CHAPTER -IV

Capital Budgeting of Bell Metal Industry of Sarthebari

4.1 Introduction:

Whenever an investment is made, it is very important to study the profitability of the project where investments are made. Capital Budgeting or Investment Analysis or Project Evaluation is the study of sustainability and profitability of a firm or an industry. But it is seen that in the Micro Small Medium Enterprise (MSME) sector, particularly in the handicraft sector no proper capital budgeting is done. In India, most of the handicraft trades are going on hereditarily. People start producing a product because his/her parents were engaged in the trade. Again many people start a business or trade because they can't think of any other business or simply because their friends or neighbors have chosen the trade or business. When a person enters into a traditional trade, profitability and potential income is the last thing that they consider.

Most of the *Kohars* of Sarthebari also get into the process of bell metal products because it is their way of life. The children of Sarthebari have been seeing this trade from their childhood in their homes. So when they grow up, they start learning the process and ultimately join a *Garhshall* as a *Jogali*. If he has the ability then ultimately he will take a decision whether he will become a *Kohar* or not.

We can say that when a boy decided to enter the trade of bell metal production, he never takes an economic decision. While joining a *Garhshall* as an *Aidha,* he never considers the potential income which he would earn from the profession, nor does he think of his future profitability if he becomes a *Kohar*. So when an *Aidha* decides to become a *Kohar* and open a new *Garhshall,* he has no other option but to produce the same product where he is trained in. In Chapter II, we have observed that there is significant difference in the average annual income of the *Kohars* and *Aidhas* producing different bell metal products. As it is not easy to switch from one product to another, they have to continue with the product which they are producing regardless of the profitability.

In this chapter, we will try to find out the potential profitability of the industry as a whole through different methods of Capital Budgeting and also try to find out the relative profitability of different products. 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.

4.2 Review of Literature:

Dickerson (1963) lays down the theoretical basis of Capital Budgeting. He set up a theoretical background for capital budgeting as well as the practical application of it. He measured the cost of capital by determining the discount rate, which equates future cash flows to the present value of the stock. He dealt with the problem of financing a project by borrowing capital which may influence the market price because of the real cash cost involved. He suggested that the present structure of the firm should be assumed as the optimum position and the quantum of new finance should be determined based on the current structure. He suggested the payout period as a good measure of project evaluation. Rangel *et.al* (2015) brought out the limitations in both the Net Present Value (NPV) and Internal Rate of Return (IRR) method of Capital budgeting and suggested Modified IRR and Modified NPV method. The study corrected the demerits of the NPV method by introducing the Profitability Index (PI) method. Hirschey (2009) explains the process of Capital Budgeting theoretically and with the help of Case studies explains different type of Capital Budgeting techniques. The book lays down the different formulae for different Capital budgeting methods. Wilkinson (2005) studies the principles of investment analysis and in a systematic way discusses the process and different techniques of capital budgeting. This study also explains the risk and cash flow analysis of a project. This book explains in detail the whole investment analysis. It also gives the different formulae for computation of various Capital Budgeting techniques.

Danielson and Scott (2006) analysed the Capital Budgeting practices in the small firms based on secondary data. Defining small firms as those with less than 250 employees, this study confirms that small firms usually adopt less sophisticated method of capital budgeting. In case of these firms, Payback and Accounting Rate of Return method are more preferred than Discounted Cash Flow analysis. Dreze and Stern (1987) explained the Cost

Benefit analysis as a procedure for evaluating decisions. This study formalised the concept of Project Evaluation and Shadow price. This study also evaluates the theory of production efficiency of public sector in India. This study applies the Cost Benefit Analysis beyond the limited scope of project evaluation and applies them to the problems of decision making in public policies. Mukherjee (1988) examined the capital budgeting manuals of the fortune 500 of the US. It studied manuals from 72 US companies and analyzed the capital budgeting process from an insider's point of view. The study establishes that capital budgeting is a three stage process- Planning, Appropriation and Audit. The planning process starts from the top management of the company whereas the appropriation stage requires participation from the whole firm. Determination of cash flows, selection of the capital budgeting criterion, hurdle rate and risk analysis and capital rationing are the most important components in this stage. Audit during implementation and post completion review are the two important components of the capital budgeting audit. The study concludes that the Discounted Cash Flow and IRR are the most popular methods of capital budgeting among the respondents.

