will enable them to process more raw materials and the income of the artisans will increase. If this temporary closure of *Garhshalls* due to lack of raw materials can be solved, then there will be at least 10% increase in the income of the artisans. Secondly, if there is enough scrap metals to process, *Garhshalls* can increase their daily productivity. This will also help in dealing the problem of excess demand through increased productivity. The *Kohars* do not use virgin bell metal because it becomes costly to them. If virgin bell metal can be made available to them at subsidized rate then their dependence on scrap metal will decease.

2 Another problem faced by the industry is lack of charcoal (*Bogorir Angar*), which has to be sourced from Meghalaya and there is no close substitute of it. Charcoal from other tree is not effective in the industry. Again due to environmental restrictions, it is becoming more difficult to produce charcoal now-a-days. A possible solution of this problem is use of propane forges. Blade smiths of advanced countries now uses propane forges instead of coal forges. If this technology can be made available to the *Kohars* and they shifts from coal furnaces to the propane forges then this major problem of the industry can be dealt with.

3 The bell metal industry of Sarthebari is a labour intensive industry which is subject to decreasing returns to scale. But it was observed that individually the factor intensity of labour for each product is high. This proves that if the amount of labour is increased the production can be increased in more than proportionate way. Thus the industry can be developed by increasing the total product by increasing the amount of labour. This industry requires skilled labour. And training of labour though training camp or programme will not yield any result in this regard as bell metal industry needs experienced labour, which is trained in a *Garhshall* for long period of time. This problem can be solved by identifying experienced *Aidhas* who are willing to open a *Garhshall* but could not do so due to financial and other logistic constraints. After identifying them, they should be provided all the necessary help so that their new *Garhshall* can be set up. By this way the number of *Garhshall* will increase and more and more people will be engaged in the industry. In this matter, the cooperative has to play an active role in identifying the potential *Kohars* from the *Aidhas* and give them the required support.

4 Bell metal industry is very profitable as we have discussed above. At present, there are very few industries which can generate such a huge profit for the entrepreneur. The Government of India also has given importance to the MSME sector as a vehicle of economic growth of the country. If the industry can be expanded then it has the potential to partially solve the problem of unemployment is the area. For that, a two way approach can be adopted. First, the Government can adopt an effective scheme from training of the artisans to marketing of the product so that the productivity and income of the Garhshalls increase. Secondly, the PPP (Private Public Partnership) mode can be applied here. If the Government agencies take the responsibility of production sector and corporate houses are involved in the marketing then there is a possibility of development of this industry.

5 Another major problem faced by this industry is the challenge from imitation products. There is no easy or immediate solution to this problem.

Getting Geographical Indication (GI) mark for the bell metal products of Sarthebari is a potential solution to this problem. The Government can also undertake BIS (Bureau of Indian Standards) hall marking of the bell metal products of Sarthebari. If the hall marking of the products of Sarthebari can be done and proper awareness is created among the consumers, this problem can be dealt with to a great extent.

6 There is no easy way to deal with the problem of challenges from substitute goods. For this, change has to be made from within the industry. *Kohars* and the *Aidhas* must be ready to change their product profile and production technique. New designs of the products must be introduced to increase its appeal among the consumers. New production technologies should be introduced so that productivity can be increased without compromising the uniqueness of the products. Research institutes like National Institute of Design (NID) can play a very important role in this regard. NIDs Centre for Bamboo Initiatives is a success story in bamboo based research, technology, design and training. Similar module can also be applied in this industry also. The level of education of the *Kohars* plays a very important role in this regard. The more educated the *Kohars* become, the more they will be willing to change.

7 It has been observed in the field study that the *Kohars* are reluctant to take part in exhibitions and expos. They have yet to realize the potential benefits of taking part in such programmes. The governments through its various agencies should arrange for the bell metal artisans attendance in various national and international exhibitions and trade fairs. This will definitely help the *Kohars* in broadening of their outlook and also provide them with fresh ideas for development of the industry, including new product ideas and designs.

8 We have observed that in the country there are many industrial clusters dealing with bell metal products. Exchange programmes of artisans among the different bell metal artisans should be organized. By this way a *Kohar* of Sarthebari will learn about the bell metal craft of Odisha from a *Kansari*

or a bell metal artisan from Mannar in Kerala will learn about the bell metal craft of Sarthebari. This exchange of knowledge and ideas will help all the artisans. This will help the artisans to modify their production techniques thus reducing cost and increase productivity. This will also encourage them to introduce new products.

9 ARTFED (Assam Apex Weavers and Artisans Cooperative Federation Ltd.) is a marketing organisation of Government of Assam. It has 55 sales outlets across India, which deals with handloom and handicraft products of Assam. ARTFED also deals with bell metal products. But the share of bell metal products in ARTFED's product profile is negligible as compared to the handloom products. Government organisations like ARTFED can play a major role in organizing training camps and exhibitions, marketing, branding etc of the bell metal products of Sarthebari.

10 The Ministry of MSME, Government of India has launched many schemes for the development of the MSME sector in India. But it has been observed that the bell metal industry of Sarthebari has not been able to reap the benefits of these schemes. One of the flagships schemes of the MSME Ministry is Micro & Small Enterprises Cluster Development Programme (MSE-CDP). Through these scheme soft interventions like Counseling, motivations, training, technology upgradation etc. is provided. Again hard interventions like setting up of Common Facility Centers, and other infrastructure development is taken up. Schemes like these should be utilised for the development of the bell metal industry of Sarthebari.