There have been many studies of capital budgeting techniques, adopted by various firms on the basis of empirical data across the globe. Hasan (2012) studies the capital budgeting techniques of the small scale industries of Australia. This study collected data regarding the capital budgeting practices from 62 companies of Australia through the mailed questionnaire method. This study concluded that Payback Period Method is the most preferred one along with Discounted Cash Flow Method. Profitability Index is also another method which is preferred by these firms. Mollah *et al* (2021) investigated the current capital budgeting techniques of the listed companies of Bangladesh and concluded that most preferred the Net Present Value approach and the Internal Rate of Return and Payback Period Methods come second and third in the list of most preferred capital budgeting techniques. For this study, data were collected from the Chief Financial Officers (CFOs) of 46 of the top 100 listed firms of Bangladesh. The data collected were analysed using descriptive and inferential statistics. The variables analysed were educational qualification of the CFOs or financial directors, work experience, size of the firm, planning horizon, purpose of the budgeting methods, cost and factors determining capital budgeting techniques. The survey found that majority of the respondents adjusts the unexpected risk of inflation by adjusting with the discount rate. Khamees *et al*. (2010) provides empirical evidence to the capital

budgeting practices of the Jordanian industrial corporations. It collected data from 58 industrial corporations through a structured questionnaire consisting of two parts- Demographical Information and Capital Budgeting techniques. The study concludes that 77.1 % of the corporations adopt more than one Capital Budgeting techniques. The results show that PI and NPV are the most preferred techniques of capital budgeting. The corporations while using capita budgeting adjusts the inflationary pressure by considering the nominal rate of cash inflows. Viviers (2011) investigates the capital budgeting techniques of the motor manufacturing companies of South Africa. The study found out that NPV and IRR are the two most preferred criteria and most respondents use multiple capital budgeting techniques. Based on semi structured personal interviews with senior managers of eight motor manufacturing companies, this study analyses the different capital budgeting techniques adopted by them. Mubashar and Tariq (2019) have analysed the capital budgeting practice of the listed firms of Pakistan. Based on a questionnaire sent through e mail, this study collected data from 70 firms and analysed the data on the basis of a standard five category scale and used the Mann- Whitney U test. Based on the hypotheses that firm's demographic and executive characteristics influence the capital budgeting response, the study concludes that NPV, IRR and PI are the most popular capital budgeting techniques.

In India also, a number of studies was undertaken to analyse the different capital budgeting techniques adopted by various Indian firms. Hamid (2015) studied the design and cost structure of the shawl industry of Kashmir. Based on stratified random sampling, it studied 130 handloom units of Srinagar district of Kashmir and analysed the socio economic profile of the artisans involved in the trade. The study calculates the profitability of the handloom units by calculating Net Profit as the difference between the Gross Revenue and Total Cost. It also calculated the Net Profit Margin as the percentage value of Gross Margin to the Total Cost. The study reveals that the shawl makers earn a return of Rs.0.88 to Rs.2.42 per rupee invested with an average of Rs 1.47, thus earning a premium of 147% net return on their investment. Hassan *et al* (2017) studied the capital budgeting practices used by the MSMEs of the state of Tripura. Based on primary data, this study examines the level of awareness of the owners regarding the budgeting techniques and level of usage of these techniques by the entrepreneurs. The two objectives of the study was to assess the level of awareness of the owners of MSMEs of Tripura about different capital budgeting techniques

and the pattern of use of different tools of Capital Budgeting. They surveyed 330 out of 2289 registered MSMEs of Tripura and collected primary data from them. A Five point Likert scale was used to rank the frequency of the different budgeting techniques. This study also used the three point scale to analyse the importance of use of budgeting by the respondents. This study, based on its finding, concludes that majority of the MSMEs do not consider budgeting important and not a single respondent has a long term strategic plan.

Batra and Verma (2014) did an empirical study on the different stages of Capital Budgeting. It studied the budgeting survey literature till the year 2012 and brought to light the neglected areas of capital budgeting. Cash flow estimation, project implementation and project evaluation are some of the neglected areas of capital budgeting. The study concludes that Project Evaluation often neglects the important stages of cash flow estimation and project implementation. This study was a sample survey of 77 Indian Corporations listed with Bombay Stock Exchange who undertakes capital budgeting. The study is based on three objectives – identify the neglected areas of capital budgeting, study the relative level of importance and difficulty in different stages of capital budgeting and study the impact of different variables like nature of the industry, age, size of company budget, etc. on the different levels of capital budgeting. The study concludes that financial analysis and project implementation are the most critical part of capital budgeting whereas the project review is the least difficult of all. The study also finds that project implementation is the most risky among all the stages. Verma *et al* (2009) studies the capital budgeting in India in the post globalisation period and find out the technique of capital budgeting most preferred by the corporations. It examined the corporate practice regarding adopting methods of capital budgeting regarding evaluation of an investment proposal, risk techniques and factors affecting the selection of a particular technique. It created three hypotheses namely the Null Hypothesis that size of the capital budget of the firm has no effect on the selection of capital budgeting technique, and the alternative hypotheses that education and age of the company doesn't affect the selection of technique of capital budgeting. This study selected a sample of 100 Indian companies and tried to collect data through mailed questionnaire method and only 30 responded. Hence, the final size of the sample for the study was 30. The study found that NPV and Payback Period criteria are the most popular methods with 90% of the respondents use more than one Capital Budgeting methods. It concludes that the Adjusted

Present Value method and Discounted Payback Methods are the most preferred methods of Capital Budgeting in India. Yadav (2013) surveys the entrepreneurs of Delhi and analyses the different capital budgeting methods adopted by them. The study also finds out that the bigger firms prefer the Internal Rate of Return method, whereas the smaller firms prefer the Payback Period and Net present Value Method.

Jain and Yadav (2011) made a study of the 166 non financial firms from the BSE200 index. Based on a mailed questionnaire, the study analyses data from 31 of the 166 firms initially approached. The study analyses the capital budgeting policies of the sample and found that they use both non discounted and discounted cash flow method. The study also finds that majority of the new investment proposals originates in the Head office level and most of the firms formulate plans for five years. Among the non discounted methods, Payback period method is the most widely used while among the discounted cash flow methods, the IRR is the most popular method of capital budgeting.

It can be seen from the above literature review that very few studies have tried to find the profitability of firms in the Small and Medium Enterprises (SME) sector. Again very few studies have tried to find the profitability of small scale handicraft firms through proper use of Capital Budgeting techniques. In this chapter, we have tried to find out the profitability of the bell metal production units through various methods of capital budgeting. This Chapter analyses the profitability of the bell metal production units using Capital Budgeting techniques of Pay Back Period, Profitability Index and Internal Rate of Returns as these three are the most widely used methods of Capital Budgeting. Therefore, we can state that this study has bridged the research gap in this field.

4.3 Methodology:

Census of India defines Household Industry as the one which is situated in the home premises of the owner or in the village itself. Again in this industry, one or more worker must be the family member of the owner. Most of the household industries are not registered.[1]

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[1] Meta Data, Census of India, 2011.

Therefore, bell metal industry may be categorized as a household Industry because it is usually situated in the premises of the *Kohar* and most of the family members of the household of the *Kohar* work in the firm itself as *Aidhas*. The responsibility of the setting up of the production unit lies with the *Kohar* himself. For that, he has to set up a *Garhshall* in his home premises. If space is not available in his premises then he may go to a rented place but this is very rare. No *Kohar* in our sample was found operating his *Garhshall* from a rented place. All the *Garhshall* in our sample are situated in the home premises of the *Kohar*. As a *Kohar* he has to look for supporting artisans with proper expertise. The best place to look for *Aidhas* is his own family or the extended family. It is observed in the field survey that many of the *Aidhas* are sons, cousins or nephews of the *Kohars*. In one or two places, it is observed that uncles of the *Kohar* are also working as *Aidhas* of the *Kohar*. This is because there is no hereditary system in this industry. The son of a *Kohar* may not be *Kohar*, if he does not have the quality. If the *Kohar* forcefully makes his son a *Kohar* without the quality of a *Kohar*, he will not be able to sustain the *Garhshall*. If he is not competent enough then the product of his *Garhshall* will fail to meet the minimum quality standard. As a result, the cooperative or the *Mohajons* will not take his products and he will not be in a position to sustain the *Aidhas*. His *Aidhas* will leave him and join other production units and he will be forced to close down his production unit.

For setting up a production unit, the *Kohar* has to bear the initial cost. Usually, he bears it from his own savings. The *Kohar* does not earn extra profit from his production. As the master craftsman, he earns one part extra making charge than the *Aidhas*. As discussed in Chapter II (2.1), the *Kohar* gets 24 *Annas*[2] whereas the supporting craftsmen earn 16 *Annas*. This means if the *Aidhas* earn Rs100 then the *Kohar* earns Rs.150. from the making charge of the bell metal products. The extra part of *Gorhoni* earned by the *Kohar* is due to his expertise and ownership of the *Garhshall*. This also includes his cost of initial investment. In other words, we can say that this extra earning of the *Kohar* is the profit earned by him for owning the production unit.

When the *Kohar* starts his production unit, he has to bear the costs of construction of the *Garhshall*, which is usually a tin roof with bamboo walls, preparing the land which

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[2] One sixteenth of One rupee, according to the old Indian currency system.

includes earth filling and labour cost, cost of equipments including the furnace (*Bhati*), Hammers (*Hathli*), Cast iron pots (*Muhi*), Polishers (*Reti*) etc. In the initial period, he also has to purchase some raw materials including scrap metal. He has to purchase the scrap metal because no *Mohajon* or the cooperative will be willing to give raw materials to a new *Kohar* on credit. So he has to purchase the material for the initial few days of production and gradually he will be getting orders depending on the quality of his product. Once he is able to establish reputation in the market then he will start getting orders from the *Mohajons*. At this stage, he will not need to purchase raw materials because the *Mohajons* will start supplying him the scrap metals. Then he does not have to bear its cost. Therefore, costs of raw materials have to be included in the initial investments. The other component of the initial investment part is charcoal. In the initial period the *Kohar* has to keep a stock of charcoal so that it lasts a few days. Thus the initial investment or cash outflow of the *Kohar* is calculated by taking the cost of raw materials, preparation of land for the *Garhshall*, cost of the building/ shed, cost of equipments, cost of raw materials and the cost of charcoal.