11 It has been observed that the bell metal artisans suffer from various health problems due to the nature of their work. If they are provided with health insurance and periodic health checkup facilities, the Health profile of the artisans will definitely improve.

12 This industry faces some socio-economic constraints which are not easy to address practically. It has been observed that the artisans involved in the industry are not highly educated. This is a problem which is present in almost all the handicraft industries in India. It is easy to recommend that

the bell metal artisans should be given better education facilities. But in reality it is difficult to solve this problem. If the industry is developed and income of the artisans increases significantly, their standard of living will also improve. This will have a positive effect on the educated unemployed youth of the area and then they will be attracted to the industry. This way the level of education of the artisans will improve. Hence, this study will not recommend any solution for this problem but hope that the cascading effect of the growth of the bell metal industry solves the problem of lack of education of the artisans in near future.

7.4 Limitations of the Study:

Although this study is an attempt on extensive study of the bell metal industry of Sarthebari, we must admit that it suffers from some limitations due to lack of resources. For the sake of research and benefit of the future study on the subject, the limitations of this study are enlisted below.

1. This study is an analysis of cross sectional primary data collected from field survey. Like any other cross sectional survey, this study also suffers from lack of proper data regarding some sections. For example, the production function of *Maihang*, *Lota* and Bells could not be estimated for lack of data. To overcome these kind of problems, analysis of time series data are required. But due to resource constraints, time series analysis could not be undertaken. Hence, there is a scope for future research on this topic using time series data.
2. This study tried to cover all the aspects of the bell metal industry of Sarthebari. But due to time and resource constraints the supply chain of the raw materials from its source could not be analysed.
3. Bell metal products are sold in all the districts of Assam. But this study has given more importance to the production side and analysed the bell metal marketing of Sarthebari only. There is ample scope for future study

regarding the marketing of bell metal products of Sarthebari in other areas of Assam and other parts of India.

4. Some of the bell metal products, particularly *Pachang Taal* of Sarthebari has international market and sold in the Buddhist monasteries of many countries. This is one aspect of the bell metal industry of Sarthebari which is largely ignored. It is very difficult to examine the whole supply chain of *Pachang Taal* from Sarthebari to the Buddhist monasteries all over the world. The only source is that some *Bhutiya Beparies* come to Sarthebari, collects them and sell them in the international market from Bhutan. This is one aspect of the industry which need detail study.

7.5 Scope of future Research:

One study is never enough for an industry like the bell metal industry of Sarthebari. There is always a scope of future research regarding this industry. Any future research on this sector can be undertaken from three avenues- Science and technology, management and social science.

First, study can be done from the technological point of view. A proper study should be done regarding the production technology. The industry still uses age old production techniques. Proper study should be undertaken regarding upgradation of the production technique of the bell metal products. Use of equipments like propane forges, power hammer, forge grinders, belt grinders etc. in bell metal production should be analysed by technical persons. The economic viability of use of these equipments should also be studied through cost benefit analysis.

Second, the researchers from technology background should also work on the design front. Introduction of new products and modification of the design of existing products is of paramount importance to deal with the challenge from substitute products. As the cost of bell metal is a major factor in this regard, by introducing new products the challenges from substitute products can be dealt with.

Third, from the management point of view supply chain management of the bell metal industry is an avenue which should be properly studied. Along with that marketing and branding of the products of Sarthebari should also be studied. Bell

metal products of Sarthebari are unique. Except *Taal, Bata* and *Maihang,* all the other products are facing various marketing bottlenecks. Even these three are not entirely free from these bottlenecks. Study of supply chain management and marketing will definitely help in finding the solutions of these constraints faced by the industry.

Fourth, from the point of view of social sciences there are a number of aspects of the bell metal industry that can be studied. The bell metal industries in places like Mannar, Moradabad, Balakati, Kantilo, Thanjavur etc have developed very much. A comparative study of the bell metal cluster of Sarthebari with any of these bell metal production clusters will help understanding the industry more. Comparison of income and employment generation, profitability and production technique will help in understanding the problems and future prospects of the bell metal industry of Sarthebari. Comparison of Socio-economic profile of the artisans working in the bell metal industry of Sarthebari with those from other clusters should also be studied.

Fifth, brass metal industry is also an important handicraft industry of Assam. Brass metal work as a cluster can be seen in Baniakuchi, Belbari and Kapla of Sarthebari area and Hajo of Kamrup district. There is a scope of comparative study of bell and brass metal industries regarding productivity, income and employment generation and profitability. As both are similar kind of industry, a comparative study of both will be helpful for research and for policy formulation of the government.

Sixth and finally, there is a scope of study of the industry from historical perspective. The historical causes of localisation of the industry in Sarthebari, origin of its trade relation with Bhutan and Aruncahal Pradesh, how the *Kohars* of Sarthebari developed the design of *Pachang Taal* and Singing Bowl, what is the historical significance of the relation of Sarthebari with Bhutan and Tibet etc. are some of the avenues which should be analysed further.

Thus, from the above discussions it can be concluded that the bell metal industry of Sarthebari is profitable labour intensive micro level cluster industry which generates significant level of income for the artisans and has the potential to contribute significantly to the income and employment generation to the area as well as the state of Assam.