On the other hand, the daily cash inflow of the *Kohar* is calculated as the extra part of *Gorhoni* which he gets as the owner of the *Garhshall*. This is the difference between the remuneration received by the *Kohar* and the *Aidhas*. The average annual income of the *Kohar* or the annual cash inflow of the *Garhshall* was calculated by multiplying the daily cash inflow of the *Kohar* by 305, because it is concluded that the on an average the *Garhshall* operates for around 305 days in a year.

Then the Payback period of the *Garhshall* is calculated by using the following formula.

$$\text{P-B Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}} = \frac{I}{C}$$

The production units are then compared on the basis of the Payback periods and ranked on the basis of recovering their initial investment.

Then the Profitability Indices of the projects are calculated using the following Formula[3].

$$\text{PI} \quad = \frac{\text{PV of Cash Inflows}}{\text{PV of Cash Outflows}}$$

$$= \frac{\sum_{t-1}^{n}[E(CF_{it})]/(1+r_i)^t}{\sum_{t-1}^{n}[(C_{it})]/(1+r_i)^t}$$

Where, t= Life of the Investment = 5 Years.

PV stands for present value.

It is observed that the average life of the investment lasts for about 5 years because, the *Kohar* has to replace the equipments and rebuild the *Garhshall* after around five years.

$$CF_{it} = \text{Net annual Cash Inflow for the i}^{\text{th}}\text{ year}$$

Net cash inflow consists of the extra part of *Gorhoni* which is received by the *Kohar*. As this *Gorhoni* is calculated after deduction of the day to day expenses of the *Garhshall* including refreshments, electricity bill, transportation cost, costs of raw materials like charcoal, interest, telephone charges and medical expenses if any. It gives the Net Cash Inflow for the *Kohar*. As we have considered the average *Gorhoni* for one year, we will be assuming that the production units show a constant Annual Cash Inflow. Thus,

$$C_{it} = \text{Net Annual Cash Outflow for the i}^{\text{th}}\text{ year}$$

The only cash outflow which the *Kohar* has to bear is the annual maintenance cost. This includes repairing of the *Garhshall*, procuring new equipments and maintenance of the instruments. Again we are assuming that this maintenance cost remains constant over the life of the project. Thus the Annual Cash Outflow will be the Average Annual Maintenance cost borne by the *Kohar*. 'r' is the discount rate. It is taken as the Average Wholesale price Index of the year 2018. The Average WPI of all the months, released on 14/15 th of each month is taken and it was calculated as 4.11%. Table 4.1 gives the Monthly Wholesale Price Indices of India as released by the Government of India

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[3] Hirchey,M.(2009); *Managerial Economics*, South-Western Cengage Learning, Mason, USA

Table 4.1: Wholesale Price Indices of India for the year 2018

Date of Release	Wholesale Price Indices of India
15-01-2018	3.58
15-02-2018	2.84
14-03-2018	2.48
16-04-2018	2.47
14-05-2018	3.18
14-06-2018	4.43
16-07-2018	5.77
14-08-2018	5.03
14-09-2018	4.53
15-10-2018	5.13
14-11-2018	5.28
14-12-2018	4.64
Average	4.11

Source: https://in.investing.com/[4]

Another widely used method of project evaluation is the Internal Rate of Return method. Internal Rate of Returns is the rate at which the present value of future cash inflows is equal with the initial investment. This method is preferred over the fact that once we can derive the Internal Rate of Returns, it becomes easy to test the viability of the project. The opportunity cost can also be compared with the expected rate of returns from time deposits in commercial banks.

The equation for calculating The Internal Rate of Returns is given as[5]

$$NPVi = 0 = \sum_{t=1}^{n} \frac{[E(CF_{it})]}{(1+r_i)^t} - \sum_{t=1}^{n} \frac{C_{it}}{(1+r_i)^t}$$

Where,

$\frac{[E(CF_{it})]}{(1+r_i)^t}$ is the Present Value of Expected Cash Inflow of the project.

$\frac{C_{it}}{(1+r_i)^t}$ = Present Value of Cash Outflow

'r' is the Rate of Interest for which the equation above is satisfied.

4.4 Results and Discussion:

4.4.1 Payback Period of the Bell Metal Industry:

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[4] https://in.investing.com/economic-calendar/indian-wpi-inflation-564 accessed on 11/02/2021
[5] Hirchey,M.(2009); *Managerial Economics*, South-Western Cengage Learning,Mason, USA

Payback Period is that time period where the entrepreneur is able to recover his investment. It is the simplest form of Capital Budgeting which does not take into account the time value of money. Based on the formula mentioned above and the data collected from the field, the Payback Period of the bell metal industry of Sarthebari is calculated as-

P-B Period =1.27 years

Now assuming equal cash inflow throughout the year the average Payback Period for the whole Bell Metal industry is calculated as

P-B Period =1Year 3Months and 8 days

Product wise Payback period is given in Table-4.2

Table-4.2 shows that The PB Period of *Kahi* is One year and 22 days also shown in figure 4.1. On the other hand, PB Period of Bell and others is Three years Two months and Six days. Again PB Period of *Bati* is One year Three Months and One day, and that of *Taal* and *Maihang* are One Year Four Months Eleven days and One Year Ten Months and Twenty one days respectively. On the other hand, the PB period of *Baanbati*, *Bata* and *Lota* are Two Years Five Months and Eleven days, Two Years Two Months and Six days, and Two Year Four Months and Eleven days respectively.

**Table 4.2: Payback Period of Different Bell Metal Products**

Sl.No	Product	Average Initial Investment (In Rs)	Average Annual Income (In Rs)	PAYBACK PERIOD
1	*Kahi*	82109	77470	1 Year 22 Days
2	*Bati*	59238	47580	1 Year 3 Months 1Days
3	*Taal*	107563	78995	1 Year 4 Months 11 Days
4	*Maihang*	123100	65575	1 Year 10 Months 21Days
5	*Bata*	79669	36600	2 Years 2 Months 6 Days
6	*Baanbati*	71518	29280	2 Years 5 Months 11 Days
7	*Lota*	61260	25925	2 Year 4 Months 11 Days
8	Bell/ Others	76550	24095	3 Years 2 Months 6 Days

Source: Field Survey

This shows that *Kahi* has least payback period amongst all the products and Bells has the longest payback period. In other words, we can conclude that the *Kohar* producing *Kahi* will recover his initial investment at the earliest whereas those producing Bell requires the

highest number of days to recover his investment. This explains the reasons behind *Kohars* preferring *Kahi* over other products and the high number of *Garhshalls* producing *Kahi* in the survey area. In fact 74 of the 172 *Garhshall* (43.02%) in the sample produce *Kahi*. The possible reason is that it has the highest demand among all the products and also requires least amount of time to recover the costs. *Taal* occupies the second rank at One Year Four Months and Eleven days. This shows that there is not much difference in the payback periods of *Kahi* and *Taal*. As the payback period of *Kahi* is the lowest among all, any producer will prefer *Kahi* over other products. *Bati* and *Maihang* are the two other products whose Payback Period is less than two years at 1 Year 3 Months 1Day and 1 Year 10 Months 21Days respectively. From the Payback period criterion of project evaluation, it is clear that *Kahi* is the most preferred among all the bell metal products, whereas Bells are the least preferred of all.

Figure 4.1: Payback Period of Different Bell Metal Products
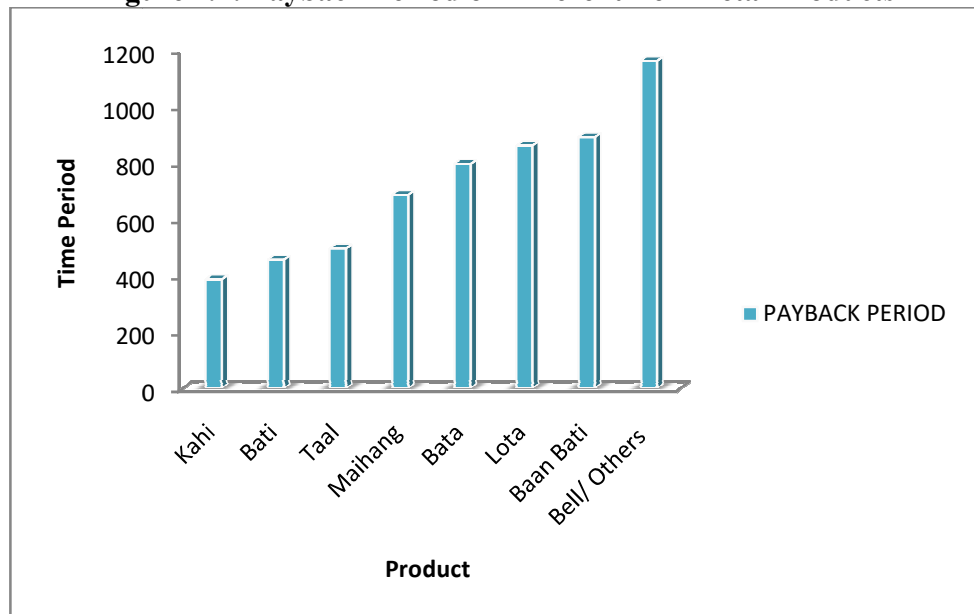
Source: Field Survey.

4.4.2 Profitability Index:

Profitability Index is an advance variant of the Net Present Value method of project evaluation. It gives us the relative profitability of a project per unit cost. Based on the above discussions, Table-4.3 gives the present values of cash inflows and outflows.

Table 4.3: Present Value of Average Annual Cash Inflow and Outflow of *Garhshalls*

Year	Average Net Annual Cash Inflow	Average Annual Cash Outflow	Discount Rate	P V Factor	Present Value of Cash Inflow	Present Value of Cash Outflow
0	63022	80488	0.0411	1	63022	80488
1	63022	7127	0.0411	0.9605	60533	6845
2	63022	7127	0.0411	0.9226	58144	6575
3	63022	7127	0.0411	0.8862	55850	6316
4	63022	7127	0.0411	0.8512	53644	6067
5	63022	7127	0.0411	0.8176	51527	5827
Total	378132	42762			342720	112118

Source: Field Survey.

Based on the data given in Table- 4.3 the Profitability Index of the bell metal Industry is calculated as-

$$PI = \frac{PV \text{ of Cash Inflows}}{PV \text{ of Cash Outflows}}$$

$$= \frac{Rs.342720.00}{Rs.112118.00}$$

$$= 3.06$$

This means that in bell metal industry a new project gives return Rs.3.06 per unit of Rupee invested by the *Kohar* in the first 5 years. This shows that bell metal production is a highly profitable occupation because the *Kohar* can triple his investments in just three years.

As we have discussed in previous chapters that the average productivity, production efficiency and income generation of each bell metal product is different, it is very important to see the relative profitability of the various bell metal products through Profitability Index criterion of Capital budgeting. Table- 4.4 gives the Present values of cash inflows and outflows of *Kahi*. We have also calculated the present values of cash inflows and outflows of *Taal* which are given in Table 4.5.

Table 4.4: Present Value of Average Annual Cash Inflow and Outflow of *Kahi*

Year	Average Net Annual Cash Inflow	Average Annual Cash Outflow	Discount Rate	P V Factor	Present Value of Cash Inflow	Present Value of Cash Outflow
0	77470	82109	0.0411	1	77470	82109
1	77470	7090	0.0411	0.9605	74410	6810
2	77470	7090	0.0411	0.9226	71474	6541
3	77470	7090	0.0411	0.8862	68654	6283
4	77470	7090	0.0411	0.8512	65942	6035
5	77470	7090	0.0411	0.8176	63339	5797
Total	464820	117559			421289	113575

Source: Field Survey

Based on the data given in Table 4.4, the Profitability Index of the *Kahi* is calculated as-

$$PI = \frac{PV \text{ of Cash Inflows}}{PV \text{ of Cash Outflows}}$$

$$= \frac{Rs.421289.00}{Rs.1135\ 7500}$$

$$= 3.71$$

It can be seen that the Profitability Index of *Kahi* is higher than the PI of the bell metal industry as a whole. At 3.71, it has a very high profitability index which gives a return of 371% over the investment in the production of *Kahi*.

Table 4.5: Present Value of Average Annual Cash Inflow and Outflow of *Taal*

Year	Average Net Annual Cash Inflow	Average Annual Cash Outflow	Discount Rate	P V Factor	Present Value of Cash Inflow	Present Value of Cash Outflow
0	78995	107563	0.0411	1	78995	107563
1	78995	7127	0.0411	0.9605	75875	6845
2	78995	7127	0.0411	0.9226	72881	6575
3	78995	7127	0.0411	0.8862	70005	6316
4	78995	7127	0.0411	0.8512	67241	6067
5	78995	7127	0.0411	0.8176	64586	5827
Total	473970	143198			429583	139193

Source: Field Survey

Based on the data given in Table-4.5, the Profitability Index of the *Taal* is calculated as-

$$PI = \frac{\text{PV of Cash Inflows}}{\text{PV of Cash Outflows}}$$

$$= \frac{Rs.4295\ 8300}{Rs.139193.00}$$

$$= 3.09$$

Like *Kahi* and *Taal*, the Profitability Indices of all the various bell metal products were calculated, which are shown in Table-4.6:

**Table 4.6: Profitability Index of Various Bell Metal Products**

Sl.No	Product	Profitability Index
1	*Kahi*	3.71
2	*Taal*	3.09
3	*Bati*	2.73
4	*Maihang*	2.25
5	*Lota*	2.01
6	*Bata*	1.86
7	*Baan Bati*	1.7
8	Bell/ Others	1.41

Source: Field Survey

Table-4.6 shows that *Kahi* has the highest Profitability Index at 3.71 and Bell/ others have the lowest Profitability Index at 1.41 which is also shown by Figure 4.2. Again *Taal* has the second best PI factor at 3.09. The third highest PI factor belongs to *Bati*. It shows that *Kohars* producing *Taal* and *Bati* can triple their investment in 5 years, whereas those producing *Kahi* can almost quadruple their investment during the same time period.

Comparison of Tables 4.2 and 4.6 shows that *Kahi* is the most profitable product for the *Kohar,* which also has the least Payback Period. Thus it is economically viable for the *Kohar* to opt for *Kahi* if he is starting a new *Garhshall*. *Kahi* is also the product which has the highest demand among all the bell metal products. In both criteria, *Taal* occupies the rank of second spot, with second highest Profitability Index as well as second lowest Payback Period. Again Bell occupies the last spot among all the products.

Figure 4.2: Profitability Index of Different Bell Metal Products
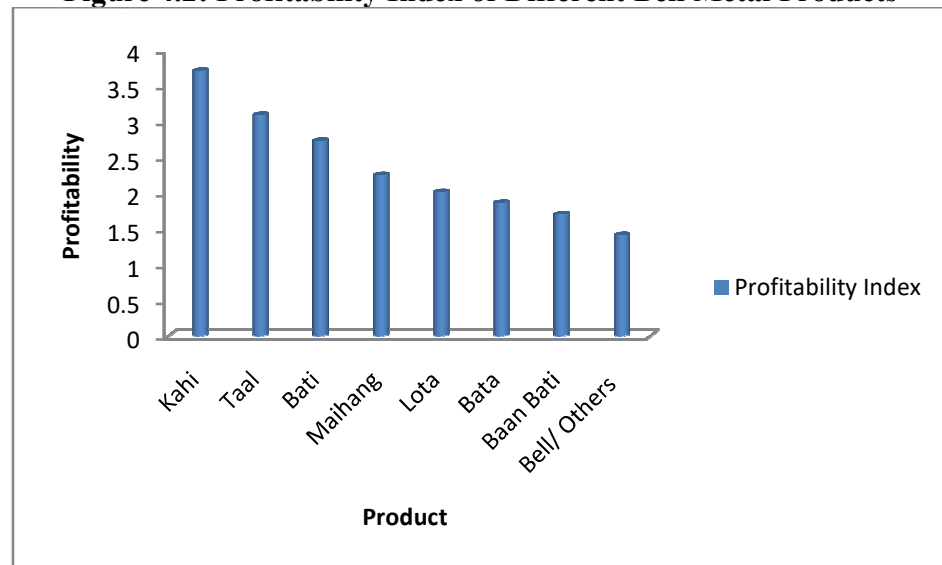
In PI method of Project Evaluation if for a project PI >1, the project should be accepted by the entrepreneur. Therefore, bell metal productions units should always be accepted by the *Kohar*.

Thus we can conclude that both the criteria of Payback Period and Profitability Index deliver consistent results.

4.4.3 Internal Rate of Returns:

IRR method of Project Evaluation 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 usually the trial and error method is applied to find the value of 'r'.

Table 4.7 gives the undiscounted values of average annual cash outflow and inflow of the *Garhshalls* of all the products. The Cash outflow for time period '0' is the Initial Investment.

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Table 4.7: Average Annual cash Inflow and Outflow of *Garhshalls*

Year	Average Net Annual Cash Inflow	Average Annual Cash Outflow	Discount Rate
0	63022	80488	r
1	63022	7127	r
2	63022	7127	r
3	63022	7127	r
4	63022	7127	r
5	63022	7127	r
Total	Cash Inflow- Rs.378132.00	Cash Out Flow- Rs.116123.00	

Source: Field survey

Based on the average annual cash inflow and outflow of the *Garhshall*s, the Average Annual Cash Inflows and Outflows are given as –

Table 4.8: Calculations of Average Annual Cash Inflow and Outflow of *Garhshalls*

Year	Average Net Annual Cash Inflow	Average Annual Cash Outflow	Discount Rate	P V Factor	Present Value of Cash Inflow	Present Value of Cash Outflow
0	63022	80488	3.19775	1	63022	80488
1	63022	7127	3.19775	0.2382	15012	1698
2	63022	7127	3.19775	0.0568	3580	406
3	63022	7127	3.19775	0.0135	851	96
4	63022	7127	3.19775	0.0032	202	23
5	63022	7127	3.19775	0.0008	50	6
Total	Rs.378132	Rs.116123			Rs.82717	Rs.82717

Source: Field Survey

Table 4.8 shows that the Present Value of Total Average Cash Outflow and Inflow becomes equal at the discount rate 3.19775.

Thus the Internal Rate of Returns for the whole bell metal industry is calculated as
r = 319.775%.

This means that the bell metal industry gives a return of 319.775% to the *Kohar*. This is huge returns as compared to what the commercial banks are offering as interest rates on Fixed Deposits. Again in the last 10 years, the Stock Market of India has given an average

annual return of 13.9%[6]. This shows that Bell metal Industry should be one of the most lucrative investment opportunities for an investor.

For comparative study Internal Rate of Returns of all the different bell metal products were also calculated. Table 4.9 shows the Internal Rate of Returns of various bell metal products.

Table 4.9: Internal Rate of Returns of Various Bell Metal Products

Sl. No	Product	Internal Rate of Returns
1	*Kahi*	15.14206
2	*Bati*	3.394
3	*Taal*	2.51062
4	*Maihang*	0.96678
5	*Bata*	0.64722
6	*Lota*	0.61622
7	*Baan Bati*	0.4982
8	Bell/ Others	0.27087

Source: Field Survey.

Table-4.9 shows that *Kahi* has the highest IRR at 15.14 and Bell/ Others have the lowest Profitability Index at 0.27. Again *Bati* has the second best IRR at 3.39. The third highest IRR belongs to *Taal* at 2.51. It shows that all the products have positive IRR showing that none of the *Kohars* incur losses in their profession of producing bell metal products, which reiterates the findings from other methods of Capital Budgeting.

Figure 4.3: Internal Rate of Return of Different Bell Metal Products
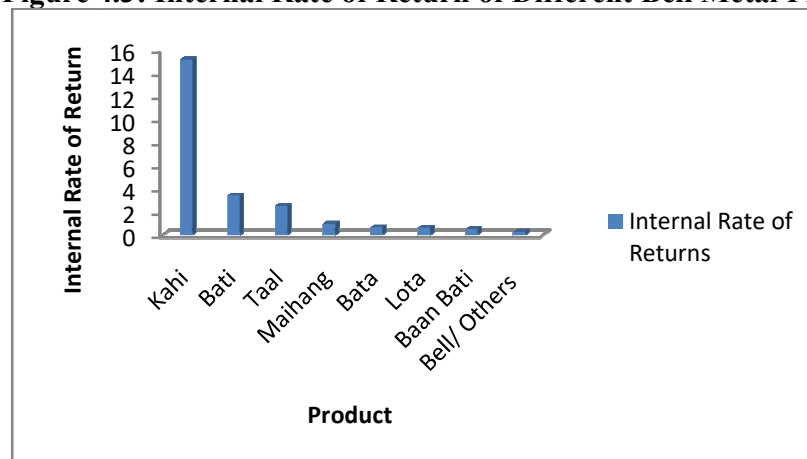
Source: Field Survey

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[6] http://www.moneychimp.com/features/market_cagr.htm accessed on 20/10/2021

4.4.4 Comparison of Profitability of Various Bell Metal products :

A comparison of the results of the three methods of Capital Budgeting which the study has undertaken, viz. Payback Period, Profitability Index and Internal Rate of Returns reveals that *Kahi* is the most profitable of all the products whereas Bell is the least profitable one. Table 4.10 gives comparison of all three methods.

Table 4.10: Comparison of Results of Different Methods of Capital Budgeting

Rank	Payback Period	Profitability Index	Internal Rate of Returns
1	*Kahi*	*Kahi*	*Kahi*
2	*Bati*	*Taal*	*Bati*
3	*Taal*	*Bati*	*Taal*
4	*Maihang*	*Maihang*	*Maihang*
5	*Bata*	*Lota*	*Bata*
6	*Lota*	*Bata*	*Lota*
7	*Baan Bati*	*Baan Bati*	*Baan Bati*
8	Bell/ Others	Bell/ Others	Bell/ Others

Source: Field Survey

Table 4.10 shows that *Kahi* is the most profitable bell metal product across all the methods of Capital Budgeting which were applied. While two methods, PB Period and IRR gave *Bati* the second rank, PI method gave second rank to *Taal*. Again PB Period and IRR gave *Bata* the fifth rank; but PI method gave Sixth rank to *Bata*. Except these two occasions, all the methods give the same rank to other products.

It can be seen that the results of the Capital Budgeting confirms the findings of the earlier chapters that *Kahi* is the most profitable bell metal product which also generates the highest average income to the artisans. It is the most popular bell metal product with highest demand. In marriages and *Annaprasanna* the most popular gift is the set of *Kahi-Bati*. Usually one set contains one *Kahi* and one *Bati*. Usually a *Kahi* weighs around 900 grams to 1.5 Kilograms. On the other hand, a *Bati* weighs around 300 to 400 grams. Thus in terms of numbers demand for both are in the same brackets but in terms of weights the demand for *Kahi* is much higher.

4.5 Conclusion:

In conclusion, we can say that bell metal production is a highly profitable profession, where the entrepreneur can earn a very high rate of return which is as high as 319.775%. But it is not possible for investors to come and enter the industry without proper knowledge and expertise. Any person with the required resources cannot become a *Kohar* and earn high

returns on his investment. To be a *Kohar* or owner of a *Garhshall,* one has to be a professional bell metal artisan with in depth knowledge of the bell metal craft. He must be able to lead his team of *Aidhas* in producing the product.

It should also be noted that one does not need to possess knowledge about all the products. The *Kohar* needs to know only about the product he is producing, for example a *Kohar* engaged in the production of *Kahi* may not have detail knowledge or expertise in producing *Taal*. As bell metal production is a highly specialized job, it requires the *Kohar* to know everything about the product he is producing.

Again there is also little scope for an investor from outside coming to Sarthebari and invest in the industry by setting up *Garhshalls* and employing *Kohars* and *Aidhas* on salary basis. No *Kohars* will agree to this. They are very proud and independent artisans, who will never work under someone else.

As it is not practically possible for outsiders and corporate to come and invest in the trade, the role of the government amplifies here. The government through its various agencies may organize training sessions so that more and more *Aidhas* can become *Kohars*, and also make available finance to them so that they can set up their own *Garhshall*.

It is also important to analyse the socio economic conditions of the artisans involved in the production of bell metal industry of Sarthebari, which is done in Chapter- V.